

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 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. LIMIT OF UNOBSTRUCTED 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 DRIVEWAYS AND ROADWAYS USE MIN. 3" DIAMETER BLACK IRON, PVC SCH 40 OR HDPE SDR 9 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 SCH. 40. 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 IN-SITU MATERIALS SUCH AS MUCK, DEBRIS AND LARGER ROCKS SHALL BE REMOVED WITH 2" MAXIMUM SIZE.
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 DEPENDING ON TYPE OF SERVICE INSTALLATION REQUIRED.
11. THE DEVELOPER/PROPERTY OWNER OR ASSIGNEE SHALL BE RESPONSIBLE FOR INSTALLATION OF SERVICES BEYOND PRESSURE TEST LIMITS AS SPECIFIED BY THE DEPARTMENT.
12. THREADED 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.

PALM BEACH COUNTY CONSTRUCTION STANDARDS & DETAILS

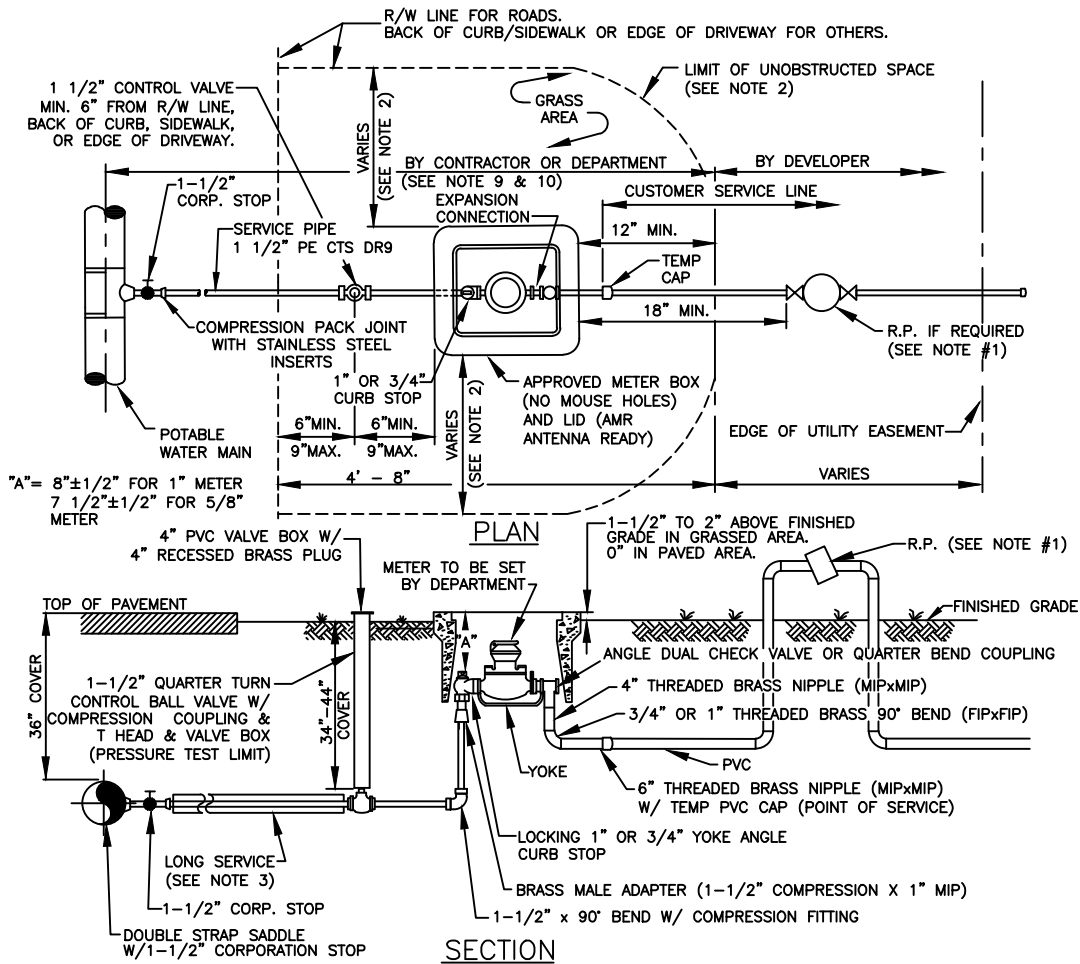
REVISION/ISSUE DATE

6/2019*

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

PAGE NO.

1W



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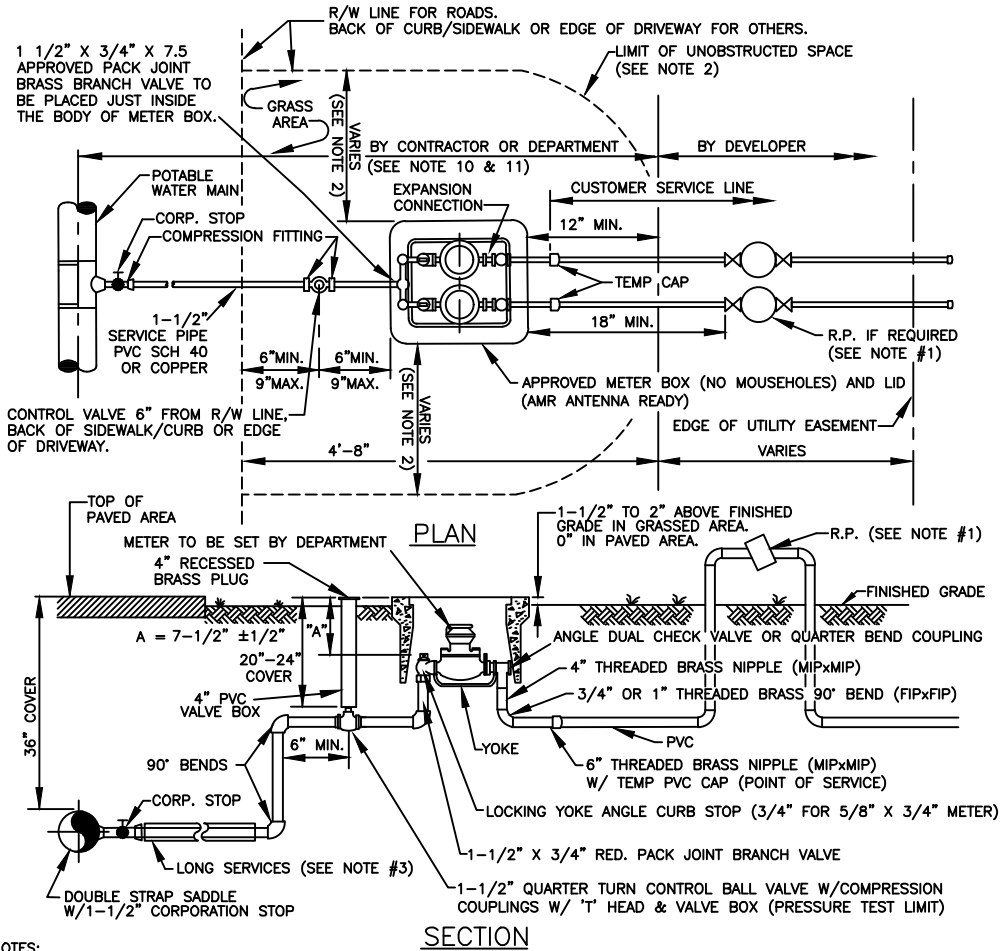
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14. STAINLESS STEEL INSERTS ARE REQUIRED FOR ALL COMPRESSION FITTINGS.
15. PVC SHALL BE SCHEDULE 40 PIPE WITH SCHEDULE 80 FITTINGS. ALL BRASS FITTINGS SHALL BE "LEAD FREE".

PALM BEACH COUNTY CONSTRUCTION STANDARDS & DETAILS

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

PAGE NO.
2W



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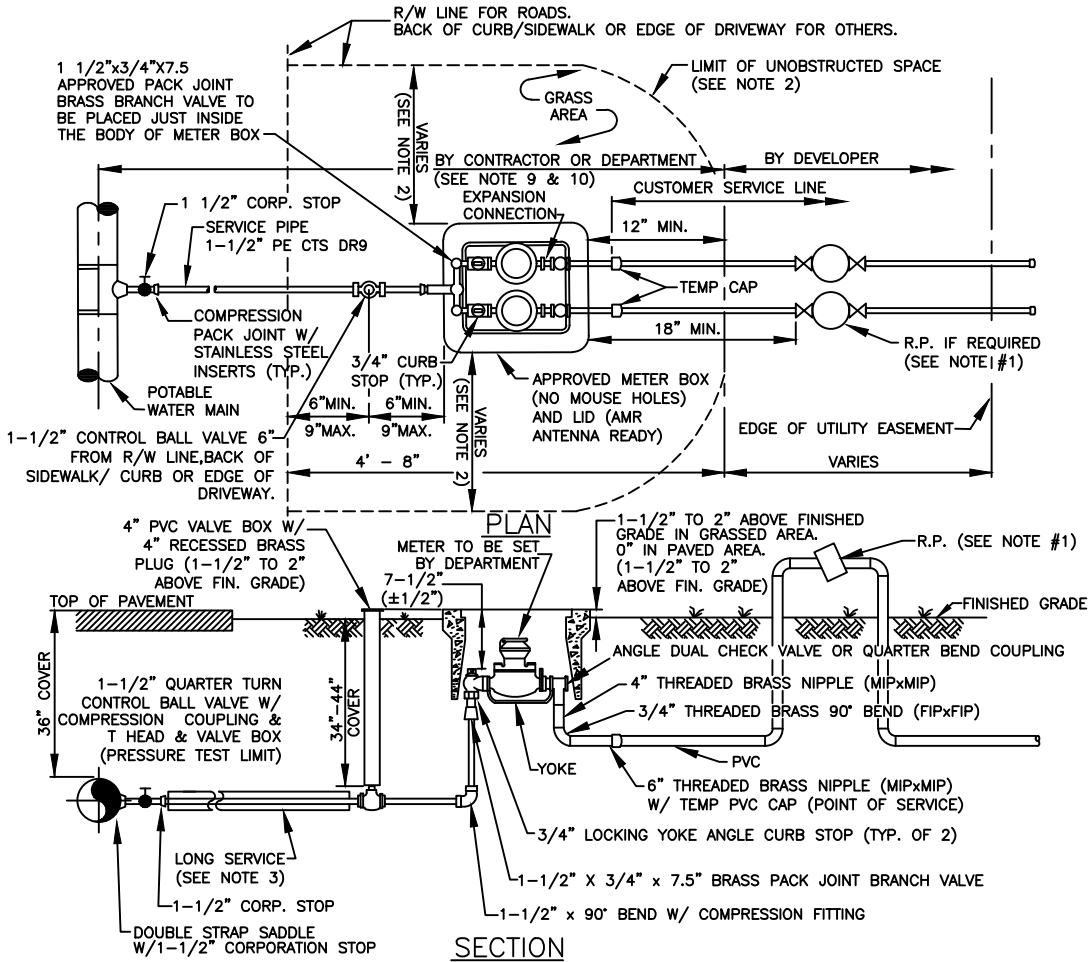
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PALM BEACH COUNTY CONSTRUCTION STANDARDS & DETAILS

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

PAGE NO.
3W



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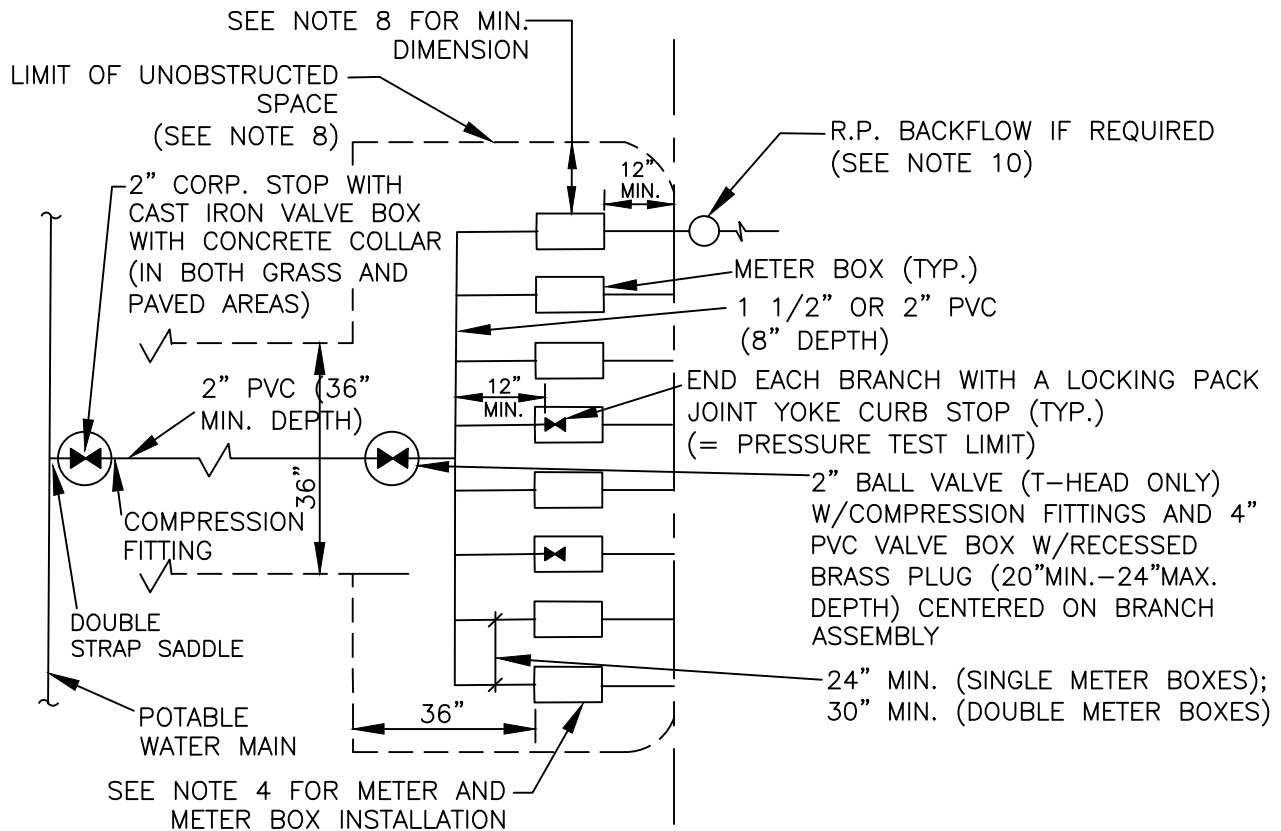
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POTABLE WATER SERVICE DUAL 5/8" X 3/4"
METER INSTALLATION DETAIL (POLYETHYLENE)

PAGE NO.

