POTABLE WATER SERVICE SINGLE 5/8" X 3/4" & 1" METER INSTALLATION DETAIL (PVC)

REVISION/ISSUE DATE: 6/2019

SECTION

NOTES:


2. LIMIT OF UNOBSERVED SPACE FROM SIDE OF WATER METER BOX SHALL BE 36" MINIMUM FOR SHRUBS AND SIMILAR OBSTRUCTIONS WITH 60" MINIMUM FOR TREES, WALLS, AND OTHER SIMILAR OBSTRUCTIONS.

3. FOR INSTALLATION OF SERVICES UNDER DRAWS AND ROADWAYS USE MIN. 3" DIAMETER BLACK IRON PVC SCH 40 OR HOPE DRAINAGE CASING. CASING SHALL BE EXTENDED MIN. 24" BEYOND EDGE OF PAVEMENT. END OF CASING TO BE SEALED WITH FOAM SEALANT. CASING SHALL BE COLOR-CODED BLACK, WHITE, BLUE, OR BLUE STRIPED.

4. SUCCESSIVE TAPS INTO THE WATER MAIN SHALL BE SPACED A MINIMUM OF 18" APART. TAPS ON SAME SIDE OF A PVC PIPE SECTION SHALL BE MIN. 10" APART.

5. METER SHALL NOT BE PLACED IN SIDEWALK OR DRIVEWAY AREAS. WATER SERVICE LINES AND TAPS SHALL NOT BE PLACED UNDER DRAWS AND ROADWAYS WHENEVER POSSIBLE AND IF REQUIRED, ONLY WITH PRIOR DEPARTMENT APPROVAL.

6. COPPER SHALL BE "TYPE K" CONTINUOUS AND SUITABLE FOR UNDERGROUND SERVICE WITH FLARED CONNECTIONS. PVC PIPE SHALL BE SCH 40. WITH SCH 80 PVC FITTINGS. ALL BRASS SHALL BE "LEAD FREE".

7. MAXIMUM SERVICE LENGTH IS 100' TO METER.

8. BINGO (MIN. 4") AND COVER (MIN. -5") OVER SERVICE LINE OR CASING SHALL CONSIST OF FINE GRAINULAR MATERIAL. UNSTABLE OR PULVERIZED MATERIAL SUCH AS DUST, DIRT AND LARGE ROCKS SHALL BE REMOVED WITH 2" MOUNDING.

9. METER/SERVICE WILL NOT BE INSTALLED/ACTIVATED UNTIL:
   a. All form boards for driveway and/or sidewalk must be completely installed or the driveway and/or sidewalk must have been installed.
   b. "Minimum unobstructed space as shown in note 2 and on the plan view is provided with 12" minimum vertical separation required to all other utilities.
   c. The required backflow prevention assembly/device is installed and has passed initial test.

10. METER TO BE INSTALLED BY DEPARTMENT. THE PIPING BEYOND THE CONTROL VALVE SHALL BE INSTALLED BY THE DEVELOPER OR THE DEPARTMENT DEPENDS ON TYPE OF SERVICE INSTALLATION REQUIRED.

11. THE DEVELOPER/PROPERTY OWNER OR ASSOCIATION SHALL BE RESPONSIBLE FOR INSTALLATION OF SERVICES BEYOND PRESSURE TEST LIMIT AS SPECIFIED BY THE DEPARTMENT.

12. TAPED AREAS OF CORPORATION STOP AND OTHER FITTINGS SHALL BE SPIRAL WRAPPED WITH TWO (2) WRAPS OF Teflon tape.

13. METER BOXES IN NON-GRASS AREAS SHALL HAVE TRAFFIC RATED LIDS.

14. A 12" THICK COMPACTED 3/4" ROCK BASE IS REQUIRED FOR METER BOXES OUTSIDE OF GRASS AREA. THE BASE SHALL EXTEND MINIMUM 12" BEYOND THE METER BOX PERIMETER.
1. All non-residential services and residential services with separate metered reclaimed water service shall have an approved reduced pressure principle backflow prevention assembly (R.P.). The initial test of the R.P. shall be performed by the Department. The R.P. shall be installed as close as possible to the point of service not to exceed 48" without prior department approval.

2. Unit of unobstructed space, from side of water meter box shall be 30" minimum for shrubs and similar obstructions with 60" minimum for trees, walls, and other similar obstructions.

3. For installation of services under driveways and roadways use min. 3" diameter black iron, PVC SCH 40 or HOPE SR 8 casing. Casing shall extend min. 24" beyond edge of pavement. End of casing to be sealed with foam sealant. Casing shall be color-coded black, white, blue, or blue striped.

4. Successive taps into the water main shall be spaced a minimum of 18" apart. Taps on same side of a PVC pipe section shall be min. 10" apart.

5. Meter shall not be placed in sidewalk or driveway areas. Water service lines and taps shall not be placed under driveways whenever possible and if required, only with prior department approval.

6. Copper shall be "Type K" continuous and suitable for underground service with flared connections. PVC pipe shall be SO4. All with SCH 80 PVC fittings. All brass shall be "lead free".

7. Maximum service length is 100' to meter.

8. Bedding (min. 4") and cover (min. 4") over service line or casing shall consist of fine granular material. Unsuitable fill material such as junk, debris and larger rocks shall be removed with 2" maximum size.

9. Meter shall not be installed/activated until:
   a. All form boards for driveway and/or sidewalk must be completely installed or the driveway and/or sidewalk must have been installed.
   b. "Minimum unobstructed space" as shown in note 2 and on the plan view is provided with 12" minimum vertical separation required to all other utilities.
   c. The required backflow prevention assembly/device is installed and has passed initial test.

10. Water to be installed by department. The piping beyond the control space shall be installed by the developer or the department depending on type of service installation required.

11. The developer/property owner or assignee shall be responsible for installation of services beyond pressure reducing zone as specified by the Department.

12. Threaded areas of corporation stop and other fittings shall be spirally wrapped with two (2) wraps of 3/4" teflon tape.

13. Meter boxes in non-grass areas shall have traffic rated lids.

14. A 12" thick compacted 3/4" rock base is required for meter boxes outside of grass area. The base shall extend minimum 12" beyond the meter box perimeter.
1. All non-residential and residential services with separate metered reclaimed water service shall have an approved reduced pressure principle backflow prevention assembly (R.P.P.). The initial test of the R.P.P. shall be performed by the department. The R.P.P. shall be installed as close as possible to the point of service not to exceed 48" without prior department approval.

2. Limit of unobstructed space from side of water meter box shall be 36" minimum for shrubs and similar obstructions with 80" minimum for trees, walls, and other similar obstructions.

3. For installation of services under driveways and roadways use min. 3" diameter black iron, PVC SCH 40 OR HDPE for casing. Casing shall be min. 24" beyond edge of pavement. End of casing to be sealed with foam sealant. Casing shall be color-coded black, white, blue, or blue striped.

4. Successive taps into the water main shall be spaced a minimum of 15" apart. Taps on same side of a pipe section shall be min. 12" apart.

5. Meter shall not be placed in sidewalk or driveway areas. Water service lines and taps shall not be placed under driveways whenever possible and if required, only with prior department approval.

6. Maximum service length is 100' to meter.

7. Bending shall be at least 15° and cover min. 4" over service line or casing shall consist of fine granular material unsuitable in-fill materials such as black sand and larger rocks shall be removed with 37-maximum size.

8. Meter service will not be installed/activated until:
   a. All turn boards for driveway and/or sidewalk must be completely installed or the driveway and/or sidewalk must have been installed.
   b. Minimum unobstructed space as shown in Note 2 and on the plan view is provided with 12" minimum vertical separation required to all other utilities.
   c. The required backflow prevention assembly/device is installed and has passed initial test.

9. Meter to be installed by the department, the piping beyond the control valve to be installed by the developer or the department depending on the type of service installation required.

10. The developer/property owner or associate shall be responsible for installation of services beyond pressure point as specified by the department.

11. Bending of corporation stop and other fittings shall be spiral wrapped with two (2) wraps of Teflon tape.

12. Meter boxes in non-grass areas shall have traffic rated lids.

13. A 12" thick compacted 3/4" base base is required for meter boxes outside of grass area. The base shall extend min. 12" beyond the meter box perimeter.

14. Stainless steel inserts are required for all compression fittings.

15. PVC shall be schedule 40 pipe with schedule 80 fittings. All brass fittings shall be "lead free".
1. SERVICE PIPING LARGER THAN 2" WILL NOT BE ACCEPTED. FOR INSTALLATION OF SERVICES UNDER DRIVEWAYS AND ROADWAYS USE 4" DIAMETER BLACK IRON, PVC SCH. 40, OR HDPE SDR 9 CASING. CASING SHALL EXTEND 24" BEYOND EDGE OF PAVEMENT. END OF CASING TO BE SEALED WITH FOAM SEALANT. CASING SHALL BE COLOR CODED BLACK, WHITE, BULE, OR BLUE STRIPED.

2. METER LOCATION MUST CORRESPOND TO UNIT/BAY CONFIGURATION TO AVOID SERVICE LINE CROSSINGS.

3. METER/SERVICE WILL NOT BE INSTALLED/ACTIVATED UNTIL:
   A. ALL FORM BOARDS FOR DRIVEWAY AND/OR SIDEWALK MUST BE COMPLETELY INSTALLED OR THE DRIVEWAY AND/OR SIDEWALK MUST HAVE BEEN INSTALLED.
   B. "MINIMUM UNOBRstructED SPACE" AS SHOWN IN NOTE 2 AND ON THE PLAN VIEW IS PROVIDED WITH 12" MINIMUM VERTICAL SEPARATION REQUIRED TO ALL OTHER UTILITIES.
   C. THE REQUIRED BACKFLOW PREVENTION ASSEMBLY/DEVICE IS INSTALLED AND HAS PASSED INITIAL TEST.

4. TYPICAL METER INSTALLATION DETAILS 1W AND 4W AS APPLICABLE.

5. THE DEVELOPER/PROPERTY OWNER OR ASSIGNEE SHALL BE RESPONSIBLE FOR SERVICE INSTALLATION BEYOND PRESSURE TEST LIMITS AS SPECIFIED BY THE DEPARTMENT.

6. THREAD WRAP AREAS OF CORPORATION STOP AND OTHER FITTINGS SHALL BE SPIRAL WRAPPED WITH TWO (2) WRAPS OF TEFLOX TAPE.

7. MAX. (8) 5/8 METERS OR MAX. (4) 1 METERS, OR MAX. (2) 5/8 METERS WITH (2) 1 METERS MAY BE CONNECTED TO A SINGLE 2" SERVICE LINE.

8. LIMIT OF UNOBRstructED SPACE FROM SIDE OF WATER METER BOX SHALL BE 36" MINIMUM FOR SHRUBS AND SIMILAR OBSTRUCTIONS WITH 60" MINIMUM FOR TREES, WALLS, AND OTHER SIMILAR OBSTRUCTIONS.

9. PVC PIPE SHALL BE SCHEDULE 40 PIPE WITH SCHEDULE 80 FITTINGS. ALL BRASS FITTINGS SHALL BE "LEAD FREE".

NOTES:

1. ALL NON-RESIDENTIAL SERVICES AND RESIDENTIAL SERVICES WITH SEPARATE METERED RECLAIMED WATER SERVICE SHALL HAVE AN APPROVED REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTION ASSEMBLY (R.P.) THE INITIAL TEST OF THE R.P. SHALL BE PERFORMED IN THE DEPARTMENT. THE R.P. SHALL BE INSTALLED AS CLOSE AS POSSIBLE TO THE POINT OF SERVICE NOT TO EXCEED 60' WITHOUT PRIOR DEPARTMENT APPROVAL.

2. LIMIT OF UNOBSERVED SPACE FROM SIDE OF WATER METER BOX SHALL BE 36" MINIMUM FOR SHRUBS AND SIMILAR OBSTRUCTIONS WITH 60" MINIMUM FOR TREES, WALLS, AND OTHER SIMILAR OBSTRUCTIONS.

3. FOR INSTALLATION OF SERVICES UNDER DRAWSMEN AND ROADWAYS, USE MIN. 4" DIAMETER BLACK IRON, PVC SCH 40, OR HRE SDR 9 CASING, CASING SHALL EXTEND MIN. 24" BEYOND EDGE OF PAVEMENT. CASING TO BE SEAL WITH FOAM SEALANT. CASING SHALL BE COLOR-CODED BLACK, WHITE, RED OR BLUE-STRIPED.

4. SUCCESSIVE TAPS INTO THE WATER MAIN SHALL BE SPACED A MINIMUM OF 18" APART. TAPS SPACED BETWEEN 18" AND 48" SHALL BE OFFSET TO EACH SIDE OF THE MAIN. TAPS ON THE SAME SIDE OF A PVC PIPE SECTION SHALL BE MIN. 10" APART.

5. METER SHALL NOT BE PLACED IN SIDEWALK OR DRIVEWAY AREAS. WATER SERVICE LINES AND TAPS SHALL NOT BE PLACED UNDER DWARVES WHENEVER POSSIBLE AND IF REQUIRED, ONLY WITH PRIOR DEPARTMENT APPROVAL.

6. MAXIMUM SERVICE LENGTH IS 100' TO METER.

7. BENDING (MIN. 40°) AND COVER (MIN. 40°) OVER SERVICE LINE OR CASING SHALL CONSIST OF FINE GRANULAR MATERIAL. UNSUITABLE IN-SITU MATERIALS SUCH AS MUCK, BERRY AND LARGER ROCKS SHALL BE REMOVED WITH 2" MAXIMUM SIZE.

8. METER/SERVICE WILL NOT BE INSTALLED/ACTIVATED UNTIL:
   a. ALL FORM BOARDS FOR DRIVEWAY AND/OR SIDEWALK MUST BE COMPLETELY INSTALLED OR THE DRIVEWAY AND/OR SIDEWALK MUST HAVE BEEN INSTALLED.
   b. MINIMUM UNOBSEROY SPACE AS SHOWN IN NOTE 2 AND ON THE PLAN VIEW IS PROVIDED WITH 12" MINIMUM VERTICAL SEPARATION REQUIRED TO ALL OTHER UTILITIES.
   c. THE REQUIRED BACKFLOW PREVENTION ASSEMBLY/DEVICE IS INSTALLED AND HAS PASSED INITIAL TEST.

9. SERVICE COMPONENTS SHALL BE CONSTRUCTED FOR THE METER TO BE INSTALLED "TRUE" AND "PLUMB" AND TO ALLOW METER READING THROUGH THE METER READER LID.

10. APPROVED COPPER SETTER ASSEMBLY REQUIRED. PVC SHALL BE SCHEDULE 40 PIPE WITH SCHEDULE 80 FITTINGS. ALL BRASS FITTINGS SHALL BE "TRUE" AND "PLUMB".

11. SERVICE TO BE INSTALLED BY THE DEPARTMENT. THE PIPE BEYOND THE CONTROL VALVE SHALL BE INSTALLED BY THE DEVELOPER OR THE DEPARTMENT, DEPENDING ON TYPE OF SERVICE INSTALLATION REQUESTED.

12. ALL HARDWARE FOR FLANGED CONNECTIONS (BOLTS, ETC.) TO BE STAINLESS STEEL.

13. THRUST AREAS OF CORPORA TION STOP AND OTHER FITTINGS SHALL BE SPIRAL WRAPPED WITH TWO (2) WRAPS OF TEFON TAPE. ALL BRASS FITTINGS SHALL BE TRUE AND PLUMB.

14. METER BOXES IN NON-GRASS AREAS SHALL HAVE TRAFFIC RATED LIDS.

15. A 4" THICK COMPACTED 3/4" ROCK BASE IS REQUIRED. THE BASE SHALL EXTEND MINIMUM 12" BEYOND THE METER BOX PERIMETER.
NOTES:


2. LIMIT OF UNOBSTRUCTED SPACE FROM SIDE OF WATER METER BOX SHALL BE 36" MINIMUM FOR SHRUBS AND SIMILAR OBSTRUCTIONS WITH 60" MINIMUM FOR THREE WALLS AND OTHER SIMILAR OBSTRUCTIONS.

3. FOR INSTALLATION OF SERVICES UNDER DRIVEWAY AND ROADWAYS, USE MAX. 4" DIAMETER BLACK IRON PVC SCH 40, OR MORE FOR 8 CASING. CASING SHALL EXTEND MIN. 24" BEYOND EDGE OF PAVEMENT. CASING TO BE SEALED WITH FOAM SEALANT. CASING SHALL BE COLOR-CODED BLACK, WHITE, OR BLUE STIPED.

4. SUCCESSIVE TAPS INTO THE WATER MAIN SHALL BE SPACED A MINIMUM OF 12" APART. TAP SPACED BETWEEN 18" AND 48" SHALL BE OFFSET TO EACH SIDE OF THE MAIN. TAPS ON THE SAME SIDE OF A PVC PIPE SHALL BE MIN. 10" APART.

5. METER SHALL NOT BE PLACED IN SIDEWALK OR DRIVEWAY AREAS. WATER SERVICE LINES AND TAPS SHALL NOT BE PLACED UNDER DRIVEWAYS WHENEVER POSSIBLE AND IF REQUIRED, ONLY WITH PRIOR DEPARTMENT APPROVAL.

6. MAXIMUM SERVICE LENGTH IS 1000 TO 1500 FEET.

7. SCREENING (MIN. 4") AND COVER (MIN. 4") OVER SERVICE LINE OR CASING SHALL CONSIST OF FINE GRANULAR MATERIAL, UNSUITABLE IN-SITU MATERIALS SUCH AS MUCK, BERRIES AND LARGER ROCKS SHALL BE REMOVED WITH 2" MAXIMUM SIZE.

8. METER/SERVICE WILL NOT BE INSTALLED/ACTIVATED UNTIL:
   a. ALL FORM BOARDS FOR DRIVEWAY AND/OR SIDEWALK MUST BE COMPLETELY INSTALLED OR THE DRIVEWAY AND/OR SIDEWALK MUST HAVE BEEN INSTALLED.
   b. "MINIMUM UNOBSTRUCTED SPACE" AS SHOWN IN NOTE 2 AND ON THE PLAN VIEW IS PROVIDED WITH 12" MINIMUM VERTICAL SEPARATION REQUIRED TO ALL OTHER UTILITIES.
   c. THE REQUIRED BACKFLOW PREVENTION ASSEMBLY/DEVICE IS INSTALLED AND HAS PASSED INITIAL TEST.

9. SERVICE COMPONENTS SHALL BE CONSTRUCTED FOR THE METER TO BE INSTALLED "TRUE" AND "PLUMB" AND TO ALLOW METER READING THROUGH THE METER HATCH LID.

10. APPROVED COPPER METER ASSEMBLY REQUIRED. PVC SHALL BE SCHEDULE 40 PIPE WITH SCHEDULE 60 FITTINGS. ALL BRASS FITTINGS SHALL BE "LEAD FREE."

11. METER TO BE INSTALLED BY THE DEPARTMENT. THE PIPING BEYOND THE CONTROL VALVE SHALL BE INSTALLED BY THE DEVELOPER OR THE DEPARTMENT, IN CONJUNCTION ON THE TYPE OF SERVICE INSTALLATION REQUIRING.

12. ALL HARDWARE FOR FLANGED CONNECTIONS (BOLTS, ETC.) TO BE STAINLESS STEEL.

13. INFEED AREAS OF CORPORATION STOP AND OTHER FITTINGS SHALL BE SPIRAL WRAPPED WITH TWO (2) WRAPS OF TEFLOM TAPE. ALL BRASS FITTINGS SHALL BE "LEAD FREE."

14. METER BOXES IN NON-GRASS AREAS SHALL HAVE TRAFFIC RATED LIDS.

15. A 4" THICK COMPACTED 3/4" ROCK BASE IS REQUIRED. THE BASE SHALL EXTEND MINIMUM 12" BEYOND THE METER BOX PERIMETER.
1. All service piping shall be 4" ductile iron with 4" gate valves with valve boxes and concrete collars (if applicable).

2. Only approved meter boxes shall be used. The meter box lid shall be a department approved lid. The box and lid shall be provided by the customer and placed above ground near the meter location. The property owner shall excavate the meter box area to expose the bypass piping then install the box and backfill the area after the meter installation.

3. Approved restrained flanged adapters are required. Place 4"x3" flanged reducers as shown on detail.

4. All services shall have an approved reduced pressure principle backflow prevention assembly (R.P.). The initial test of the R.P. shall be performed by the department. The R.P. shall be installed as close as possible to the point of service at 36" minimum and not to exceed 48" without prior department approval.

5. The entire assembly (without meter/spool pieces as shown) shall be pressure tested as required.

6. Meter/service will not be installed/activated until:
   A. All form boards for driveway and/or sidewalk must be completely installed or the driveway and/or sidewalk must have been installed.
   B. Minimum unobstructed space as shown in Note 2 and on the plan view is provided with 12" minimum vertical separation required to all other utilities.
   C. The required backflow prevention assembly/device is installed and has passed initial test.

7. By-pass piping shall be installed on the right side of meter in direction of flow unless otherwise previously approved by the department.

8. All hardware for flanged connections (bolts, etc.) to be stainless steel.

9. Meter box lid shall be traffic rated for all installation locations.

10. A 4" thick compacted 3/4" rock base is required. The base shall extend minimum 12" beyond the meter box perimeter.

11. Limit of unobstructed space from side of water meter box and by-pass piping shall be 36" minimum for shrubs and similar obstructions with 60" minimum for trees, walls, and other similar obstructions.
POTABLE WATER 4" METER INSTALLATION

1. ALL SERVICE PIPING SHALL BE 6" DUCTILE IRON WITH 6" GATE VALVES. THE 6" GATE VALVE FOR BYPASS PIPING SHALL HAVE A SQUARE NUT.