4W



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, BLUE, OR BLUE STRIPED.
2. METER LOCATION MUST CORRESPOND TO UNIT/BAY CONFIGURATION TO AVOID SERVICE LINE CROSSINGS.
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 - 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. THREADED AREAS OF CORPORATION STOP AND OTHER FITTINGS SHALL BE SPIRAL WRAPPED WITH TWO (2) WRAPS OF TEFLON 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 UNOBSTRUCTED 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.
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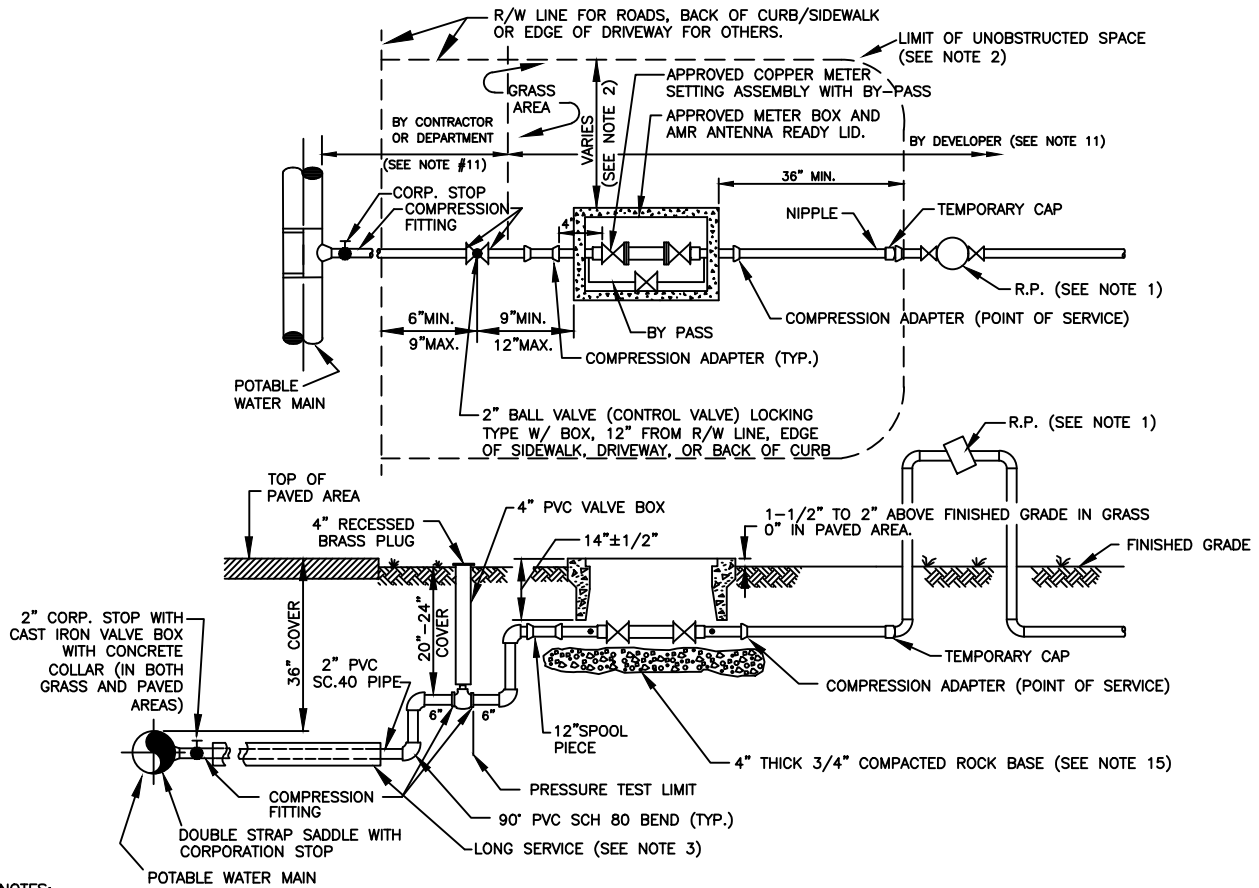
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POTABLE WATER TYPICAL CONNECTION FOR
MULTIPLE SERVICES

PAGE NO.

5W



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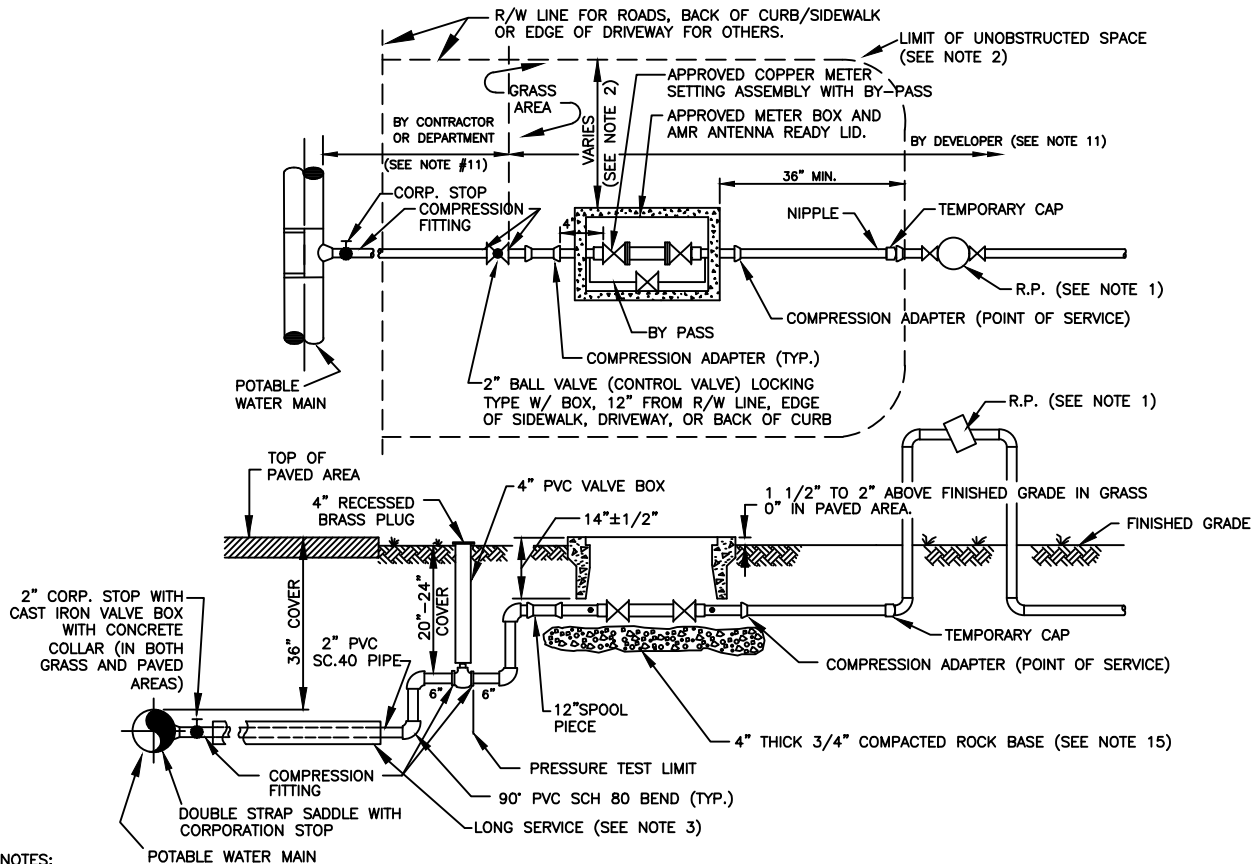
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9. SERVICE COMPONENTS SHALL BE CONSTRUCTED FOR THE METER TO BE INSTALLED "TRUE" AND "PLUMB" AND TO ALLOW METER READING THROUGH THE METER READER LID.
10. APPROVED COPPER SETTER ASSEMBLY REQUIRED. PVC SHALL BE SCHEDULE 40 PIPE WITH SCHEDULE 80 FITTINGS. ALL BRASS FITTINGS SHALL BE "LEAD FREE".
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POTABLE WATER
1 1/2" METER INSTALLATION

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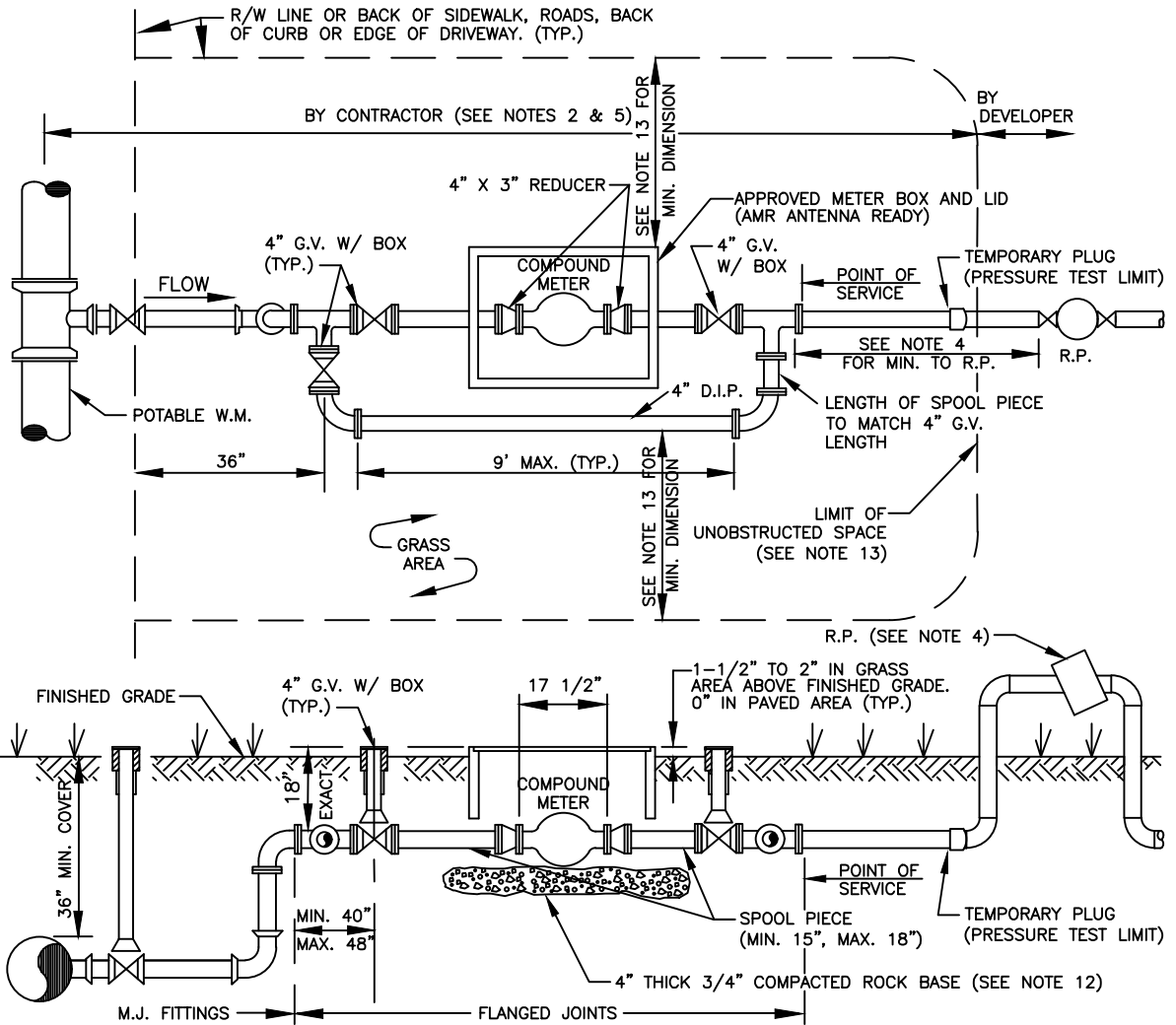
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POTABLE WATER
2" METER INSTALLATION

PAGE NO.