3. APPROVED RESTRAINED FLANGED ADAPTERS ARE REQUIRED.

4. THE ENTIRE METER ASSEMBLY INCLUDING BYPASS (EXCLUDING WATER METER) SHALL BE PRESSURE TESTED AS REQUIRED.

5. WATER METER SHALL BE INSTALLED BY THE DEPARTMENT. LAYING LENGTH OF THE METER TO BE CONFINED PRIOR TO SERVICE INSTALLATION.

6. SERVICE COMPONENTS SHALL BE CONSTRUCTED FOR THE METER TO BE INSTALLED "TRUE" AND "PLUMB.

7. PIPE SUPPORTS SHALL BE CONSTRUCTED PER WUD STANDARD DETAIL 47W AND SHALL BE LOCATED PER THIS DETAIL.

8. METER/SERVICE WILL NOT BE INSTALLED/ACTIVATED UNTIL
   A. ALL FORM BOARDS FOR DRIVEWAY AND/OR SIDEWALK MUST BE COMPLETELY INSTALLED OR THE DRIVEWAY AND/OR SIDEWALK MUST HAVE BEEN INSTALLED.
   B. "MINIMUM UNOBSTRUCTED SPACE" AS SHOWN IN NOTE 12 AND ON THE PLAN VIEW IS PROVIDED.
   C. THE REQUIRED BACKFLOW PREVENTION ASSEMBLY/DEVICE IS INSTALLED AND HAS PASSED INITIAL TEST.

9. BYPASS PIPING SHALL BE INSTALLED ON THE RIGHT SIDE OF METER IN DIRECTION OF FLOW UNLESS OTHERWISE PREVIOUSLY APPROVED BY THE DEPARTMENT.

10. ALL HARDWARE FOR FLANGED CONNECTIONS SHALL BE STAINLESS STEEL 304 OR PRIOR APPROVED EQUAL BY THE DEPARTMENT.

11. CONCRETE PAD FOR WATER METER ASSEMBLY SHALL BE 4" THICK WITH 4"x4" WIRE MESH. CONCRETE PAD IS REQUIRED TO BE BROOM FINISHED AND INSTALLED PRIOR TO THE WATER METER ASSEMBLY.

12. LIMIT OF UNOBSTRUCTED SPACE FROM SIDE OF WATER METER ASSEMBLY CONCRETE PAD SHALL BE 36" MINIMUM FOR SHRUBS AND SIMILAR OBSTRUCTIONS WITH 60" MINIMUM FOR TREES, WALLS, AND OTHER SIMILAR OBSTRUCTIONS.
POTABLE WATER 6" METER INSTALLATION

NOTES:
1. ALL SERVICE Piping shall be 8" ductile iron with 8" gate valves. The 8" gate valve for bypass piping shall have a square nut.
2. ALL SERVICES shall have an approved reduced pressure principle backflow prevention assembly (R.P.). The initial test of the R.P. shall be performed by the department. The R.P. shall be installed as close as possible to the point of service, not to exceed 48" without prior department approval.
3. APPROVED RESTRAINED FLANGED ADAPTERS are required.
4. THE ENTIRE METER ASSEMBLY INCLUDING BYPASS (EXCLUDING WATER METER) shall be pressure tested as required.
5. WATER METER shall be installed by the department. Laying length of the meter to be confirmed prior to service installation.
6. SERVICE COMPONENTS shall be constructed for the meter to be installed "true" and "plumb".
7. PIPE SUPPORTS shall be constructed per W.U.D. standard detail 47W and shall be located per this detail.
8. METER/SERVICE WILL NOT be installed/activated until:
   A. ALL FORM BOARDS FOR DRIVEWAY AND/OR SIDEWALK must be completely installed or the driveway and/or sidewalk must have been installed.
   B. "MINIMUM UNOBSTRUCTED SPACE" as shown in Note 12 and on the plan view is provided.
   C. THE REQUIRED BACKFLOW PREVENTION ASSEMBLY/DEVICE is installed and has passed initial test.
9. BYPASS PIPING shall be installed on the right side of the meter in direction of flow unless otherwise previously approved by the department.
10. ALL HARDWARE FOR FLANGED CONNECTIONS shall be stainless steel 304 or prior approved equal by the department.
11. CONCRETE PAD for water meter assembly shall be 4" thick with 4"x4" wire mesh. Concrete pad is required to be broom finished and installed prior to the water meter assembly.
12. LIMIT of UNOBSTRUCTED SPACE from side of water meter assembly concrete pad shall be 36" minimum for shrubs and similar obstructions with 60" minimum for trees, walls, and other similar obstructions.

PALM BEACH COUNTY CONSTRUCTION STANDARDS & DETAILS

REVISION/ISSUE DATE 6/2019

ATTACHMENT B-1

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EASEMENT AREA CLEAR OF ANY ABOVE GROUND STRUCTURES, TRANSFORMERS, POWER POLE, LIGHT POLES, HAND HOLES, JUNCTION BOXES OR BURIED POWER CABLE.

WASTEWATER LATERAL

PBC WUD WASTEWATER CLEAN OUT

EASEMENT AREA CLEAR OF ANY ABOVE GROUND STRUCTURES, TRANSFORMERS, POWER POLE, LIGHT POLES, HAND HOLES, JUNCTION BOXES OR BURIED POWER CABLE.

WATER SERVICE PIPE (PVC SCH.40, HDPE, OR COPPER)

WATER SERVICE CONTROL VALVE WITH BOX

PBCWUD WATER METER BOX

WATER METER BOX

R/W LINE

10' UTILITY EASEMENT

12" MIN.
18" MAX.
30" MIN.
42" MAX.

12" MIN.
18" MAX.
30" MIN.
42" MAX.

36" MIN.
42" MAX.

12" MIN.
18" MAX.
30" MIN.
42" MAX.

12" MIN.
18" MAX.
30" MIN.
42" MAX.

NOTES:
1. THE DETAIL WAS DEVELOPED IN COLLABORATION WITH UTILITY COMPANIES SUPPLYING VARIOUS UTILITY SERVICES TO P.B.C.W.U.D. CUSTOMERS.

2. THE DIMENSIONS SHOWN SHALL SERVE AS A GENERAL GUIDELINE TO INSTALL UTILITIES WITHIN A 10' WIDE UTILITY EASEMENT PARALLELING A RIGHT-OF-WAY.

3. THE PARTICIPATING UTILITIES PLEDGE TO OBSERVE, FOLLOW, AND ENFORCE THE INSTALLATION PARAMETERS SHOWN ON THIS DETAIL.
4" DIP BOLLARD FILLED WITH CONCRETE AND PAINTED YELLOW (TYP) (SEE NOTE 10)

RESTRAINT HYDRANT TEE OR TAPPING SLEEVE
(A WELDED OUTLET TEE MAY BE APPROVED FOR MAINS 24" AND LARGER)
12" MAX (SEE NOTE 1)
12" MIN (SEE NOTE 1)

4-1/2" PUMPER NOZZLE FACING ACCESS W \& ALL
(2) 2-1/2" HOSE NOZZLES

3" x 3" x 6" CONCRETE COLLAR (POURED IN PLACE)

POTABLE WATER MAIN

6" DIP

VALUE SETTING
6" GATE VALVE

FINISHED GRADE

MEGALUGS OR APPROVED EQUAL (TYP)

MEGALUGS OR EQUAL

NOTES:

1. FIRE HYDRANT SHALL BE INSTALLED PLUMB AND TRUE IN UNOBS CURED LOCATION AND SHALL NOT INTERFERENCE WITH PEDESTRIAN WALKWAYS, BIKE PATHS, AND SUCH OTHER SIMILAR PATHWAYS WITH THE EDGE OF THE PUMPER NOZZLE AND/OR HOSE NOZZLES BEING A MINIMUM OF 12" BEHIND SUCH PATHWAYS. A MINIMUM OF 7.5' FEET CLEARANCE IS REQUIRED FROM EACH SIDE AND REAR OF THE HYDRANT. THE FRONT OF THE HYDRANT PUMPER NOZZLE SHALL BE LOCATED A MAXIMUM OF 12' FROM THE EDGE OF PAVEMENT UNLESS OTHERWISE PREVIOUSLY APPROVED BY THE FIRE MARSHAL OFFICE HAVING JURISDICTION.

2. THE SAME MODEL HYDRANT SHALL BE USED THROUGHOUT CURRENT CONTRACT PHASE.

3. VALVE SHALL BE PLACED ADJACENT TO MAIN AND RESTRICTED WITH MEGALUGS OR EQUAL.

4. HYDRANT TEES ARE PREFERRED.

5. ALL HYDRANTS SHALL BE TEE'D OFF OF MAINS.

6. HYDRANTS SHALL NOT BE PLACED IN SIDEWALKS, ROADWAYS, OR BIKE PATHS.

7. FIRE HYDRANT SHALL BE LOCATED 5' MINIMUM FROM EDGE OF PAVEMENT WITH RAISED CURBING AND 6' MINIMUM WITHOUT RAISED CURBING.

8. ON RUNS LONGER THAN 60 FEET ANOTHER VALVE IS REQUIRED LESS THAN ONE PIPE JOINT OF THE HYDRANT.

9. PAINT SAFETY RED, IF REQUIRED, WITH APPROVED PAINT.

10. BOLLARDS MAY BE REQUIRED FOR HYDRANTS WITH LESS THAN SIX (6) FEET TO EDGE OF PAVEMENT WITHOUT RAISED CURBING. NO BOLLARDS SHALL BE INSTALLED IN COUNTY AND/OR FDOT RIGHT-OF-WAY "CLEAR ZONE".

11. BURIED HYDRANT HARDWARE SHALL BE STAINLESS STEEL (TYPE 304L OR TYPE 304 BOLTS/TYP 304 NUTS).

12. NO CONNECTION (TEE, TAP) IS ALLOWED BETWEEN THE HYDRANT CONTROL VALVE AND THE FIRE HYDRANT.

13. APPROVED SECURITY CAPS WITH CHAINS ARE REQUIRED FOR ALL NOZZLES.

PALM BEACH COUNTY CONSTRUCTION STANDARDS & DETAILS

REVISION/ISSUE DATE 6/2019
TYPICAL FIRE HYDRANT INSTALLATION WITH BOLLARDS DETAIL

ATTACHMENT B-1

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NOTES:
1. CONCRETE COLLAR IS NOT REQUIRED IN PAVED AREAS IF PAVEMENT SURFACE IS FINISHED PRIOR TO CONDITIONAL FINAL INSPECTION.
2. WHEN OPERATING NUT IS DEEPER THAN 38” A ONE PIECE EXTENSION WILL BE REQUIRED. OPERATING NUT 20” TO 36” BELOW FINISHED GRADE. EXTENSION BOLTS & NUTS ARE TO BE STAINLESS STEEL. A HIGH STRENGTH STEEL CENTERING PLATE, WELDED TO THE EXTENSION, IS ALSO REQUIRED.
3. VALVE BOXES SHALL HAVE COVERS MARKED "WATER".
4. VALVE BOX Extension TO BE D.I.P. OR C-900 PVC SDR 18 (BLUE).
5. a Cut-in installation shall require megaclugs or equal throughout assembly.
6. in ORDER TO MAINTAIN ADEQUATE COVER OVER VALVE NUT, THE FOLLOWING MINIMUM COVERS OVER PIPE ARE REQUIRED:
<table>
<thead>
<tr>
<th>GATE VALVE SIZE</th>
<th>MIN. COVER OVER PIPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>16&quot;</td>
<td>48&quot;</td>
</tr>
<tr>
<td>20&quot;</td>
<td>54&quot;</td>
</tr>
<tr>
<td>24&quot;</td>
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<td>84&quot;</td>
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</table>
7. valves in roadways shall be located outside of wheel paths whenever possible.
NOTES:

1. CONCRETE COLLAR IS NOT REQUIRED IN PAVED AREAS IF PAVEMENT SURFACE IS FINISHED PRIOR TO CONDITIONAL FINAL INSPECTION.

2. WHEN TOP OF OPERATING NUT IS DEEPER THAN 42" AN EXTENSION WILL BE REQUIRED TO BRING OPERATING NUT 24"-30" BELOW FINISHED GRADE. EXTENSION BOLTS & NUTS ARE TO BE STAINLESS STEEL. A HIGH STRENGTH STEEL CENTERING PLATE, WELDED TO THE EXTENSION, IS ALSO REQUIRED.

3. VALVE BOXES SHALL HAVE COVERS MARKED "WATER".

4. A CUT-IN INSTALLATION SHALL REQUIRE MEGALUGS OR EQUAL THROUGHOUT ASSEMBLY.

5. EXTENSION VALVE BOX TO BE D.I.P. OR C-900 PVC DR 18 (COLOR: BLUE)

6. VALVES IN ROADWAYS SHALL BE LOCATED OUTSIDE OF WHEEL PATHS WHENEVER POSSIBLE.
NOTES:
1. THE PERMANENT SAMPLING STATION SHALL BE INSTALLED AT EACH UTILITY WATER SYSTEM INTERCONNECT AND AS DIRECTED BY THE DEPARTMENT.
2. THE SAMPLING STATION SHALL BE LOCATED IN EASILY ACCESSIBLE AREA, MINIMUM 10'(FEET) FROM EDGE OF ROADWAY PAVEMENT IN GRASSED AREA.
3. ALTERNATIVE DESIGNS WILL BE ACCEPTED SUBJECT TO REVIEW AND APPROVAL BY THE DEPARTMENT.
4. ALL BRASS SHALL BE "LEAD FREE".
5. CASING IS REQUIRED FOR SERVICE PIPING UNDER PAVED AREAS.
6. THE HOUSING COLOR SHALL BE FIRE HYDRANT RED.

DRAWING

MIN. 8" ALL AROUND
36"x30"x5" THICK CONCRETE COLLAR
3/4" PVC SCH 40 (SEE NOTE 5)
3/4" BRASS CURB STOP VALVE W/ WING NUT AND COMPRESSION FITTINGS W/ BOX
3/4" TAP W/DUPLICATE STRAP SADDLE & CORP. STOP
3/4" CORPORATION STOP VALVE W/ COMPRESSION FITTINGS
4" P.V.C. BOX W/ RECESSED BRASS PLUG

WATER MAIN

4" P.V.C. BOX W/ RECESSED BRASS PLUG

1" PVC SLEEVE

MIN. 1/2" S.S. PIPE

1/2" S.S. QUICK CONNECTION COUPLING

BRASS 90° ELBOW W/ COMPRESSION FITTING

MIN. 18"
NOTE:
1. SAMPLE POINT SHOULD BE A SERVICE LINE
   OR FIRE HYDRANT IF POSSIBLE.
2. THREADED AREAS OF CORPORATION STOP SHALL
   BE SPIRAL WRAPPED WITH TWO WRAPS OF TEFLO
   TAPE.
3. CLOSE AND CAP CORPORATION STOP
   AFTER SAMPLING COMPLETION.
NOTES:
1. USE HYDRANT WRENCH ONLY.
2. ALL PIPES AND FITTINGS SCH. 40 P.V.C. (PIPE COLOR : WHITE).
NOTES:


2. WHENEVER POSSIBLE MAINTAIN MIN. TEN (10) FEET HORIZONTAL DISTANCE (WALL TO WALL) BETWEEN POTABLE WATER MAIN AND STORM SEWER, WASTEWATER MAIN, OR FORCE MAIN (A MIN. 6" SEPARATION MAY BE APPROVED ON A CASE BY CASE BASIS). MAINTAIN MIN. THREE (3) FEET HORIZONTAL DISTANCE (WALL TO WALL) BETWEEN RECLAIMED WATER MAIN AND POTABLE WATER MAIN, STORM SEWER, WASTEWATER GRAVITY MAIN OR FORCE MAIN.

3. FORCE MAIN CROSSING POTABLE WATER MAIN OR RECLAIMED WATER MAIN SHALL BE LAYED TO PROVIDE A MINIMUM VERTICAL DISTANCE OF TWELVE (12) INCHES BETWEEN THE OUTSIDE OF THE FORCE MAIN AND OUTSIDE OF THE POTABLE WATER MAIN OR RECLAIMED WATER MAIN WITH THE POTABLE WATER MAIN OR RECLAIMED WATER MAIN CROSSING OVER THE FORCE MAIN.


5. POTABLE WATER SERVICE LINES SHALL CROSS OVER WASTEWATER MAINS WITH MIN. 12" VERTICAL SEPARATION. WHERE THIS MIN. SEPARATION CANNOT BE MAINTAINED, THE WATER SERVICE SHALL BE ENCASED IN A MIN. 10' LONG CASING CENTERED OVER THE CROSSING WITH MIN. 6" VERTICAL SEPARATION.

6. WASTEWATER MAINS, WATER MAINS, STORM PIPES AND OTHER UTILITY PIPES SHALL CROSS PERPENDICULAR WHENEVER POSSIBLE.

2. WHENEVER POSSIBLE MAINTAIN MIN. TEN (10) FEET HORIZONTAL DISTANCE (WALL TO WALL) BETWEEN POTABLE WATER MAIN AND STORM SEWER, WASTEWATER MAIN, OR FORCE MAIN (A MIN. 6" SEPARATION MAY BE APPROVED ON A CASE-BY-CASE BASIS.) MAINTAIN MIN. THREE (3) FEET HORIZONTAL DISTANCE (WALL TO WALL) BETWEEN RECLAIMED WATER MAIN AND POTABLE WATER MAIN, STORM SEWER, WASTEWATER GRAVITY MAIN OR FORCE MAIN.

3. FORCE MAIN CROSSING POTABLE WATER MAIN OR RECLAIMED WATER MAIN SHALL BE LAID TO PROVIDE A MINIMUM VERTICAL DISTANCE OF TWELVE (12) INCHES BETWEEN THE OUTSIDE OF THE FORCE MAIN AND OUTSIDE OF THE POTABLE WATER MAIN OR RECLAIMED WATER MAIN WITH THE POTABLE WATER MAIN OR RECLAIMED WATER MAIN CROSSING OVER THE FORCE MAIN.

4. FITTINGS SHALL BE RESTRAINED.

5. THE DEFLECTION TYPE CROSSING IS PREFERRED.

6. DO NOT EXCEED 75% OF MANUFACTURERS RECOMMENDED MAXIMUM JOINT DEFLECTION FOR DUCTILE IRON PIPE. PVC PIPE CURVATURE MAY ONLY BE ACCOMPLISHED BY INSTALLING APPROPRIATE BENDS.

7. ALL EXPOSED TIE STEEL SHALL BE COATED WITH COAL-TAR EPOXY

8. POTABLE WATER SERVICE LINES SHALL CROSS OVER WASTEWATER MAINS WITH MIN. 12" VERTICAL SEPARATION. WHERE THIS MIN. SEPARATION CAN NOT BE MAINTAINED, THE WATER SERVICE SHALL BE ENCASED IN A MIN. 10" LONG CASING CENTERED OVER THE CROSSING WITH MIN. 6" VERTICAL SEPARATION.

9. WASTEWATER MAINS, WATER MAINS, STORM PIPES AND OTHER UTILITY PIPES SHALL CROSS PERPENDICULAR WHENEVER POSSIBLE.
**NOTES:**

1. Concrete thrust blocks or thrust collars may be utilized only if necessary for connections to an existing piping system, otherwise mechanical restraints shall be used. Keep "T" bolts clear of concrete, wrapped in visqueen for future access, with a minimum of 1" thickness between the fitting and soil.

2. Before pouring concrete, plugs shall be wrapped with visqueen and a board placed in front.

3. Concrete shall be 2500 p.s.i. minimum.

4. The engineer of record shall submit a thrust block size calculation for tee connections into unrestrained existing mains larger than 14".

5. The engineer of record shall submit a pipe restraint design for inline extensions of a existing unrestrained main if mechanical joint restraint can not be installed on the existing main.
NOTES:

1. TEMPORARY DEAD END BLOWOFF ONLY ALLOWED WITH PRIOR DEPARTMENT APPROVAL.
2. BLOWOFF BOX TO BE LOCATED IN GRASS AREA, MIN. 2' FROM SIDEWALK OR PAVEMENT.
3. PERMANENT DEAD ENDS REQUIRE THE INSTALLATION OF AN APPROVED AUTOMATIC FLUSHING ASSEMBLY.
4. ALL BRASS SHALL BE "LEAD FREE".

POTABLE WATER MAIN AND VALVE (RESTRAINED JOINTS)

PROFILE VIEW

(2) HORIZONTAL THREADED BRASS 90° BENDS (TO PROVIDE MIN. 1'-0" OFFSET)

PLAN VIEW

(2) HORIZONTAL THREADED BRASS 90° BENDS (TO PROVIDE MIN. 1'-0" OFFSET)

APPROVED "SINGLE" TRAFFIC BEARING METER BOX (NO METER READER LID)

APPROVED 11"x18"x12" TRAFFIC BEARING METER BOX WITH SOLID LID

BRASS CAP W/ INVERTED NUT

2" N.P.T. X 2 1/2" N.S.T.
BRASS NIPPLE (MIN. 12" LONG)

2" THREADED BRASS RISER PIPE

FINISHED GRADE

VALVE BOX MARKED "WATER"
1. A profile drawing to scale for each jack and bore, directional drill, or direct buried installation is required to be approved by the Department prior to installation. If a split casing is required, then shop drawings are required to be submitted and approved by the Department prior to construction and/or installation.

2. Thicker wall casings and larger cover over casing may be required by the right-of-way owner.

3. Steel casing shall be coated outside with coal tar epoxy (min. 16 mils O.F.) and be painted with a 4" minimum wide continuous stripe, color coded to match the pipe inside, along the top axis of the casing.

4. Pipe in casing shall be pulled to fully engage restraint.

5. Steel casing is required for all water main installations utilizing jack and bore construction and when mains are installed under fences, walls, or landscape berms. When the casing is installed under fences, walls, or landscape berms it shall be centered on the previous barrier and is required to extend 10' minimum past barrier on each side unless otherwise previously approved by the Department.