7W



NOTES:

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. 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. THE ENTIRE ASSEMBLY (WITHOUT METER/SPOOL PIECES AS SHOWN) SHALL BE PRESSURE TESTED AS REQUIRED.
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. 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 (BOLTS, ETC.) TO BE STAINLESS STEEL.
11. METER BOX LID SHALL BE TRAFFIC RATED FOR ALL INSTALLATION LOCATIONS.
12. A 4" THICK COMPACTED 3/4" ROCK BASE IS REQUIRED. THE BASE SHALL EXTEND MINIMUM 12" BEYOND THE METER BOX PERIMETER.
13. LIMIT OF UNOBSTRUCTED SPACE FROM SIDE OF WATER METER BOX AND BYPASS PIPING 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

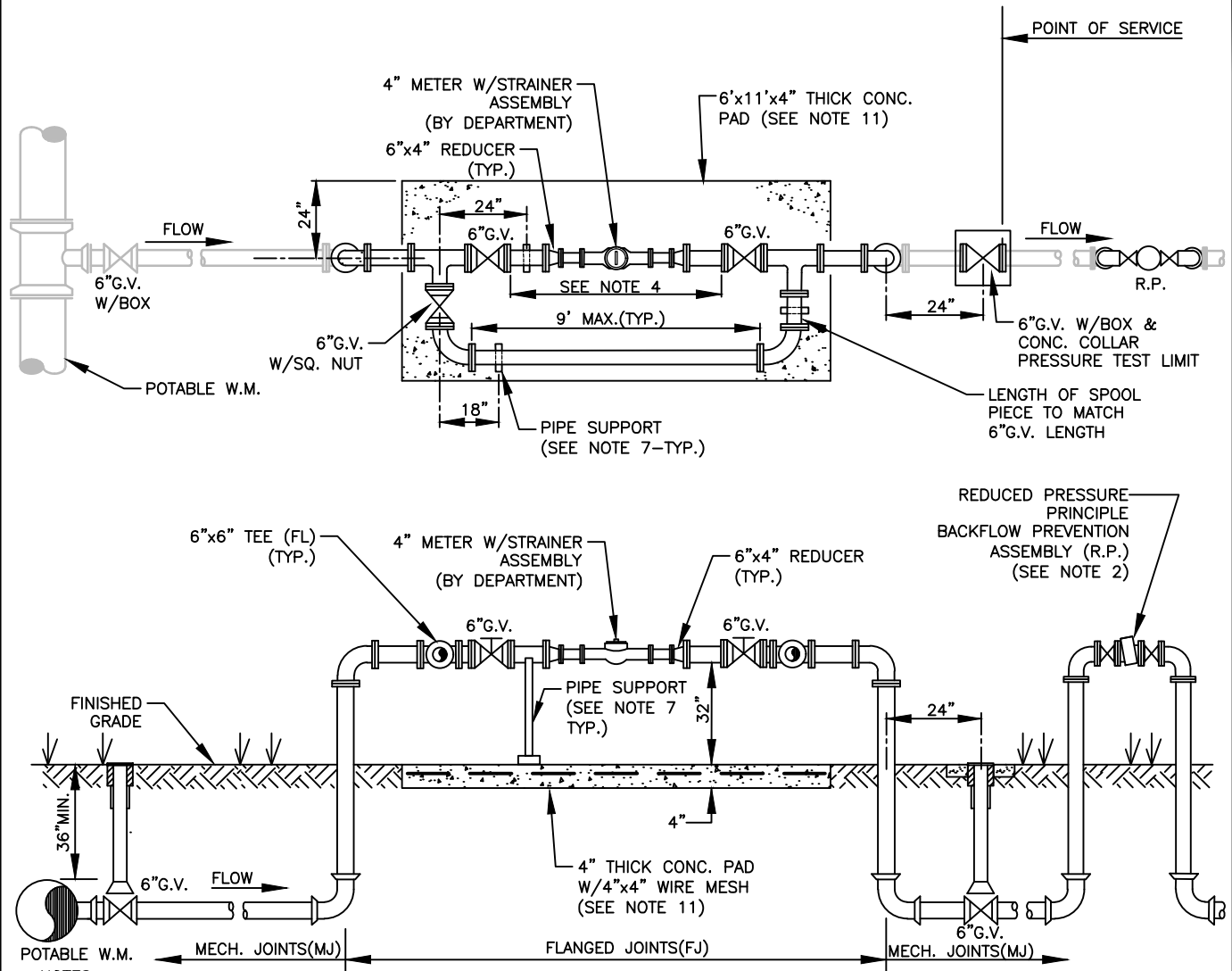
REVISION/ISSUE DATE

6/2019*

POTABLE WATER 3" METER
INSTALLATION

PAGE NO.

8W



NOTES:

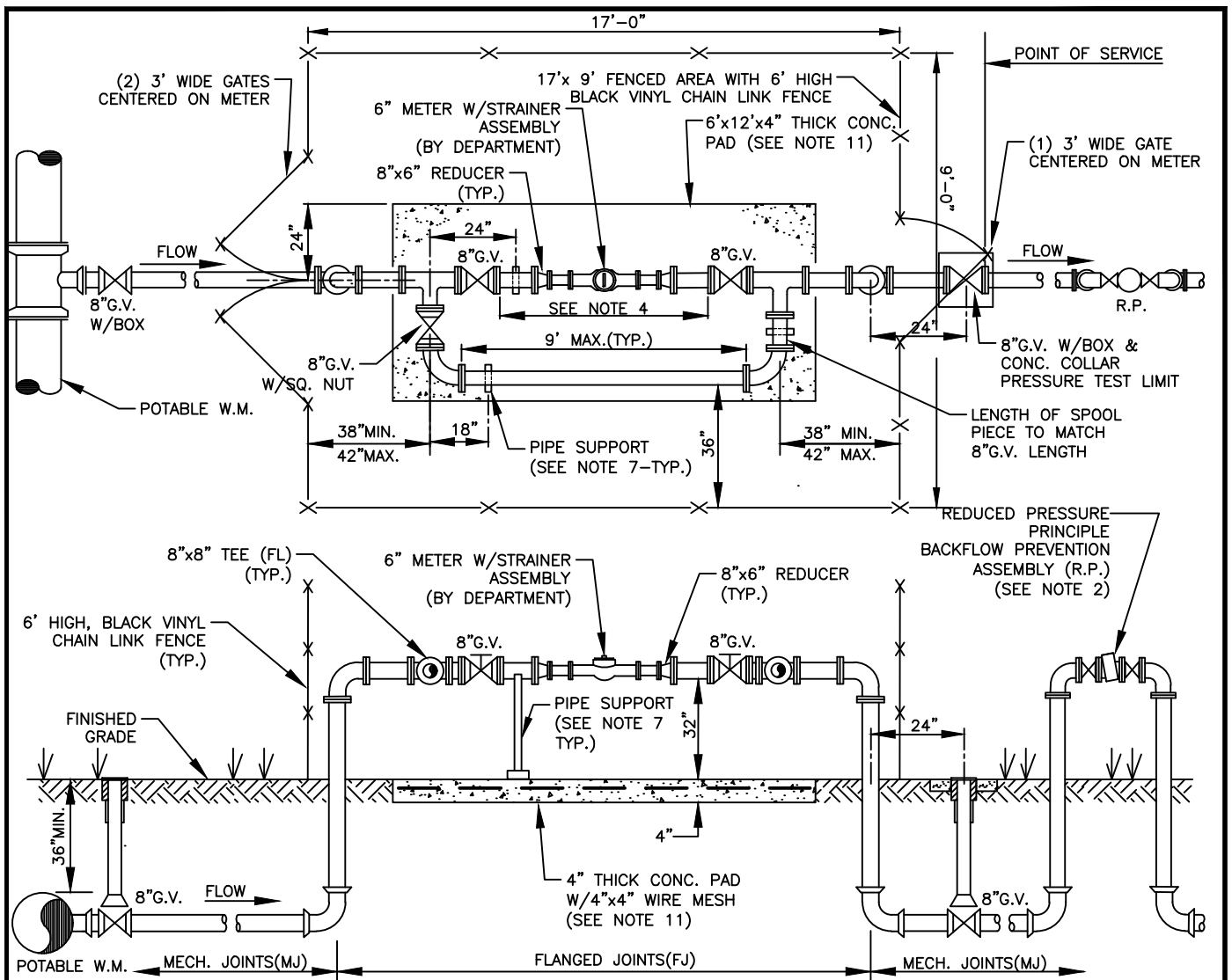
1. ALL SERVICE PIPING SHALL BE 6" DUCTILE IRON WITH 6" GATE VALVES. THE 6" GATE VALVE FOR BYPASS PIPING SHALL HAVE A SQUARE NUT.
2. ALL SERVICES SHALL HAVE AN APPROVED REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTION ASSEMBLY (R.P.). THE INITIAL TEST OF THE R.P. SHALL BE PERFORMED BY THE DEPARTMENT. THE 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 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.

PALM BEACH COUNTY CONSTRUCTION STANDARDS & DETAILS

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POTABLE WATER 4" METER
INSTALLATION

PAGE NO.
9W



NOTES:

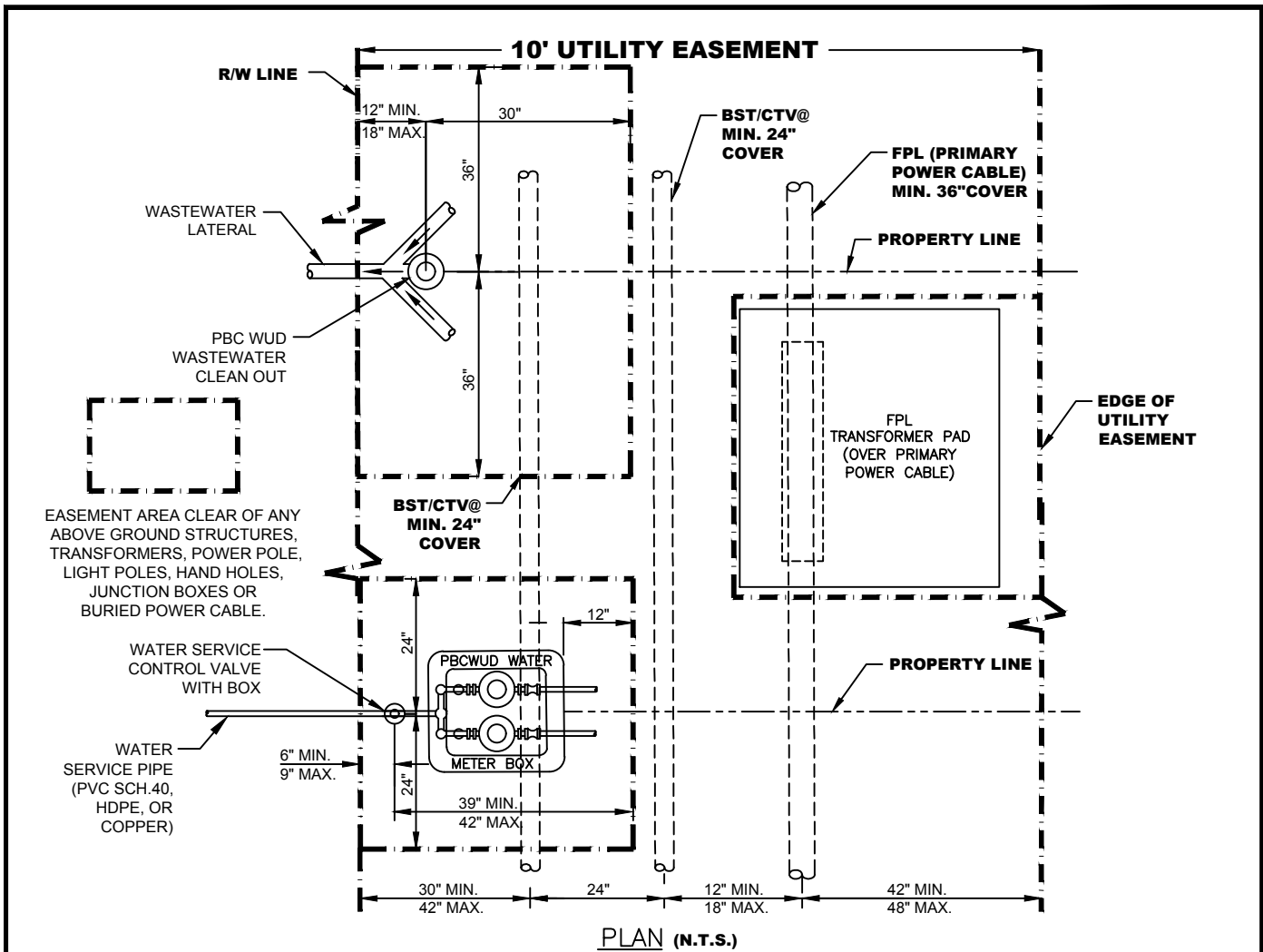
1. ALL SERVICE PIPING SHALL BE 8" DUCTILE IRON WITH 8" GATE VALVES. THE 8" GATE VALVE FOR BYPASS PIPING SHALL HAVE A SQUARE NUT.
2. ALL SERVICES SHALL HAVE AN APPROVED REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTION ASSEMBLY (R.P.). THE INITIAL TEST OF THE R.P. SHALL BE PERFORMED BY THE DEPARTMENT. THE 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 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.