### Table: Casing Size and Minimum Wall Thickness

<table>
<thead>
<tr>
<th>Carrier Pipe Size</th>
<th>Steel Casing Inside Diameter (Min)</th>
<th>Minimum Wall Thickness (See Note 2)</th>
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<tbody>
<tr>
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### Notes:

- **DEPARTMENT APPROVED NEOPRENE END SEAL W/ STAINLESS STEEL BANDS (TYP.)**
- **ROADWAY, FENCE, WALL, OR LANDSCAPE BERM (SEE NOTE 5)**
- **MIN. 36" FROM END OF CASING TO FITTING OR PIPE JOINT (TYP.).**
- **ENDS SEALED WITH CEMENT GROUT**
- **DUCTILE IRON TO EXTEND ONE LENGTH MINIMUM**
- **Casing Spacer (Typ.)**
- **PAVING OR SOD**
- **ROCK BASE OR DIRT**
- **DUCTILE IRON RESTRAINED JOINT PIPE WITH CASING SPACERS INSTALLED, PER MANUFACTURERS REQUIREMENTS. (SHELL JOINT HARNESS RESTRAINT IS NOT ACCEPTABLE).**

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**Palm Beach County Construction Standards & Details**

**Page No:** 22W

**Revision/Issue Date:** 6/2019

**Attachment B-1**
NOTES:

1. BEDDING SHALL CONSIST OF IN-SITU GRANULAR MATERIAL OR WASHED AND GRADED LIMEROCK - 3/8" - 7/8" SIZING. UNSUITABLE IN-SITU MATERIALS SUCH AS MUCK, DEBRIS AND LARGER ROCKS SHALL BE REMOVED.

2. THE PIPE SHALL BE FULLY SUPPORTED FOR ITS ENTIRE LENGTH WITH APPROPRIATE COMPAC TION UNDER THE PIPE HAUNCHES.

3. THE PIPE SHALL BE PLACED IN A DRY TRENCH.

4. BACKFILL SHALL BE FREE OF UNSUITABLE MATERIAL SUCH AS LARGE ROCK, MUCK AND DEBRIS.

5. DENSITY TESTS ARE REQUIRED IN 1 FOOT LIFTS ABOVE THE PIPE AT INTERVALS OF 400' MAXIMUM. MINIMUM 1 SET OF TESTS FOR EACH WASTEWATER GRAVITY MAIN RUN, OR AS DIRECTED BY THE INSPECTOR.

6. THE DEVELOPER/CONTRACTOR SHALL BE RESPONSIBLE TO COMPLY WITH ALL TRENCH SAFETY LAWS AND REGULATIONS.

7. SEE SEPARATE DETAILS FOR "PIPE INSTALLATION UNDER EXISTING PAVEMENT - OPEN CUT."

8. THE AFFECTED AREA SHALL BE RESTORED TO EQUAL OR BETTER CONDITION OR AS SPECIFIED IN PERMIT/CONTRACT DOCUMENTS.

9. APPROVED MAGNETIC TAPE IS REQUIRED FOR: ALL POTABLE WATER MAINS, FORCE MAINS AND RECLAIMED WATER MAINS. THE TAPE SHALL BE INSTALLED MAX. 24" BELOW FINISHED GRADE.

10. ROOT BARRIER IS REQUIRED FOR APPROVED TREE INSTALLATION CLOSER THAN 10 FEET FROM UTILITY FACILITIES.

11. CONTINUOUS 4" WIDE PAINT STRIPING IS REQUIRED FOR DIP/PCCP WATER MAINS (BLUE), DIP SEWER MAINS (GREEN), AND DIP RECLAIMED WATER MAINS (PURPLE).

12. PERMANENT ABOVE GROUND UTILITY MARKER SHALL BE INSTALLED IF REQUIRED BY PROPERTY OWNER GRANTING THE PIPE INSTALLATION PERMIT.

13. FOR PIPE INSTALLATIONS IN ROAD RIGHTS-OF-WAY, ROAD OWNER’S PERMIT SPECIFICATIONS SHALL APPLY.

PALM BEACH COUNTY CONSTRUCTION STANDARDS & DETAILS
CONSTRUCTION PROCEDURES

THE BACKFILL FOR THE FIRST AND SECOND STAGES SHALL BE PLACED IN 6" LIFTS (COMPACTED THICKNESS) AND SHALL BE COMPACTED TO 100% OF MAXIMUM DENSITY AS DETERMINED BY AASHTO T-99.

STAGE 1:

THE CONTRACTOR SHALL PROVIDE ADEQUATE COMPACTED FILL BENEATH THE HAUNCHES OF THE PIPE, USING MECHANICAL TAMPS SUITABLE FOR THIS PURPOSE. THIS COMPACTION APPLIES TO THE MATERIAL PLACED BENEATH THE HAUNCHES OF THE PIPE AND ABOVE ANY BEDDING REQUIRED.

STAGE 2:

THE CONTRACTOR SHALL OBTAIN A WELL-COMPACTED BED AND FILL ALONG THE SIDES OF THE PIPE AND TO A POINT INDICATING THE TOP OF SUB-GRADE MATERIAL.

CONSTRUCTION NOTES

1) BEDDING SHALL CONSIST OF IN-SITU GRANULAR MATERIAL OR WASHED AND GRADED UWEROCK 3/8" - 7/8" SIZING WITH EQUAL OR GREATER STRUCTURAL ADEQUACY AS EXISTING. UNSUITABLE IN-SITU MATERIALS SUCH AS MUCK, DEBRIS AND LARGER ROCKS SHALL BE REMOVED.

2) REPLACED BASE MATERIAL (PER LAND DEVELOPMENT DESIGN STANDARDS) OVER DITCH SHALL BE TWICE THE THICKNESS OF THE ORIGINAL BASE OR 12" MINIMUM, WHICHEREVER IS GREATER.

3) ASPHALT CONCRETE PAVEMENT JOINTS SHALL BE MECHANICALLY SAWED AND BUTT-JOINTED.

4) BASE MATERIAL SHALL BE PLACED IN TWO OR THREE LAYERS (6" MAX. PER LAYER) AND EACH LAYER THOROUGHLY ROLLED OR TAMMED TO THE SPECIFIED DENSITY.

5) SURFACE MATERIAL WILL BE CONSISTENT WITH THE EXISTING SURFACE OR 1 1/2" SI ASPHALTIC CONCRETE WITH RC-70 PRIME COAT AT 0.10 GAL/SQ. YD.

6) PIPE SHALL BE PLACED IN A DRY TRENCH.

GENERAL NOTES

A) ALL ROADWAY REPAIR WORK SHALL BE PERFORMED IN CONFORMANCE WITH APPLICABLE FOOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION AND COUNTY PPM# EL-0-3506.

B) DENSITY TESTS SHALL BE TAKEN IN 1 FT LIFTS ABOVE THE PIPE AT INTERVALS OF 400 FT MAXIMUM (1 SET MINIMUM) OR AS DIRECTED BY THE CONSTRUCTION COORDINATION DIVISION. RESULTS SHALL BE SUBMITTED TO CONSTRUCTION COORDINATION DIVISION AS PART OF THEIR FIELD REVIEW.


D) IF THE PAVEMENT IS NOT COMPLETELY RESTORED IMMEDIATELY FOLLOWING THE OPEN CUT, A SMOOTH TEMPORARY PATCH (MINIMUM 1 1/4" ASPHALT) SHALL BE INSTALLED, PROPERLY MATCHING THE EXISTING GRADING OF THE ROADWAY. THE TEMPORARY PATCH SHALL BE ALLOWED TO REMAIN IN PLACE AND BE MAINTAINED FOR A PERIOD NO LONGER THAN 45 DAYS. THE COUNTY RETAINS THE RIGHT TO USE POSTED SURETY TO COMPLETE ANY RESTORATION WORK THAT HAS NOT BEEN COMPLETED IN THE 45 DAYS PERIOD. ALTERNATIVE TEMPORARY TRENCH PROTECTION (STEEL PLATES OR OTHERS) MAY BE APPROVED BY THE CONSTRUCTION COORDINATION DIVISION.

E) FOR THE FINAL RESTORATION, THE ROAD SHALL BE MILLER AND RESURFACED WITH 1-1/2" (ONE AND A HALF INCH) OF SII OR SI ASPHALT SURFACE COURSE FOR A FULL LANE WIDTH ENCROACHED BY THE TRENCH.

F) APPROVED MAGNETIC TAPE IS REQUIRED FOR ALL MAIN PRESSURE PIPES AND CONDUIT IN THE COUNTY'S RIGHT-OF-WAY. INSTALL TAPE 24" BELOW FINISHED GRADE.

G) CONTINUOUS 4" WIDE PAINT STRIPING IS REQUIRED FOR DIP/PCCP WATER MAINS (BLUE), DIP SANITARY MAINS (GREEN), DIP RECLAIMED WATER MAINS (PURPLE), GAS MAINS (YELLOW), OR AS REQUIRED BY THE APWA.
CONSTRUCTION PROCEDURES

THE BACKFILL FOR THE FIRST AND SECOND STAGES SHALL BE PLACED IN 6" LIFTS (COMPACTED THICKNESS) AND SHALL BE COMPACTED TO 100% OF MAXIMUM DENSITY AS DETERMINED BY AASHTO T-99.

STAGE 1:

THE CONTRACTOR SHALL PROVIDE ADEQUATE COMPACTED FILL BENEATH THE HAUNCHES OF THE PIPE, USING MECHANICAL TAMPS SUITABLE FOR THIS PURPOSE. THIS COMPACTION APPLIES TO THE MATERIAL PLACED BENEATH THE HAUNCHES OF THE PIPE AND ABOVE ANY BEDDING REQUIRED.

STAGE 2:

THE CONTRACTOR SHALL OBTAIN A WELL-COMPACTED BED AND FILL ALONG THE SIDES OF THE PIPE AND TO A POINT INDICATING THE TOP OF SUB-GRADE MATERIAL.

CONSTRUCTION NOTES

1) BEDDING SHALL CONSIST OF IN-SITU GRANULAR MATERIAL OR WASHED AND GRADED UMBROCK 3/8" - 7/8" SIZING WITH EQUAL OR GREATER STRUCTURAL ADHESIVITY AS EXISTING. UNSUITABLE IN-SITU MATERIALS SUCH AS MUCK, DEBRIS AND LARGER ROCKS SHALL BE REMOVED.

2) REPLACED BASE MATERIAL OVER DITCH SHALL BE 18" MINIMUM FOR THOROUGHFARE PLAN ROADS.

3) ASPHALT CONCRETE PAVEMENT JOINTS SHALL BE MECHANICALLY SAWNED AND BUTT-JOINTED.

4) BASE MATERIAL (PER ROADWAY PRODUCTION DESIGN STANDARDS) SHALL BE PLACED IN TWO OR THREE LAYERS (6" MAX. PER LAYER) AND EACH LAYER THOROUGHLY ROLLED OR TAMPALED TO THE SPECIFIED DENSITY.

5) * SURFACE TRANSITION AREA (SEE PLANS FOR LOCATION), OVERLAY OR MILL/RESURFACE FOR A DISTANCE OF 50' ON BOTH SIDES OF THE OPEN CUT AND FOR A FULL LANE WIDTH.