PALM BEACH COUNTY CONSTRUCTION STANDARDS & DETAILS

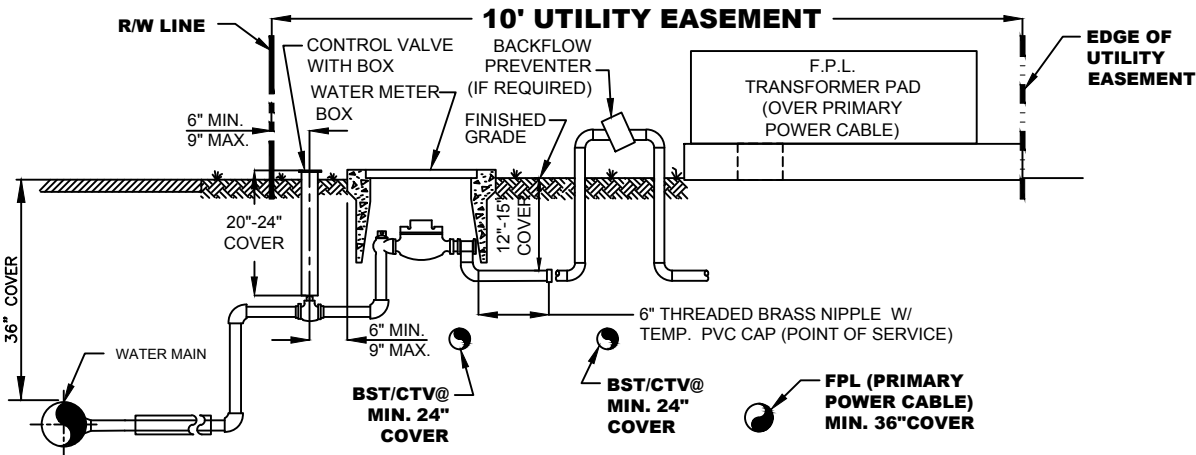
REVISION/ISSUE DATE
6/2019*

**POTABLE WATER 6" METER
INSTALLATION**

PAGE NO.
10W



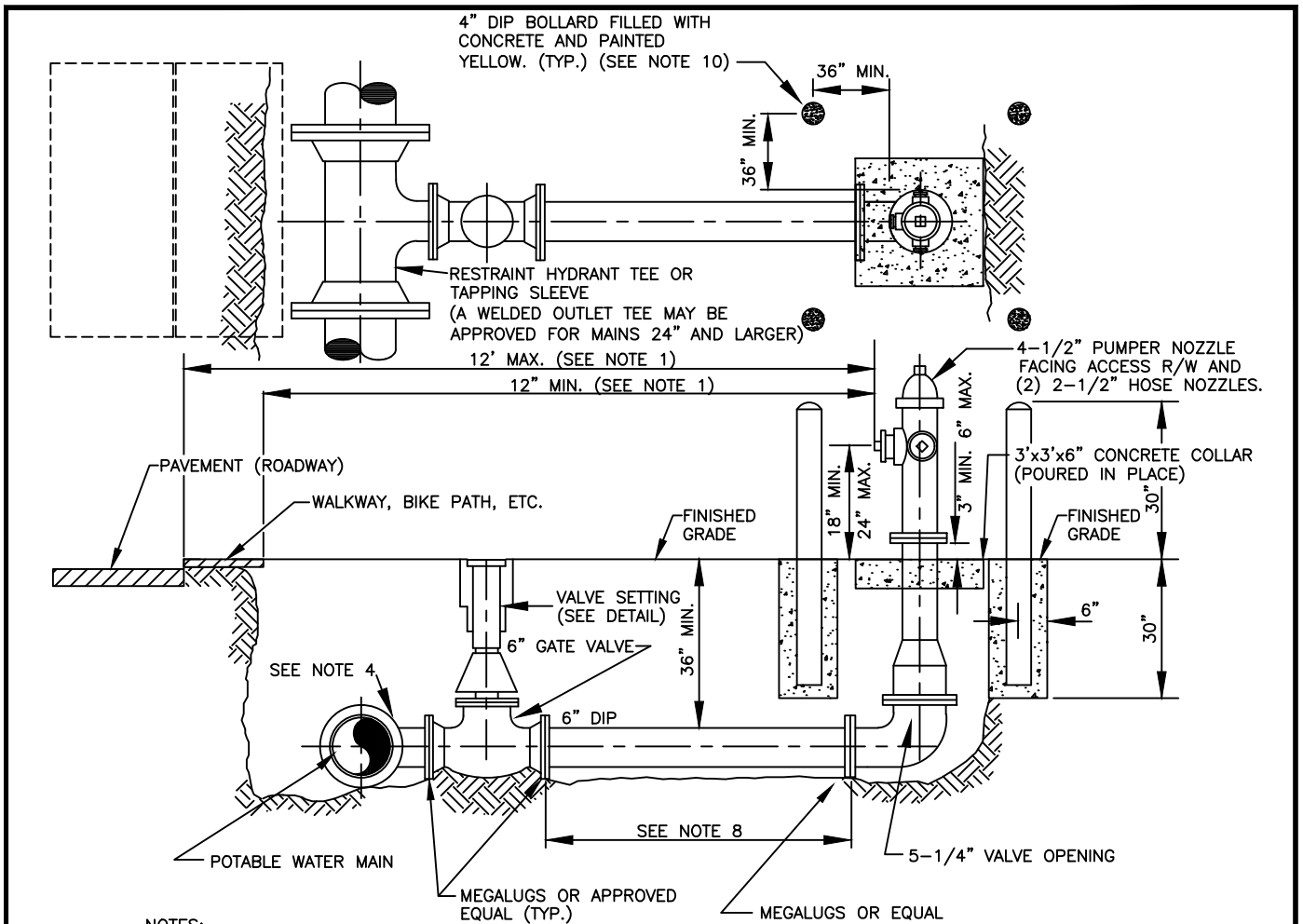
PLAN (N.T.S.)



PROFILE (N.T.S.)

- 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.

PALM BEACH COUNTY CONSTRUCTION STANDARDS & DETAILS		
REVISION/ISSUE DATE 6/2019*	TYPICAL UTILITY INSTALLATION DETAIL IN A 10' UTILITY EASEMENT PARALLEL TO R/W	PAGE NO. 11W



NOTES:

1. FIRE HYDRANT SHALL BE INSTALLED PLUMB AND TRUE IN UNOBSTRUCTED LOCATION AND SHALL NOT INTERFERE 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. HYDRANTS MUST BE ORDERED RED IN COLOR, WITH FINISHED EPOXY COAT APPLIED BY THE HYDRANT MANUFACTURER. HYDRANT SHALL BE FACTORY EQUIPPED WITH PLUGGED DRAIN HOLES.
3. VALVE SHALL BE PLACED ADJACENT TO MAIN AND RESTRAINED 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 BIKEPATHS.
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/TYPE 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

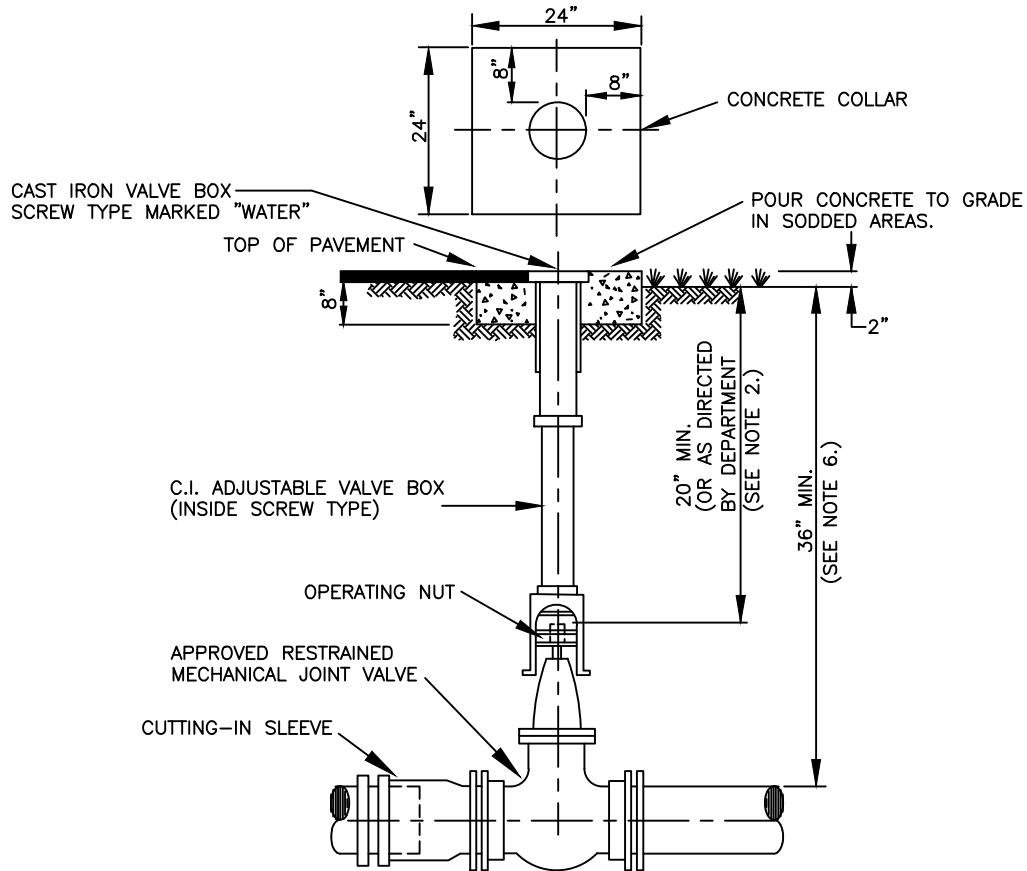
REVISION/ISSUE DATE

6/2019 *

TYPICAL FIRE HYDRANT INSTALLATION
WITH BOLLARDS DETAIL

PAGE NO.

12W



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 36" A ONE PIECE EXTENSION WILL BE REQUIRED TO BRING OPERATING NUT 20"-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. VALVE BOX EXTENSION TO BE D.I.P. OR C-900 PVC SDR 18 (BLUE)
5. A CUT-IN INSTALLATION SHALL REQUIRE MEGALUGS OR EQUAL THROUGHOUT ASSEMBLY.
6. IN ORDER TO MAINTAIN ADEQUATE COVER OVER VALVE NUT, THE FOLLOWING MINIMUM COVERS OVER PIPE ARE REQUIRED

GATE VALVE SIZE	MIN. COVER OVER PIPE
16"	48"
20"	54"
24"	60"
30"	72"
36"	84"
7. VALVES IN ROADWAYS SHALL BE LOCATED OUTSIDE OF WHEEL PATHS WHENEVER POSSIBLE.

PALM BEACH COUNTY CONSTRUCTION STANDARDS & DETAILS

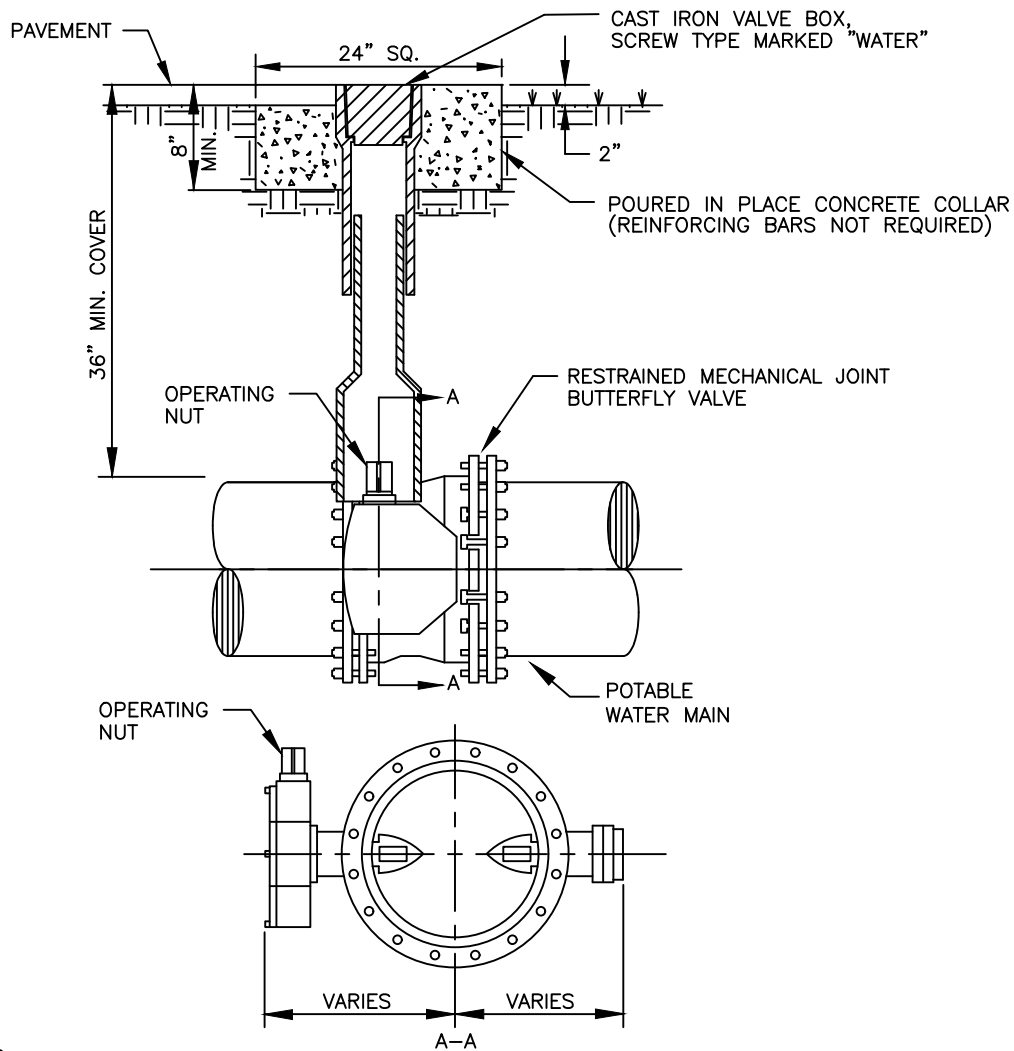
REVISION/ISSUE DATE

6/2019

POTABLE WATER MAIN TYPICAL
GATE VALVE SETTING AND MAIN CUT-IN DETAIL

PAGE NO.

13W



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.

PALM BEACH COUNTY CONSTRUCTION STANDARDS & DETAILS

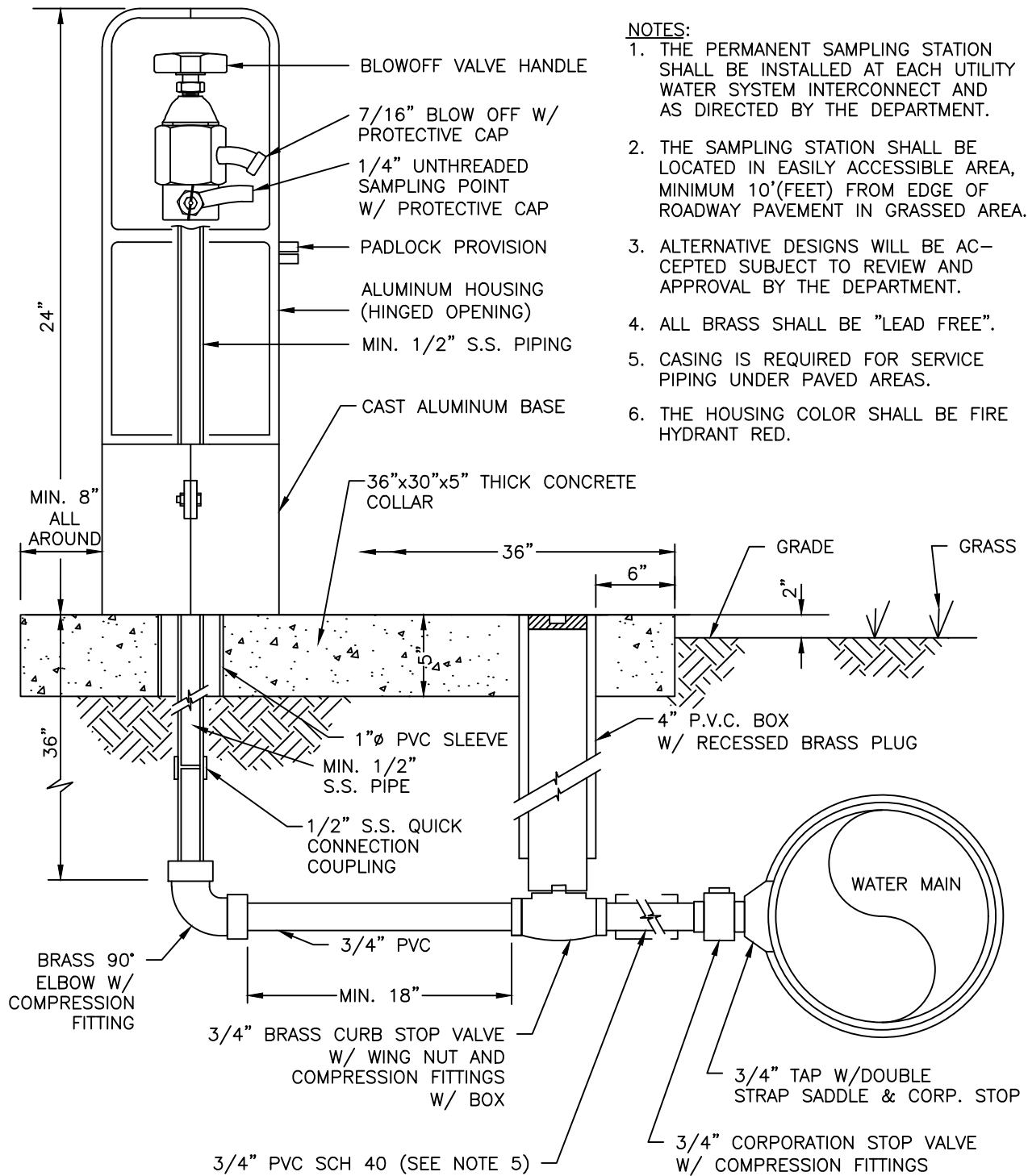
REVISION/ISSUE DATE

6/2019

POTABLE WATER MAIN TYPICAL BUTTERFLY VALVE SETTING

PAGE NO.

14W



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.

PALM BEACH COUNTY CONSTRUCTION STANDARDS & DETAILS

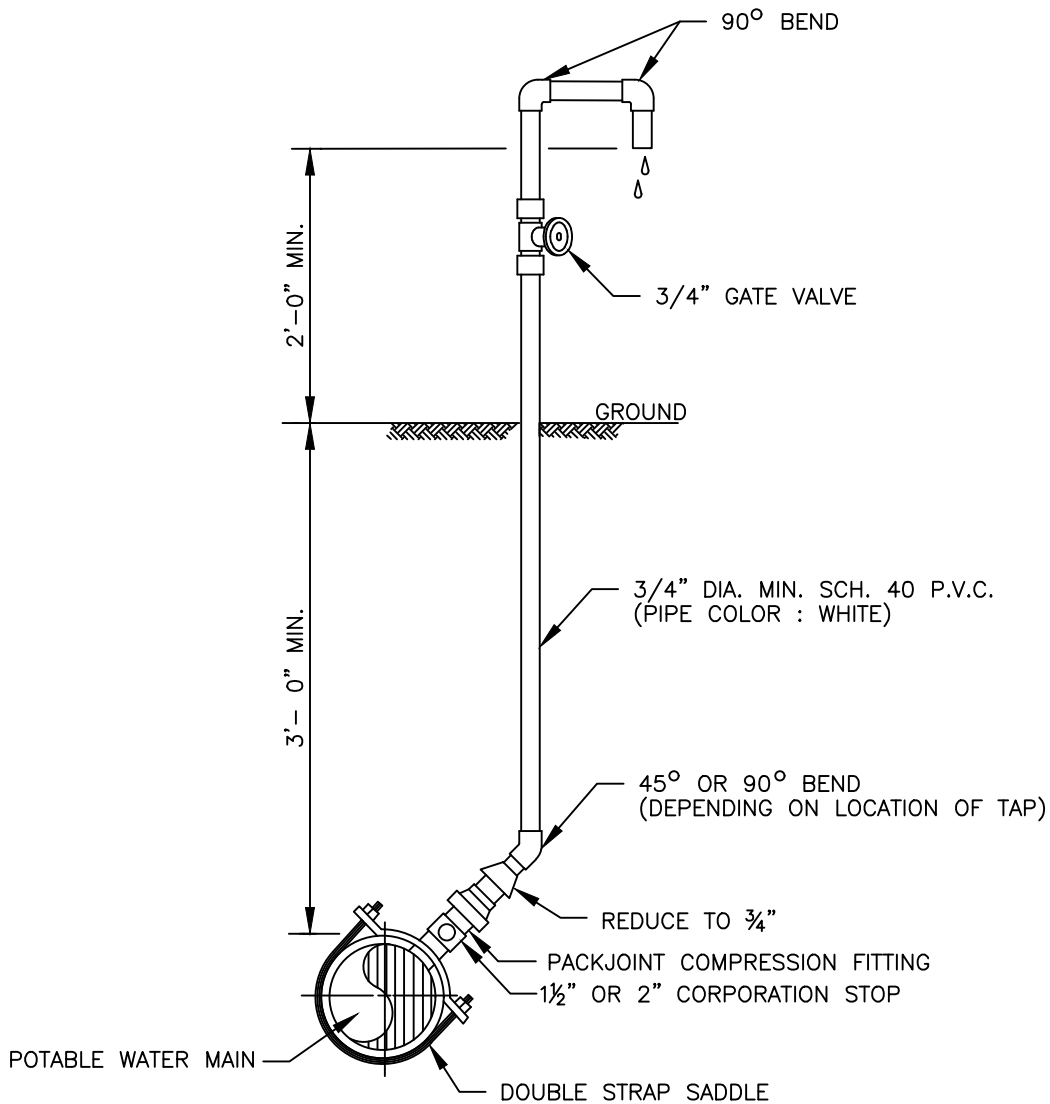
REVISION/ISSUE DATE

6/2019

PERMANENT SAMPLING POINT

PAGE NO.

15W



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 TEFLON TAPE.
3. CLOSE AND CAP CORPORATION STOP AFTER SAMPLING COMPLETION.

PALM BEACH COUNTY CONSTRUCTION STANDARDS & DETAILS

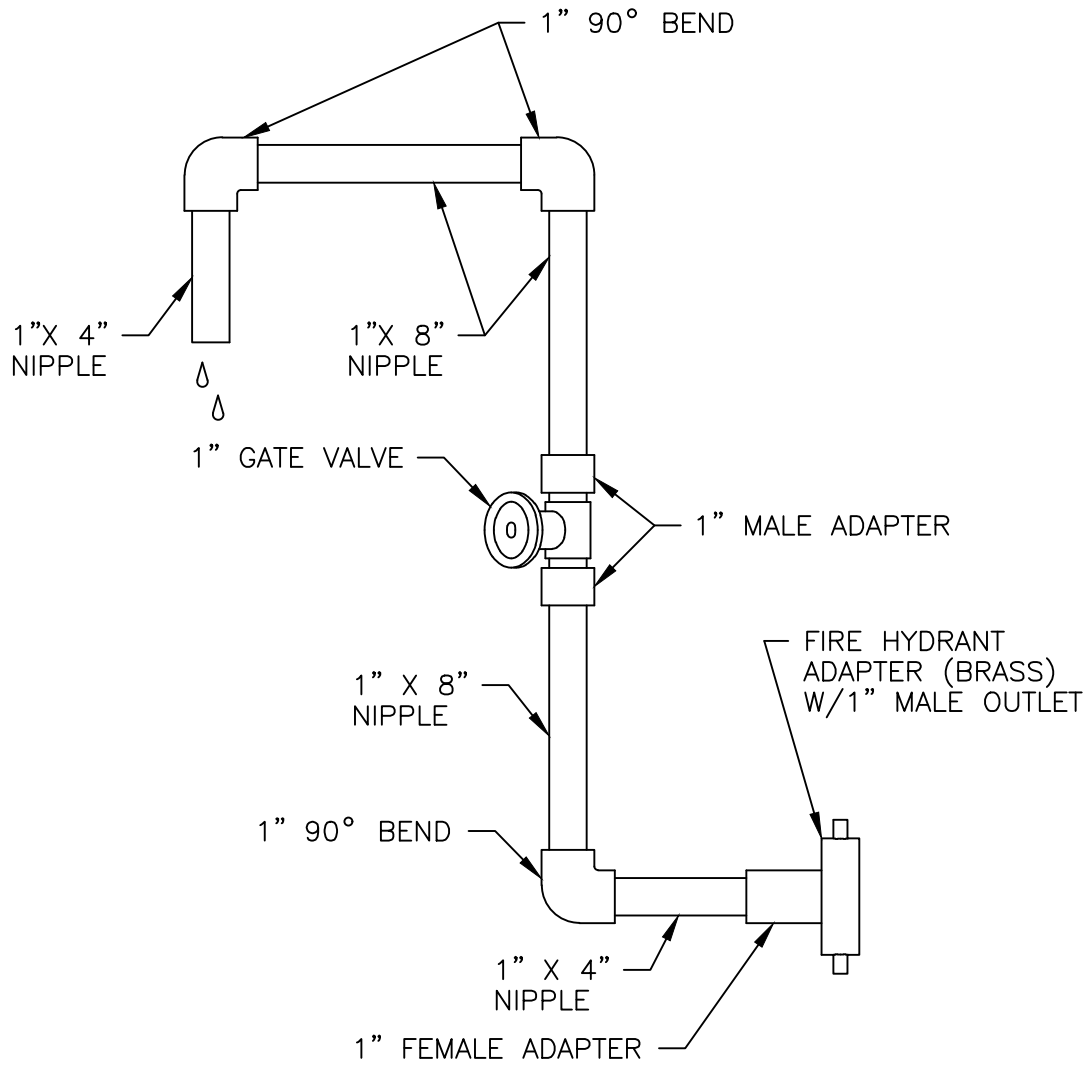
REVISION/ISSUE DATE

6/2019

POTABLE WATER MAIN TEMPORARY SAMPLING POINT

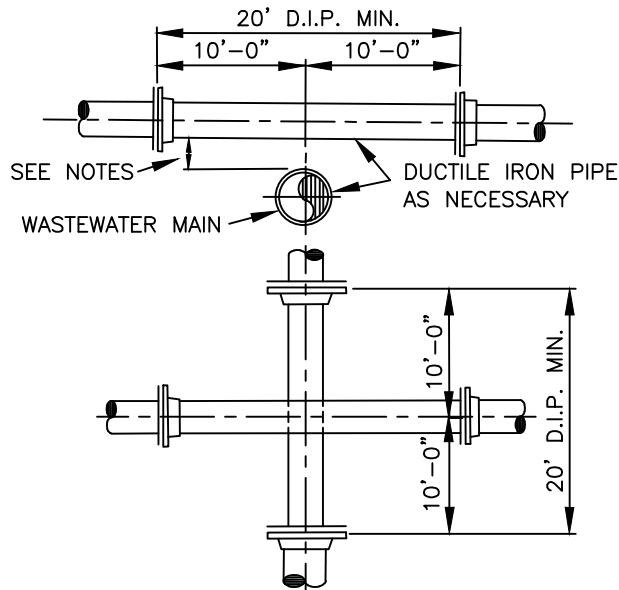
PAGE NO.