6) 1 SI SI ASPHALTIC CONCRETE OVER 1 1/2 SI ASPHALTIC CONCRETE WITH RC-70 PRIME COAT AT 0.10 GAL/SQ. YD.

7) PIPE SHALL BE PLACED IN A DRY TRENCH.

GENERAL NOTES

A) ALL ROADWAY REPAIR WORK SHALL BE PERFORMED IN CONFORMANCE WITH APPLICABLE FDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION AND COUNTY PPM# EL-0-3605.

B) DENSITY TESTS SHALL BE TAKEN IN 1 FT LIFTS ABOVE THE PIPE AT INTERVALS OF 400 FT MAXIMUM (1 SET MINIMUM) OR AS DIRECTED BY THE CONSTRUCTION COORDINATION DIVISION. RESULTS SHALL BE SUBMITTED TO CONSTRUCTION COORDINATION DIVISION AS PART OF THEIR FIELD REVIEW.


D) IF THE PAVEMENT IS NOT COMPLETELY RESTORED IMMEDIATELY FOLLOWING THE OPEN CUT, A SMOOTH TEMPORARY PATCH (MINIMUM 1 1/2" ASPHALT) SHALL BE INSTALLED, PROPERLY MATCHING THE EXISTING GRAVING OF THE ROADWAY. THE TEMPORARY PATCH SHALL BE ALLOWED TO REMAIN IN PLACE AND BE MAINTAINED FOR A PERIOD NO LONGER THAN 45 DAYS. THE COUNTY RETAINS THE RIGHT TO USE POSTED SURETY TO COMPLETE ANY RESTORATION WORK THAT HAS NOT BEEN COMPLETED IN THE 45 DAYS PERIOD. ALTERNATIVE TEMPORARY TRENCH PROTECTION (STEEL PLATES OR OTHERS) MAY BE APPROVED BY THE CONSTRUCTION COORDINATION DIVISION.


F) APPROVED MAGNETIC TAPE IS REQUIRED FOR ALL MAIN PRESSURE PIPES AND CONDUIT IN THE COUNTY'S RIGHT-OF-WAY. INSTALL TAPE 24" BELOW FINISHED GRADE.

G) CONTINUOUS 4" WIDE PAINT STRIPING IS REQUIRED FOR DIP/PCP WATER MAINS (BLUE), DIP SANITARY MAINS (GREEN), DIP RECLAIMED WATER MAINS (PURPLE), GAS MAINS (YELLOW), OR AS REQUIRED BY THE AWP.

Palm Beach County Construction Standards & Details

Revision/Issue Date: 6/2019

Open Cut Pipe Installation

Thoroughfare Road

Page No. 25W

Attachment B-1

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1. ALL EXPOSED PIPE SHALL BE DUCTILE IRON OR PREFABRICATED STEEL WITH FLANGED FITTINGS AND PROFILED GASKETS. RETAINER GLANDS AND UNIFLANGE TYPE FITTINGS ARE NOT TO BE SUBSTITUTED FOR FLANGED FITTINGS. PREFABRICATED STEEL PIPE MAY INCORPORATE WELDED ON LONG RADIUS UPPER BENDS. PREFABRICATED FLANGED PIPE SHALL BE FACTORY TESTED.

2. SPAN LENGTHS AS REQUIRED BY PERMITTING AGENCY

3. FAN GUARDS ARE REQUIRED. SEE FAN GUARD/PILE CAP DESIGN DETAILS FOR ADDITIONAL REQUIREMENTS.

4. ALL EXPOSED PIPING SHALL BE PAINTED AS SPECIFIED IN THE APPROVED MATERIAL LIST.

5. ALL HARDWARE SHALL BE PAINTED WITH MIDAS-TAR EPOXY.

6. PIPE SHALL BE CRADLED ON \( \frac{3}{4} \)" THICK RUBBER (DUROMETER GRADE 50) CURRENT FDOT STANDARDS APPLY. RUBBER IS REQUIRED AT ALL STRAPS INSTALLED OVER STEEL PIPE. NEOPRENE SHALL EXTEND MIN. 1" BEYOND THE EDGES OF CRADLE AND STRAPS.

7. TIE-DOWN STRAPS MUST PROPERLY FIT AND SECURE PIPE IN CRADLE.

8. PIPE CRADLE IN CAP SHALL CONTACT \( \frac{3}{8} \) CIRCUMFERENCE OF PIPE. (SEE FAN GUARD DETAIL)

9. SHOW EXISTING CANAL CROSS SECTION ULTIMATE CANAL SECTION AND RELEVANT ELEVATIONS AND DISTANCES ON A TO SCALE DETAIL DRAWING.

10. PILE LIFT CABLE SHALL BE REMOVED BELOW SURFACE; HOLE SHALL BE FILLED WITH EPOXY CEMENT.

11. THE BRASS FITTINGS SHALL BE SPIRAL WRAPPED WITH TWO WRAPS OF TEFLON TAPE.

12. THE PRESSURE GAUGE SHALL FACE THE CLOSEST SETTLE OR APPROVED EQUAL.

13. THE PILES AND CAP DESIGN SHALL BE SHOWN ON TO SCALE AND SEALEY DETAIL DRAWINGS. (MIN. 12"x12" TYPE 1A FLORIDA DOT INDEX PILES ARE REQUIRED.) PILE PENETRATION BELOW CANAL BOTTOM SHALL BE 15" MINIMUM. MINIMUM LOAD CAPACITY OF 20 TONS PER PILE IS REQUIRED (FDOT STANDARDS APPLY). SIGNED AND SEALEY SHOP DRAWINGS ARE REQUIRED.

14. STEEL PIPE SHALL HAVE WELDED ON BEARING PADS EXTENDING MIN. 1" BEYOND PIPE CRADLE THE PADS SHALL BE INSTALLED PRIOR TO PAINTING
**NOTES:**

1. FAN GUARDS SHALL BE PLACED AT EACH END OF CANAL CROSSING.
2. HARDWARE SHALL BE PAINTED WITH COAL TAR EPOXY.
3. FANGUARD WITH HARDWARE SHALL BE FABRICATED FROM DOUBLE HOT DIPPED GALVANIZED STEEL.
4. SHOP DRAWINGS FOR FANGUARDS, CAPS, AND PILES MUST BE SUBMITTED TO PBWUD FOR REVIEW AND APPROVAL PRIOR TO PRE-CONSTRUCTION MEETING.
5. REINFORCING STEEL SHALL CONFORM TO ASTM A–615, GRADE 60. MIN. 2" CONCRETE COVER OVER ALL STEEL.
6. SEE "TYPICAL CANAL CROSSING DETAIL" FOR ADDITIONAL REQUIREMENTS.
7. NO WELDING OF REBAR TO REBAR OR REBAR TO PILE STRANDS SHALL BE ALLOWED.
8. DESIGN DRAWINGS ARE REQUIRED.
9. LONG RADIUS WELDED ON UPPER BENDS ARE ACCEPTABLE FOR STEEL PIPE.
10. IF A PILE/CAP STEEL CONNECTION IS REQUIRED BY DESIGNING ENGINEER, MIN. (4) #8 REINFORCEMENT BARS SHALL BE DRILLED AND DoweLED (EPOXIED) MIN. 16" DEEP INTO THE PILE AND TIED WITH THE CAP STEEL.
11. ACCESS PLATFORM AND GATE REQUIRED ON ARV SIDE ONLY.

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**Palm Beach County Construction Standards & Details**

**FAN GUARD/PILE CAP DESIGN – SINGLE PIPE (SINGLE PILES)**

**Page No.** 27W

**Attachment B–1**

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NOTES:

1. PRECAST 4000 P.S.I. TYPE II CONCRETE STRUCTURE. SHOP DRAWING IS REQUIRED TO BE APPROVED BY THE DEPARTMENT PRIOR TO VAULT CONSTRUCTION AND/OR INSTALLATION.

2. COMBINATION AIR RELEASE VALVE (AV) SHALL BE TYPE AND SIZE APPROPRIATE FOR SERVICE INTENDED. ALTHOUGH A 1" MINIMUM SIZED AV IS REQUIRED ON POTABLE WATER MAIN INSTALLATIONS.

3. ALL OPENINGS SHALL BE SEALED WITH WATERPROOF NON-SHRINKING GROUT.

4. ALTERNATE VAULT AND COVER DESIGN MAY BE USED PROVIDED ALTERNATE VAULT AND/OR COVER SHOP DRAWINGS WERE SUBMITTED AND APPROVED BY THE DEPARTMENT PRIOR TO THE VAULT AND/OR COVER BEING INSTALLED.

5. DUCTILE IRON PIPE IS REQUIRED THROUGH THE VAULT. NO PIPE JOINTS INSIDE OR WITHIN 12" OF THE VAULT.

6. THREADED AREAS OF BRASS FITTINGS SHALL BE SPIRAL WRAPPED WITH TWO WRAPS OF TEFLOM TAPE.

7. LARGER VAULTS WILL BE REQUIRED FOR PIPES LARGER THAN 12".

   PIPE SIZE  |  MIN. VAULT SIZE
   16"-24"   |  4' x 5'
   24"-30"   |  4' x 5'
   30"-42"   |  4' x 6'

8. SHOP DRAWINGS ARE REQUIRED FOR CUSTOM MADE BRACKETS.
1. Precast 4000 P.S.I. Type II concrete structure. Shop drawing is required to be approved by the department prior to vault construction and/or installation.

2. All openings shall be sealed with a waterproof non-shrinking grout.

3. Lift holes are permitted.

4. All pipe holes shall be precast.

5. Manhole fabrication shall be in accordance with A.S.T.M. C-478 latest standard.

6. Concrete collar required when manhole is outside of pavement, see detail.

7. Combination air release valve (ARV) shall be type and size appropriate for service intended although a 1” minimum sized ARV is required on potable water main installations.

8. Ductile iron pipe is required through the vault. No pipe joints inside or within 18” of the manhole.

9. Threaded areas of brass fittings shall be spiral wrap with two wraps of Teflon tape.

10. Potable water mains 12” and smaller, an alternate vault and cover design may be used provided alternate vault and/or cover shop drawings were submitted and approved by the department prior to the vault and/or cover being installed.

11. Larger manholes will be required for pipes larger than 12”.

12. Shop drawings are required for custom made brackets.

13. Manholes in roadways shall be located outside of wheel paths.

Palm Beach County Construction Standards & Details

Potable Water Main Air Release Manhole
In Paved Area and in Road R/W

Revision/Issue Date: 6/2019

Page No.: 29W

Attachment B-1

Page 51 of 69
NOTES:
1. PRECAST MONOLITHIC Poured 4000 P.S.I. TYPE II CONCRETE STRUCTURE. SHOP DRAWING IS REQUIRED TO BE APPROVED BY THE DEPARTMENT PRIOR TO VAULT CONSTRUCTION AND/OR INSTALLATION.
2. ALL OPENINGS SHALL BE SEALED WITH A WATERPROOF NON-SHRINKING GROUT.
3. ALL PIPE HOLES SHALL BE PRECAST.
4. ALTERNATIVE VAULT DESIGN MAY BE USED WITH AN APPROVED 32" DIAMETER HINGED MANHOLE COVER PROVIDED ALTERNATE VAULT AND/OR COVER SHOP DRAWING WAS SUBMITTED AND APPROVED BY THE DEPARTMENT PRIOR TO THE VAULT AND/OR COVER BEING INSTALLED.
5. ARV, TAP AND PIPING TO BE TYPE AND SIZE APPROPRIATE FOR SERVICE INTENDED.
6. COMBINATION AIR RELEASE VALVE (ARV) SHALL BE TYPE AND SIZE APPROPRIATE FOR SERVICE INTENDED ALTHOUGH A 1" MINIMUM SIZED ARV IS REQUIRED ON POTABLE WATER MAIN INSTALLATIONS.
7. SHOP DRAWING IS REQUIRED FOR REVIEW AND APPROVAL.
8. THREADED AREAS OF BRASS FITTINGS AND OTHER FITTINGS SHALL BE SPIRAL WRAPPED WITH TWO WRAPS OF TEFLOF TAP.
9. IN LIEU OF BRICK WORK, APPROVED PRECAST CONCRETE ADJUSTING RINGS MAY BE USED.
10. SHOP DRAWINGS ARE REQUIRED FOR CUSTOM MADE BRACKETS.
11. PIPE AND FITTINGS SHALL BE NO LEAD BRASS.
12. MANHOLEs SHALL BE INSTALLED OUTSIDE TRAFFIC AREAS.
MAXIMUM QUANTITY OF WATER (GALLONS PER HOUR) THAT MAY BE SUPPLIED TO MAINTAIN PRESSURE WITHIN 5 P.S.I. OF THE SPECIFIED TEST PRESSURE
(MECHANICAL OR PUSH-ON JOINT, 18 FT. NOMINAL LENGTHS, PER 1000 FT. OF PIPE)

<table>
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<tr>
<th>AVG. TEST PRESSURE</th>
<th>PIPE DIAMETER (INCHES)</th>
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<td>150</td>
<td>0.10 0.14 0.18 0.27 0.37 0.46 0.55 0.64 0.73 0.83 0.92 1.10 1.38 1.65 1.93 2.20</td>
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<td>0.10 0.15 0.21 0.31 0.42 0.53 0.63 0.74 0.84 0.95 1.06 1.27 1.59 1.91 2.22 2.54</td>
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</tbody>
</table>

FORMULA BASIS: \( L = \frac{(S) \times (D) \times (P) \times 1/2}{144,000} \)

- \( L \) = MAXIMUM QUANTITY OF WATER TO BE ADDED (GALLONS PER HOUR)
- \( S \) = LENGTH OF PIPE TESTED (FEET)
- \( D \) = DIAMETER OF PIPE (INCHES)
- \( P \) = TEST PRESSURE (P.S.I.)

NOTES:

1. TO OBTAIN THE MAXIMUM QUANTITY OF WATER FOR PIPE WITH 20 FT. NOMINAL LENGTHS, MULTIPLY THE QUANTITY CALCULATED FROM THE TABLE BY 0.9

2. THE MAXIMUM QUANTITY OF ADDITIONAL WATER FOR A PIPELINE IS CALCULATED BY MULTIPLYING THE QUANTITY PER HOUR AS OBTAINED FROM THE ABOVE TABLE, BY THE DURATION OF THE TEST IN HOURS, AND BY THE TOTAL LENGTH OF THE PIPE LINES TO BE TESTED DIVIDED INTO 1,000. IF THE PIPE LINES UNDER TEST CONTAINS SECTIONS OF VARIOUS DIAMETERS, THE MAXIMUM QUANTITY ADDED WILL BE THE SUM OF THE COMPUTED QUANTITIES FOR EACH SIZE.

3. MAXIMUM TEST LENGTH = 2,500 FEET PER SECTION.

4. THIS STANDARD SHALL REFLECT ANY REVISION OF A.W.W.A. C-600. HOWEVER, THE MAXIMUM QUANTITY OF WATER ADDED SHALL NOT EXCEED 50% OF THE RECOMMENDED LIMIT PER APPLICABLE A.W.W.A. C-600 STANDARD.

5. STANDARD TEST PRESSURE = 150 P.S.I.; 200 P.S.I. FOR MAINS LARGER THAN 24".

6. PRESSURE TEST DURATION TO BE MIN. 2 HOURS.
NOTES:
1. ALL PIPE AND FITTINGS UP TO THE D.C.D.A. SHALL BE DUCTILE IRON CEMENT LINED.
2. THE INITIAL TEST OF THE BACKFLOW PREVENTION ASSEMBLY SHALL BE PERFORMED
   BY THE DEPARTMENT PRIOR TO SERVICE ACTIVATION.
3. THE DOUBLE CHECK DETECTOR ASSEMBLY SHALL BE APPROVED BY THE UNIVERSITY OF
4. THE PROPERTY OWNER SHALL BE RESPONSIBLE FOR THE PROPER OPERATION, MAINTENANCE
   AND SUBSEQUENT TESTING OF THE DOUBLE CHECK DETECTOR ASSEMBLY BY
   A CERTIFIED BACKFLOW TECHNICIAN.
5. WHEN FIRE LINE LENGTH IS OVER ONE PIPE LENGTH, LINE SHALL BE TERMINATED WITH A
   GATE VALVE (= POINT OF SERVICE). NO PIPE JOINTS / CONNECTIONS ARE PERMITTED
   BETWEEN POINT OF SERVICE AND VERTICAL 90° BEND.
6. THE DESIGN SHALL MINIMIZE ANY POTENTIAL FOR WATER MAIN WITH NO FLOW. A FIRE
   HYDRANT LOCATED NEAR THE DOUBLE CHECK DETECTOR ASSEMBLY MAY BE REQUIRED
   FOR LONG, DEAD ENDING DEDICATED FIRE LINES.
7. AN APPROVED REDUCED PRESSURE PRINCIPLE DETECTOR ASSEMBLY SHALL BE
   REQUIRED FOR ALL FIRE SYSTEMS WITH STORAGE TANKS AND/OR AUXILIARY WATER
   SUPPLY.
8. TAMPER SWITCHES MAY BE REQUIRED BY THE FIRE MARSHALL.
9. PIPE MATERIAL ON THE CUSTOMER SIDE OF POINT OF SERVICE SHALL COMPLY WITH
   FIRE MARSHALL REQUIREMENTS.
10. 3' WIDE 6" THICK CONCRETE SLAB IS RECOMMENDED FOR ASSEMBLY SMALLER THAN 4".
1. ENSURE PROPER RESTRAINT OF EXISTING VALVE AND EXISTING PIPE PRIOR TO NEW PIPE CONNECTION.
2. ENSURE PROPER OPERATION OF EXISTING VALVE.
3. INSTALL BY-PASS PIPING AS SHOWN. A NEARBY HYDRANT OR SERVICE TAP MAY BE USED AS A WATER SOURCE.
4. USING BY-PASS AND CHLORINE INJECTOR PUMP, DISINFECT NEW WATER MAIN (MIN. 50 CHLORINE PPM IS REQUIRED FOR DISINFECTION).
5. COMPLETE FILLING OF THE NEW WATER MAIN AND PERFORM BACTERIOLOGICAL TESTING.
6. REMOVE EXISTING BLOW OFF (IF APPLICABLE) AND EXISTING PLUG, CONNECT NEW MAIN TO EXISTING VALVE.
7. CRACK OPEN EXISTING VALVE AFTER INITIAL DISINFECTION AND FLUSH THE NEW WATER MAIN (PBCWUD PRESENCE IS REQUIRED).
8. REMOVE BY-PASS PIPING. CAP CORPORATION STOPS WITH BRASS CAPS.
9. PRESSURE TESTING IS REQUIRED AFTER SUCCESSFUL COMPLETION OF BACTERIOLOGICAL TESTING AND HEALTH DEPARTMENT RELEASE FOR "CONSTRUCTION WATER" (IF APPLICABLE). PRESSURE TEST TO BE PERFORMED AFTER BACKFILL/ ROAD BASE AND ROAD ROCK BASE INSTALLATION/ COMPACTION.
10. AN ALTERNATIVE TIE-IN PROCEDURE (PRESSURE TESTING PRIOR TO BACTERIOLOGICAL TESTING) MAY BE CONSIDERED WITH PRIOR APPROVAL (SEE SEPARATE DETAIL).
11. RECORD DRAWINGS TO SHOW DATA FOR ALL TEST TAPS.
12. ALL BRASS SHALL BE "LEAD FREE".
## MIN. LENGTH OF PIPE (FEET) TO BE RESTRAINED

(SOURCES: EBAA IRON RESTRAINT LENGTH CALCULATION PROGRAM FOR PVC PIPE, RELEASE 3.1, AND DIPRA THRUST RESTRAINT FOR DUCTILE IRON PIPE, RELEASE 3.2)

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<tr>
<td>90° VERT. OFFSET</td>
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<td>41</td>
</tr>
<tr>
<td></td>
<td>12</td>
<td>19</td>
</tr>
<tr>
<td>45° VERT. OFFSET</td>
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### Jazz (Branch Restraint)

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### Reducer (Larger Pipe Restraint)

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<td>71</td>
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</tbody>
</table>

### Notes:

1. All data in the above table are based upon the following installation conditions:
   - Soil Type: Sand
   - Test Pressure: 150 psi / 200 psi
   - Depth of Burial: 1.5
   - Safety Factor: 1.5
   - Vertical Offset: 1.5
   - Minimum Pipe Length Along the Run:

2. The restrained pipe lengths apply to Ductile Iron and PVC pipe.
3. All joints between upper and lower bends shall be restrained.
4. Restraint pipe lengths apply to pipe on both sides of valves and fittings.
5. Multiply pipe length by 1.4 for polyethylene encased pipe.
6. Restraint pipe lengths equal to an inline valve condition are required at each end of a transition pipe materials. Pipe to other pipe materials.
7. Design Engineer is responsible to properly size the restraint pipe lengths for the project.

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**Palm Beach County Construction Standards & Details**

**Revision/Issue Date:** 6/2019

**Mechanical Thrust Restraint Minimum Pipe Lengths**

**Page No.** 34W

**Attachment B-1**

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1. SIGN SHALL BE 6" WIDE X 12" LONG, ALUMINUM (0.080 GA.). SIGN COLOR IS WHITE WITH BLACK LETTERING. ROUNDED CORNERS (1.5" RAD.), 2 HOLES (3/8" DIAM.), 10" O.C.
1. SIGNS SHALL BE 6" WIDE X 12" LONG, ALUMINUM (0.080 GA.). SIGN COLOR IS WHITE WITH BLACK LETTERING. ROUNDED CORNERS (1.5" RAD.), 2 HOLES (3/8" DIAM.), 10" O.C.
1. SIGNS SHALL BE 6" WIDE X 12" LONG, ALUMINUM (0.080 GA.).
   SIGN COLOR IS WHITE WITH BLACK LETTERING.
   ROUNDED CORNERS (1.5" RAD.), 2 HOLES (3/8" DIAM.), 10" O.C.
2. THE DUAL UNDERGROUND PIPELINE SIGN SHALL BE UTILIZED FOR
   TWO UNDERGROUND PIPELINES WITHIN THE L.W.D.D. RIGHT-OF-WAY.
NOTE:
1. UNDERGROUND PIPELINE WARNING SIGNS ARE TO BE PLACED AT THE POINT IN WHICH THE LINE INGRESSES AND EGRESSES THE L.W.D.D. RIGHT-OF-WAY.
2. SIGN SPACING IS TO BE A MAXIMUM OF 300’ ALONG THE L.W.D.D. RIGHT-OF-WAY. AS CLOSE AS POSSIBLE TO THE L.W.D.D. RIGHT OF WAY.
PROPOSED SINGLE SIGN LOCATION FACING TOWARD PIPELINE (300’ SPACING MAX.)