16W



NOTES:

1. USE HYDRANT WRENCH ONLY.
2. ALL PIPES AND FITTINGS SCH. 40 P.V.C.
(PIPE COLOR : WHITE).



NOTES:

1. STORM SEWER, GRAVITY WASTEWATER AND RECLAIMED WATER MAIN CROSSING UNDER POTABLE WATER MAINS SHALL BE LAID TO PROVIDE A MINIMUM VERTICAL DISTANCE OF TWELVE (12) INCHES BETWEEN THE INVERT OF THE UPPER PIPE AND THE CROWN OF THE LOWER PIPE. WHERE THIS MINIMUM SEPARATION CANNOT BE MAINTAINED, THE CROSSING SHALL BE ARRANGED SO THAT THE STORM/WASTEWATER/RECLAIMED WATER PIPE JOINTS AND POTABLE WATER MAIN JOINTS ARE EQUIDISTANT FROM THE POINT OF CROSSING WITH NO LESS THAN TEN (10) FEET BETWEEN ANY TWO JOINTS, BOTH PIPES SHALL BE D.I.P., AND THE MINIMUM VERTICAL SEPARATION SHALL BE 6 INCHES. WHERE THERE IS NO ALTERNATIVE TO STORM/WASTEWATER/RECLAIMED WATER PIPES CROSSING OVER A POTABLE WATER MAIN, THE CRITERIA FOR MINIMUM 12" VERTICAL SEPARATION BETWEEN LINES AND JOINT ARRANGEMENT, AS STATED ABOVE, SHALL BE REQUIRED, AND BOTH PIPES SHALL BE D.I.P. IRRESPECTIVE OF SEPARATION. D.I.P. IS NOT REQUIRED FOR STORM SEWERS.
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. WASTEWATER LATERALS SHALL CROSS UNDER POTABLE WATER MAINS WITH A MIN. 12" VERTICAL SEPARATION WHENEVER POSSIBLE. WHERE THIS MINIMUM SEPARATION CANNOT BE MAINTAINED, A 20' SECTION OF DUCTILE IRON PIPE POTABLE WATER MAIN CENTERED ON THE CROSSING IS REQUIRED AND THE MINIMUM VERTICAL SEPARATION SHALL BE 6". WHERE THERE IS NO ALTERNATIVE TO A WASTEWATER LATERAL PIPE CROSSING OVER A POTABLE WATER MAIN, A MINIMUM 12" VERTICAL SEPARATION IS REQUIRED, THE LATERAL SHALL BE P.V.C. C-900 SDR18 OR BETTER, THE POTABLE WATER MAIN SHALL BE D.I.P. AND THE PIPE JOINTS SHALL BE EQUIDISTANT FROM THE POINT OF CROSSING.
5. 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.
6. WASTEWATER MAINS, WATER MAINS, STORM PIPES AND OTHER UTILITY PIPES SHALL CROSS PERPENDICULAR WHENEVER POSSIBLE.

PALM BEACH COUNTY CONSTRUCTION STANDARDS & DETAILS

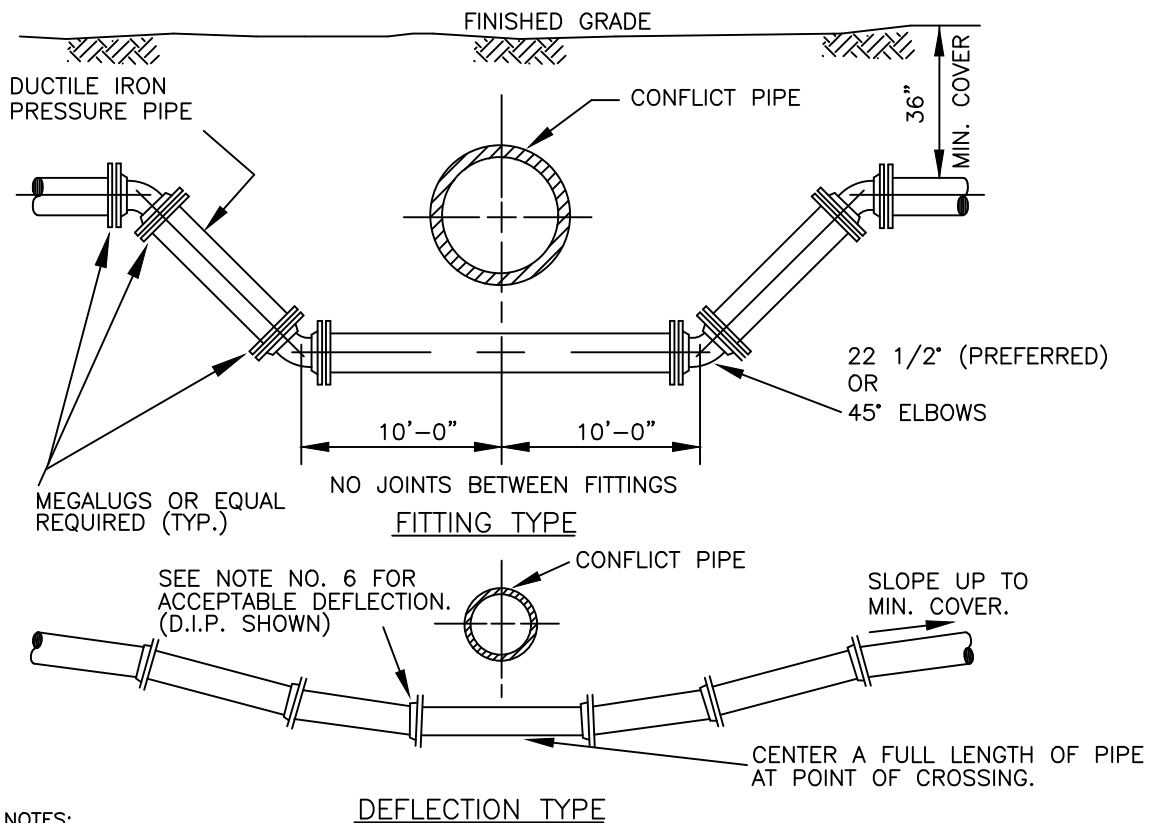
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POTABLE WATER MAIN,
WASTEWATER & STORM SEWER CONFLICT

PAGE NO.

18W



NOTES:

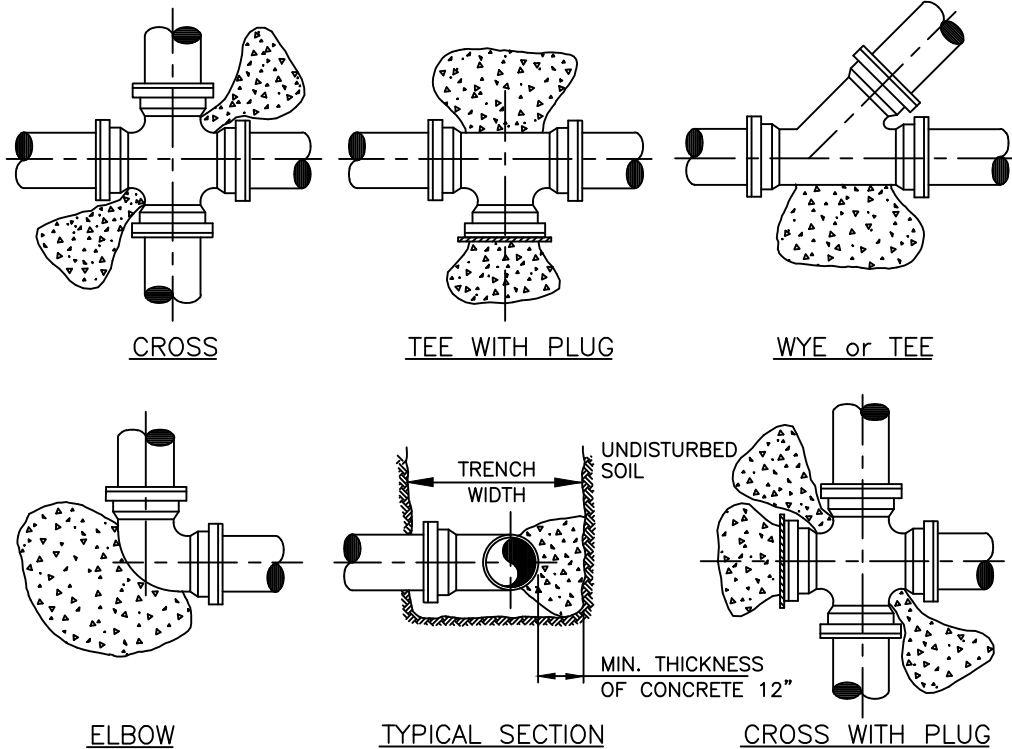
1. STORM SEWER, GRAVITY WASTEWATER AND RECLAIMED WATER MAIN CROSSING UNDER POTABLE WATER MAINS SHALL BE LAID TO PROVIDE A MINIMUM VERTICAL DISTANCE OF TWELVE (12) INCHES BETWEEN THE INVERT OF THE UPPER PIPE AND THE CROWN OF THE LOWER PIPE. WHERE THIS MINIMUM SEPARATION CANNOT BE MAINTAINED, THE CROSSING SHALL BE ARRANGED SO THAT THE STORM/WASTEWATER/RECLAIMED WATER PIPE JOINTS AND POTABLE WATER MAIN JOINTS ARE EQUIDISTANT FROM THE POINT OF CROSSING WITH NO LESS THAN TEN (10) FEET BETWEEN ANY TWO JOINTS, BOTH PIPES SHALL BE D.I.P., AND THE MINIMUM VERTICAL SEPARATION SHALL BE 6 INCHES. WHERE THERE IS NO ALTERNATIVE TO STORM/WASTEWATER/RECLAIMED WATER PIPES CROSSING OVER A POTABLE WATER MAIN, THE CRITERIA FOR MINIMUM 12" VERTICAL SEPARATION BETWEEN LINES AND JOINT ARRANGEMENT, AS STATED ABOVE, SHALL BE REQUIRED, AND BOTH PIPES SHALL BE D.I.P. IRRESPECTIVE OF SEPARATION. D.I.P. IS NOT REQUIRED FOR STORM SEWERS.
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.

PALM BEACH COUNTY CONSTRUCTION STANDARDS & DETAILS

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**POTABLE WATER MAIN/ FORCE MAIN
PRESSURE PIPE CONFLICT DETAIL**

PAGE NO.
19W



PIPE	THRUST BLOCK AREA REQ'D	REMARKS	NOTE:
4"	2.0 SQ. FT.	VALUES ARE FOR 90° BEND, BASED ON 2000 P.S.F. SAFE BEARING LOAD AND PIPE PRESSURE OF 150 P.S.I. FOR OTHER SOILS & PRESSURES THE AREA REQUIRED IS IN DIRECT PROPORTION	FOR OTHER FITTINGS USE THE FOLLOWING FACTORS. TEE 100% 45° BEND 71% 22 1/2° BEND 39% 11 1/4° BEND 20% DEAD END 100%
6"	4.0 SQ. FT.		
8"	6.6 SQ. FT.		
10"	10.0 SQ. FT.		
12"	14.0 SQ. FT.		
14"	18.6 SQ. FT.		

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.

PALM BEACH COUNTY CONSTRUCTION STANDARDS & DETAILS

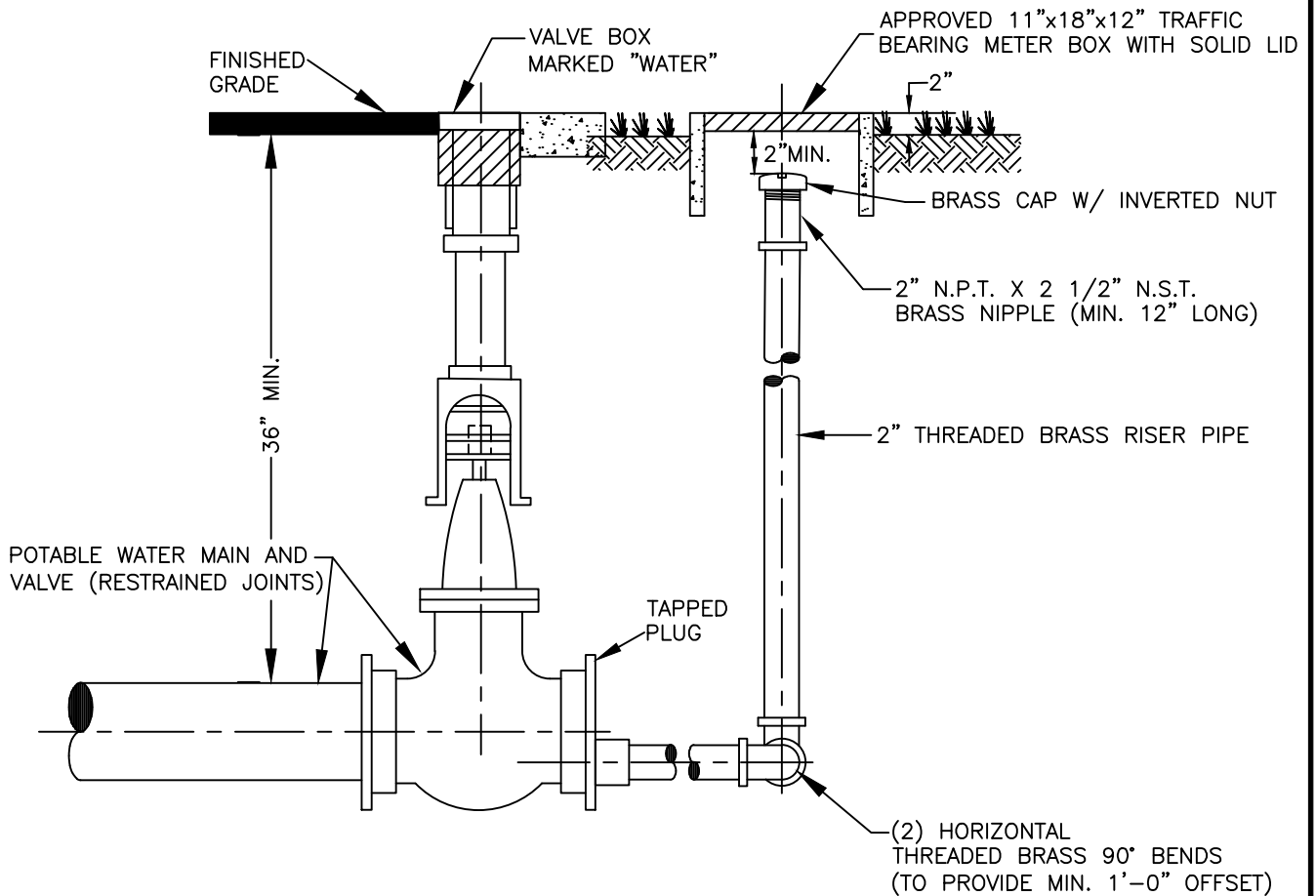
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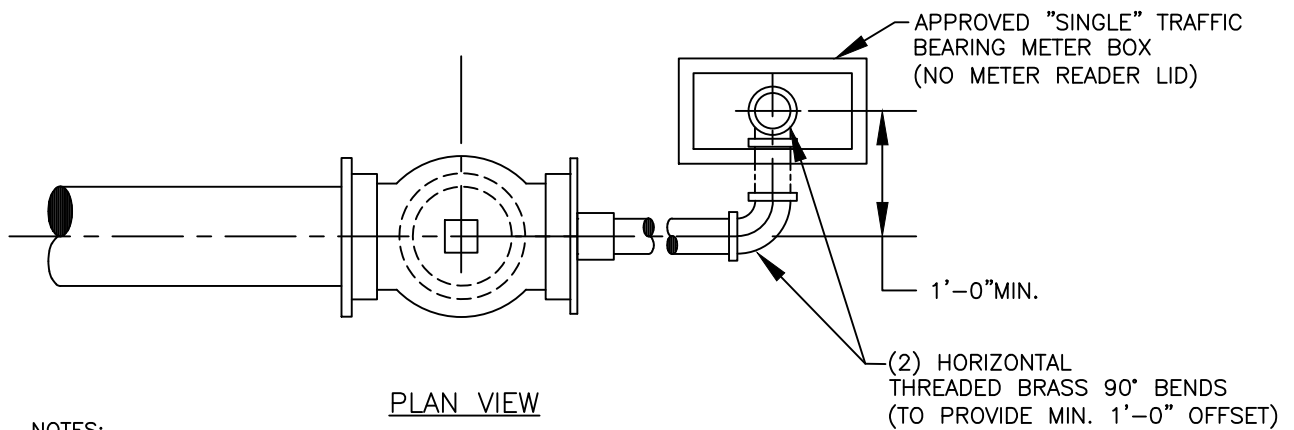
**TYPICAL THRUST BLOCKS
FOR PRESSURE PIPE**

PAGE NO.

20W



PROFILE VIEW



PLAN VIEW

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".

PALM BEACH COUNTY CONSTRUCTION STANDARDS & DETAILS

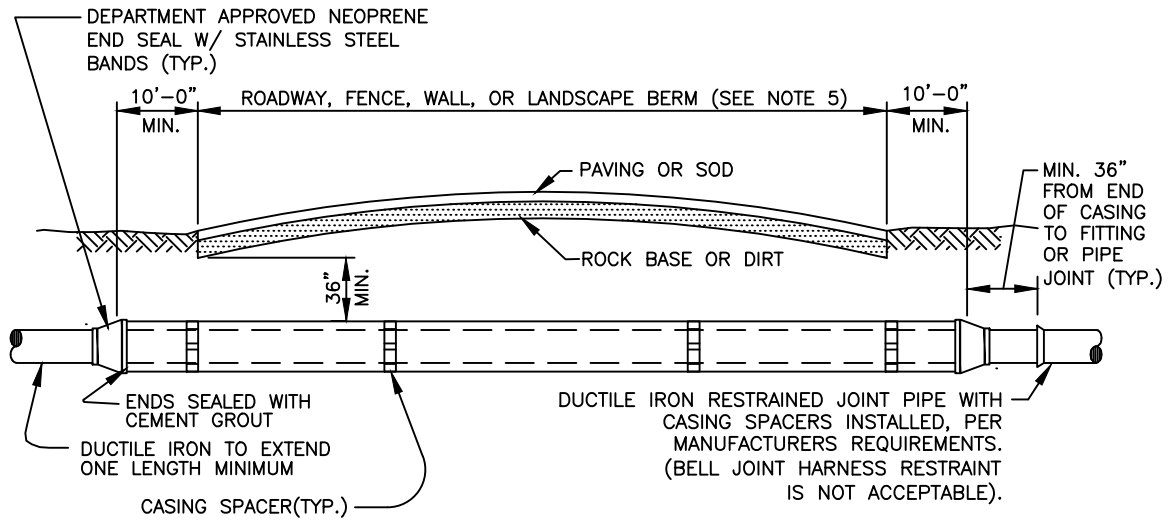
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TYPICAL 2" TERMINAL BLOWOFF
POTABLE WATER DISTRIBUTION MAINS

PAGE NO.

21W



CARRIER PIPE SIZE	STEEL CASING INSIDE DIAMETER (MIN)	MINIMUM WALL THICKNESS (SEE NOTE 2)
4"	12"	.188
6"	14"	.250
8"	20"	.250
10"	20"	.250
12"	24"	.250
14"	24"	.250
16"	30"	.312
18"	30"	.312
20"	36"	.372
24"	42"	.500
30"	48"	.500
36"	54"	.625
42"	60"	.625
48"	72"	.625

NOTES:

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 DFT) 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.

PALM BEACH COUNTY CONSTRUCTION STANDARDS & DETAILS

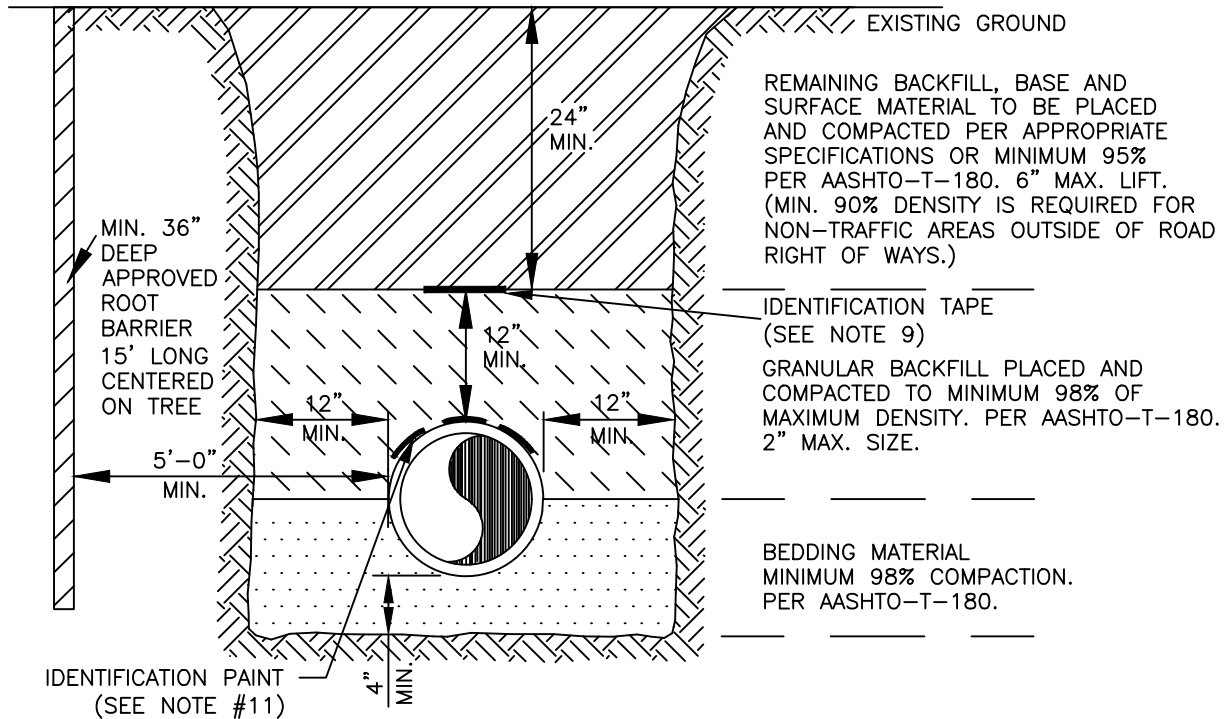
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POTABLE WATER MAIN
CASING INSTALLATION DETAILS

PAGE NO.

22W



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 COMPACTION 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

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TYPICAL TRENCH DETAIL/
ROOT BARRIER INSTALLATION DETAIL

PAGE NO.

23W

CONSTRUCTION PROCEDURES

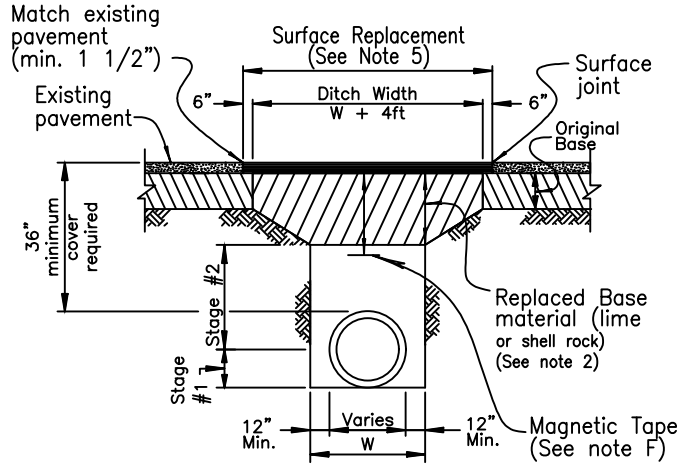
THE BACKFILL FOR THE FIRST AND SECOND STAGES SHALL BE PLACED IN 6" LIFTS (COMPACTED THICKNESS) AND SHALL BE COMPACTED TO 100% OF MAXIMUM DENSITY AS DETERMINED BY AASHTO T-99. *

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.