PROPOSED DUAL SIGN LOCATION FACING TOWARD PIPELINES (SEE DETAIL FOR DUAL SIGN)

NOTE:
1. UNDERGROUND PIPELINE WARNING SIGNS ARE TO BE PLACED AT THE POINT IN WHICH THE LINE INGRESS AND EGRESSES THE L.W.D.D. RIGHT-OF-WAY.
2. SIGN SPACING IS TO BE A MAXIMUM OF 300’ ALONG THE L.W.D.D. RIGHT-OF-WAY. AS CLOSE AS POSSIBLE TO THE L.W.D.D. RIGHT OF WAY.
NOTE:
1. UNDERGROUND PIPELINE WARNING SIGNS ARE TO BE PLACED ON BOTH SIDES OF THE CANAL CROSSING; AT THE INSIDE EDGE OF THE RIGHT-OF-WAY.
2. SIGN POST IS NOT TO BE PLACED DIRECTLY OVER PIPELINE. OFFSET SIGN POST 5' FROM PIPELINE.
NOTE:
1. UNDERGROUND PIPELINE SIGNS ARE TO BE PLACED ON BOTH SIDES OF THE CANAL CROSSING; AT THE INSIDE EDGE OF THE RIGHT-OF-WAY.
2. SIGN POST IS NOT TO BE PLACED DIRECTLY OVER PIPELINE.
OFFSET SIGN POST 5’ FROM PIPELINE.
NOTES:

1. THE "ALTERNATIVE" PROCEDURE MUST BE APPROVED BY WUD IN ADVANCE. IT ALLOWS THE NEW PIPE TO BE PRESSURE TESTED PRIOR TO BACTERIOLOGICAL TESTING.

2. BOTH VALVES SHALL BE KEPT CLOSED EXCEPT FOR FILLING AND FLUSHING.

3. WUD SHALL BE NOTIFIED BEFORE FILLING AND FLUSHING.

4. PRESSURE TEST PUMP MAY BE CONNECTED TO SERVICE LINE, FIRE HYDRANT OR BLOWOFF IN THE TESTED WATER MAIN. NO EXTRA TAPS ARE PERMITTED UNLESS UNAVOIDABLE.

5. GAUGE AND RISER TO BE REMOVED AFTER PRESSURE TEST, HOLE TO BE PLUGGED AT SADDLE WITH BRASS PLUG. A BRASS CAP IS REQUIRED.

6. THREAD AREAS OF CORPORATION STOP SHALL BE SPIRAL WRAPPED WITH TWO WRAPS OF TEFLOW TAPE.

7. ENSURE PROPER RESTRAINT OF EXISTING VALVE(S) AND PIPE PRIOR TO NEW CONNECTION.

8. SEE ALSO DETAIL FOR "STANDARD POTABLE WATER MAIN TIE-IN PROCEDURE"

9. RECORD DRAWINGS TO SHOW DATA FOR ALL TEST TAPS.

10. ALL BRASS SHALL BE "LEAD FREE".
1. AUTOMATIC FLUSHING ASSEMBLY TO BE INSTALLED PER MANUFACTURER’S REQUIREMENTS.

2. FOR INSTALLATION OF SERVICES UNDER DRIVEWAYS AND ROADWAYS, USE MIN. 4" DIAMETER BLACK IRON, PVC SCH 40, OR HDPE SDR 9 CASING. CASING SHALL EXTEND MIN. 24" BEYOND EDGE OF PAVEMENT. CASING TO BE SEALED WITH CEMENT. CASING SHALL BE COLOR-CODED BLACK, WHITE, BLUE, OR BLUE STRIPED.

3. AUTOMATIC FLUSHING ASSEMBLY TO BE INSTALLED AS CLOSE AS POSSIBLE TO THE WATER MAIN WITHIN AN UTILITY EASEMENT OR ROAD RIGHT-OF-WAY WITH PRIOR DEPARTMENT APPROVAL. IF AUTOMATIC FLUSHING ASSEMBLY HOUSING IS INSTALLED IN ROAD RIGHT-OF-WAY IT SHALL NOT INTERFERE WITH CLEAR ZONE REQUIREMENTS AS SPECIFIED BY ROAD OWNER.

4. BEDDING (MIN. 4") AND COVER (MIN. 4") OVER SERVICE LINE OR CASING SHALL CONSIST OF FINE GRANULAR MATERIAL. UNSUITABLE IN-SITU MATERIALS SUCH AS MUCK, DEBRIS AND LARGER ROCKS SHALL BE REMOVED WITH 2" MAXIMUM SIZE.

5. ALL HARDWARE (I.E. BOLTS, ETC.) REQUIRED FOR ASSEMBLY INSTALLATION SHALL BE 304 STAINLESS STEEL.

6. THREADED AREAS OF CORPORATION STOP AND OTHER FITTINGS SHALL BE SPIRAL WRAPPED WITH TWO (2) WRAPS OF TFELOEN TAPE. ALL BRASS SHALL BE "LEAD FREE".

7. A 4" THICK COMPAKTED 3/4" ROCK BASE IS REQUIRED. THE BASE SHALL EXTEND MINIMUM 12" BEYOND AUTOMATIC FLUSHING ASSEMBLY PAD PERIMETER.

8. WHEN VALVE BOX IS LOCATED IN GRASS A CONCRETE COLLAR IS REQUIRED PER DEPARTMENT STANDARDS.
1. "12" MINIMUM CLEARANCE TO BE MAINTAINED BETWEEN AUTOMATIC FLUSHING SYSTEM PAD AND ANY OBSTRUCTION.

2. FOR INSTALLATION OF SERVICES UNDER DRIVEWAYS AND ROADWAYS, USE MIN. 4" DIAMETER BLACK IRON, PVC SCH 40, OR HDPE SDR 9 CASING. CASING SHALL EXTEND MIN. 24" BEYOND EDGE OF PAVEMENT. CASING TO BE SEALED WITH CEMENT. CASING SHALL BE COLOR-CODED BLACK, WHITE, BLUE, OR BLUE STRIPED.

3. AUTOMATIC FLUSHING ASSEMBLY TO BE INSTALLED AS CLOSE AS POSSIBLE TO THE WATER MAIN.

4. BEDDING (MIN. 4") AND COVER (MIN. 4") OVER SERVICE LINE OR CASING SHALL CONSIST OF FINE GRANULAR MATERIAL. UNSUITABLE IN-SITU MATERIALS SUCH AS MUCK, DEBRIS AND LARGER ROCKS SHALL BE REMOVED WITH 2" MAXIMUM SIZE.

5. ALL HARDWARE FOR FLANGED CONNECTIONS (BOLTS, ETC.) TO BE STAINLESS STEEL.

6. THREAD-LOCKED AREAS OF CORPORATION STOP AND OTHER FITTINGS SHALL BE SPIRAL WRAPPED WITH TWO (2) WRAPS OF TEFLOW TAPE. ALL BRASS SHALL BE "LEAD FREE".

7. A 4" THICK COMPACTED 3/4" ROCK BASE IS REQUIRED. THE BASE SHALL EXTEND MINIMUM 12" BEYOND AUTOMATIC FLUSHING ASSEMBLY PAD PERIMETER.

Prior department approval required before project being approved for installation.
NOTES:

1. RIP-RAP RUBBLE AND ITS INSTALLATION MUST MEET CANAL OWNERSHIP SPECIFICATIONS AND PERMITTING REQUIREMENTS.

2. DUMP RUBBLE IN PLACE FORMING A COMPACT LAYER CONFORMING TO THE CANAL DESIGN SECTION SLOPE. ENSURE THAT RUBBLE DOES NOT SEGREGATE SO THAT SMALLER PIECES EVENLY FILL THE VOIDS BETWEEN LAGER PIECES.

3. AN ALTERNATIVE DESIGN WILL BE CONSIDERED AND MUST RECEIVE PRIOR APPROVAL FROM THE CANAL PROPERTY OWNER.
NOTES:

1. TREES SHOWN ON THIS PLAN ARE FOR GRAPHIC REPRESENTATION ONLY. TREE SPACING IS BASED ON DESIGN REQUIREMENTS AND THE TREES SHOWN ON THESE PLANS ATTEMPT TO ACCOMPLISH THAT SPACING WHILE MAINTAINING THE REQUIRED SETBACKS FROM UTILITIES. TREES MAY BE FIELD ADJUSTED TO AVOID CONFLICTS WITH DRIVEWAYS AND UNDERGROUND UTILITIES. IN ANY CASE THE TREES SHALL BE LOCATED IN THE FIELD IN ACCORDANCE WITH THE PLANTING DETAILS SHOWN HEREON.

2. TREES ARE TO BE INSTALLED WITH A TEN FOOT (10') SEPARATION FROM ANY WATER OR SEWER MAIN AND/OR SERVICE, HYDRANTS, AND LIFT STATIONS. IF A TEN FOOT (10') SEPARATION CANNOT BE ACHIEVED, THE TREE CAN BE INSTALLED WITH A ROOT BARRIER SYSTEM. HOWEVER, IN NO CASE SHALL A TREE ENCROACH INTO A PBCWUE WITHOUT PRIOR DEPARTMENT APPROVAL.

3. ONLY SOD CAN BE INSTALLED WITHIN 7.5' MINIMUM OF A FIRE HYDRANT UNLESS OTHERWISE APPROVED BY THE FIRE MARSHAL AND THE DEPARTMENT.

4. SOD ONLY SHALL BE INSTALLED WITHIN 5.0' MINIMUM OF ANY DEPARTMENT WATER METER.
NOTES:

1. SHOP DRAWING FOR THE METER ASSEMBLY PIPE SUPPORT IS REQUIRED TO BE SUBMITTED FOR APPROVAL BY THE DEPARTMENT PRIOR TO THE PIPE SUPPORT BEING CONSTRUCTED AND/OR INSTALLED. ALL PIPE SUPPORTS FOR EACH METER ASSEMBLY INSTALLATION SHALL BE THE SAME.

2. ALL PIPE SUPPORT MATERIALS AND MOUNTING HARDWARE ARE REQUIRED TO BE 304 STAINLESS STEEL.

3. THE REQUIRED WEDGE ANCHORS FOR EACH SUPPORT SHALL BE 3/8" DIAMETER WITH NOMINAL EMBEDMENT OF 2-3/8". EACH ANCHOR SHALL HAVE A WASHER, LOCK WASHER, AND NUT.