REPLACEMENT OF FLEXIBLE PAVEMENT FOR PERMITTED PAVEMENT CUT

CONSTRUCTION NOTES

- 1) BEDDING SHALL CONSIST OF IN-SITU GRANULAR MATERIAL OR WASHED AND GRADED LIMEROCK 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, WHICHEVER IS GREATER.
- 3) ASPHALT CONCRETE PAVEMENT JOINTS SHALL BE MECHANICALLY SAWED AND BUTT-JOINED.
- 4) BASE MATERIAL SHALL BE PLACED IN TWO OR THREE LAYERS (6" MAX. PER LAYER) AND EACH LAYER THOROUGHLY ROLLED OR TAMPED 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 FDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION AND COUNTY PPM# EL-0-3606.
- 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.
- C) ENGINEER-OF-RECORD SHALL PROVIDE FULL-TIME INSPECTION DURING THE ENTIRETY OF THE OPEN-CUT OPERATION, BEGINNING WITH THE EXCAVATION AND CONTINUING THROUGH THE COMPLETION OF THE PAVING.
- D) IF THE PAVEMENT IS NOT COMPLETELY RESTORED IMMEDIATELY FOLLOWING THE OPEN CUT, A SMOOTH TEMPORARY PATCH (MINIMUM 1.25" 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 MILLED AND RESURFACED WITH 1-1/2" (ONE AND A HALF INCH) OF SIII OR SI ASPHALT SURFACE COURSE FOR A FULL LANE WIDTH ENCREACHED 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.

PALM BEACH COUNTY CONSTRUCTION STANDARDS & DETAILS

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**OPEN CUT PIPE INSTALLATION
NON-THOROUGHFARE ROAD**

PAGE NO.

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CONSTRUCTION PROCEDURES

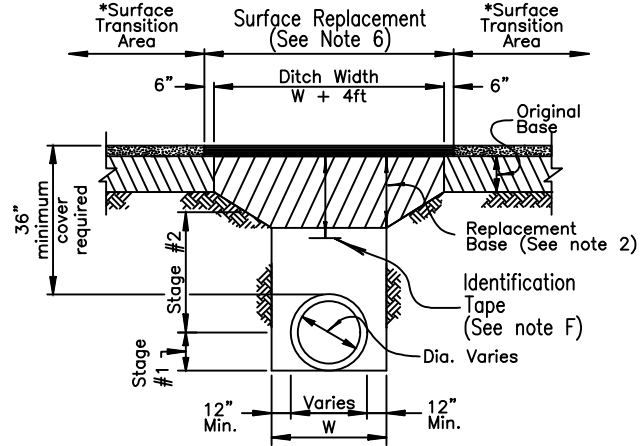
THE BACKFILL FOR THE FIRST AND SECOND STAGES SHALL BE PLACED IN 6" LIFTS (COMPACTED THICKNESS) AND SHALL BE COMPACTED TO 100% OF MAXIMUM DENSITY AS DETERMINED BY AASHTO T-99. *

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.



REPLACEMENT OF FLEXIBLE PAVEMENT FOR PERMITTED PAVEMENT CUT

CONSTRUCTION NOTES

- 1) BEDDING SHALL CONSIST OF IN-SITU GRANULAR MATERIAL OR WASHED AND GRADED LIMEROCK 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 OVER DITCH SHALL BE 16" MINIMUM FOR THOROUGHFARE PLAN ROADS.
- 3) ASPHALT CONCRETE PAVEMENT JOINTS SHALL BE MECHANICALLY SAWED 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 TAMPED 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" SIII 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.
- C) ENGINEER-OF-RECORD WILL PROVIDE FULL-TIME INSPECTION DURING THE ENTIRETY OF THE OPEN-CUT OPERATION, BEGINNING WITH THE EXCAVATION AND CONTINUING THROUGH THE COMPLETION OF THE PAVING.
- D) IF THE PAVEMENT IS NOT COMPLETELY RESTORED IMMEDIATELY FOLLOWING THE OPEN CUT, A SMOOTH TEMPORARY PATCH (MINIMUM 1.25" 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) THE FINAL RESTORATION, THE ROAD SHALL BE MILLED/RESURFACED FOR A FULL LANE WIDTH OF THE TRAVEL LANES ENCROACHED BY THE TRENCH AREA, INCLUDING A TRANSITION AREA OF 50 FT ON EACH SIDE OF THE TRENCH, THE PAVEMENT SHALL BE MILLED AND RESURFACED PER CONSTRUCTION NOTE 6.
- 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.

PALM BEACH COUNTY CONSTRUCTION STANDARDS & DETAILS

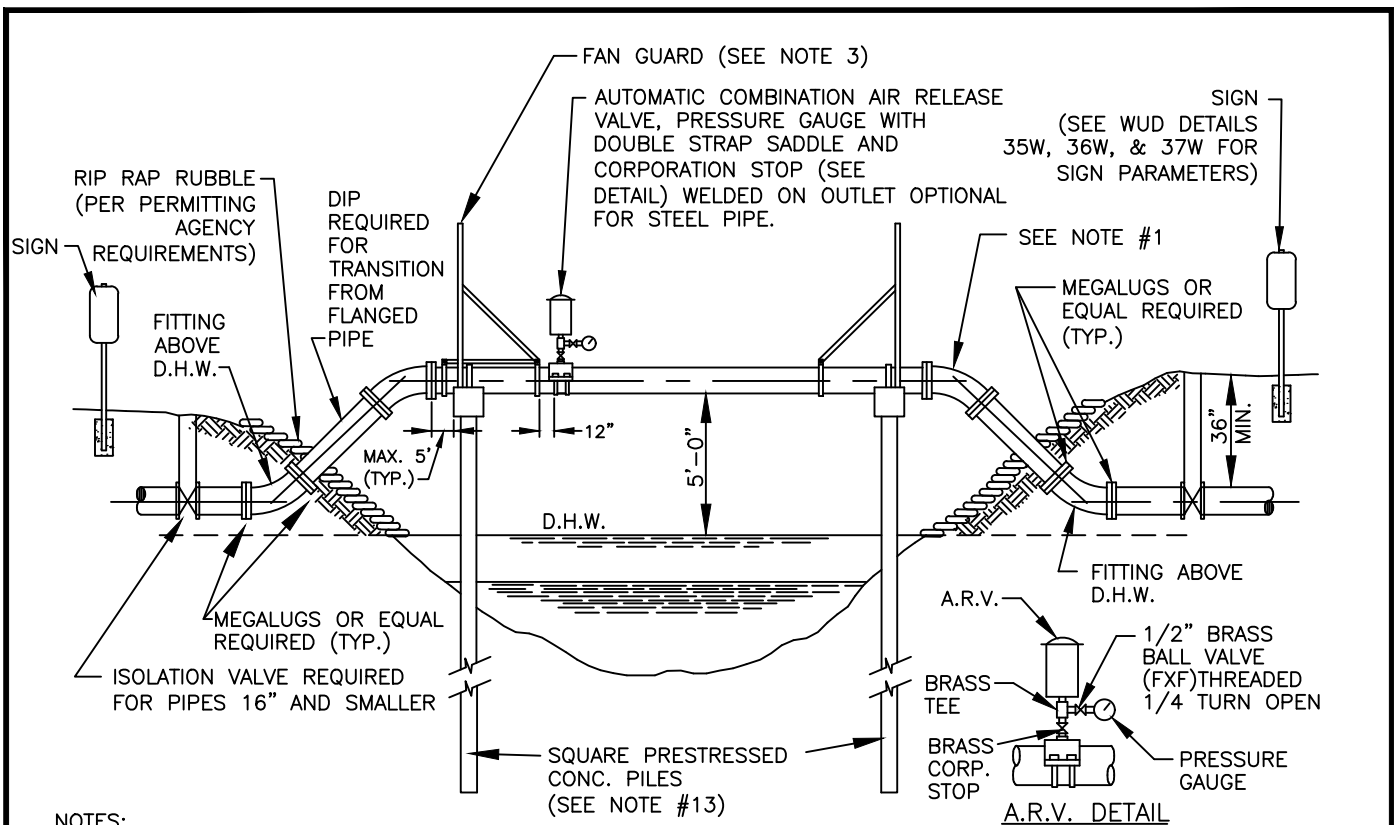
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OPEN CUT PIPE INSTALLATION
THOROUGHFARE ROAD

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NOTES:

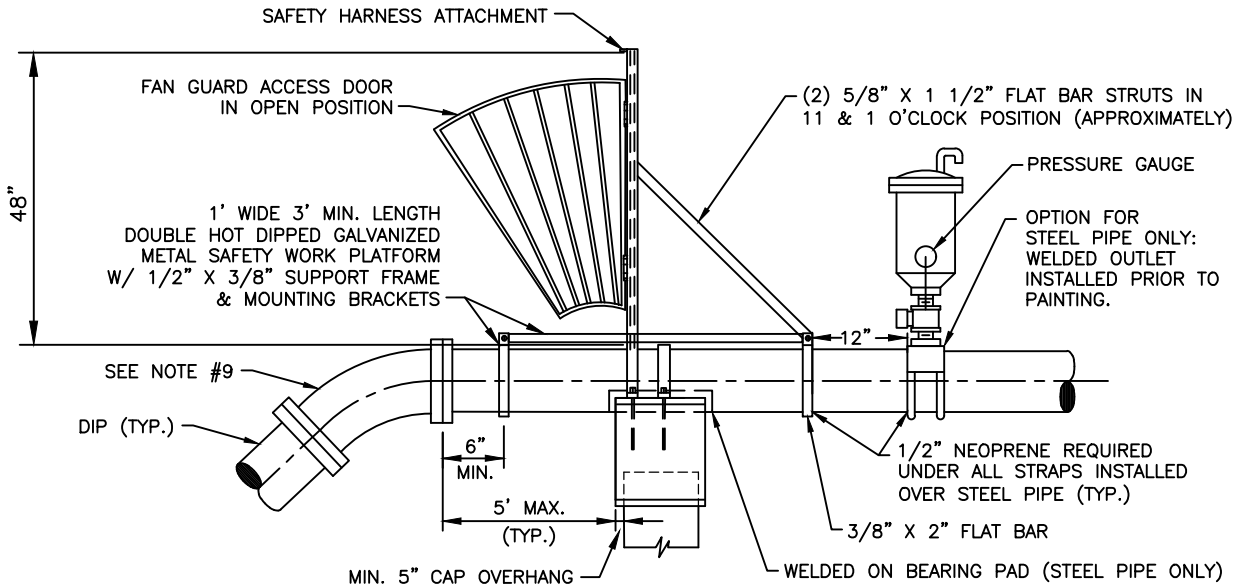
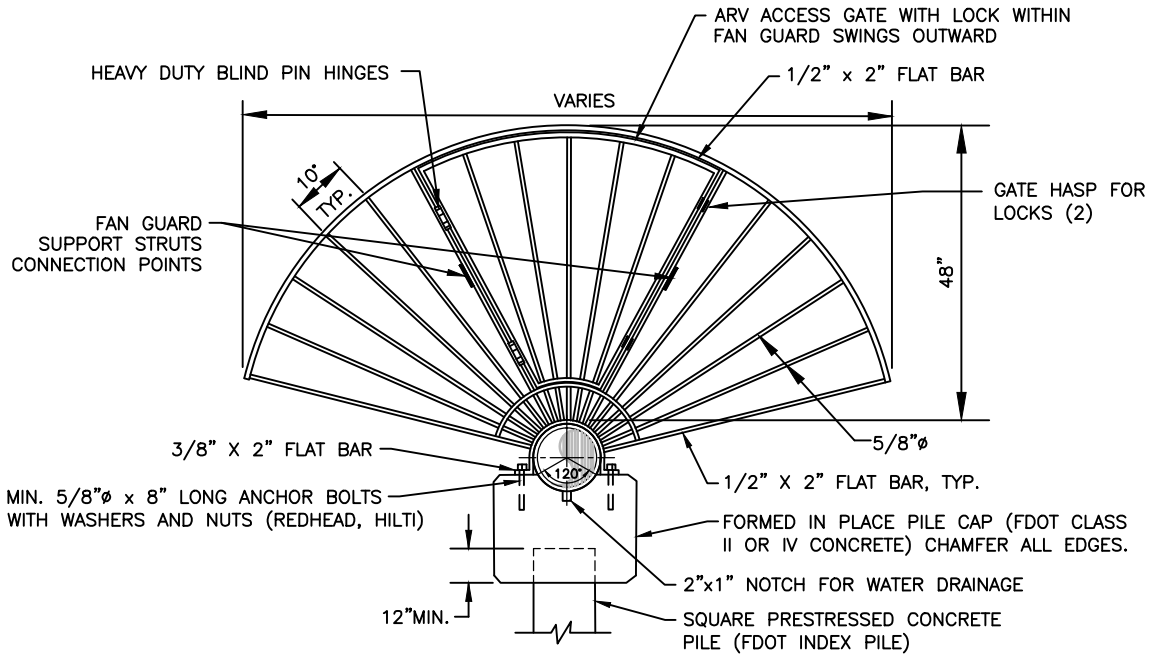
1. ALL EXPOSED PIPE SHALL BE DUCTILE IRON OR PREFABRICATED STEEL WITH FLANGED FITTINGS AND PROFILED GASKETS. RETAINER GLANDS AND UNIFLANGE TYPE FITTINGS ARE NOT TO BE SUBSTITUTED FOR FLANGED FITTINGS. PREFABRICATED STEEL PIPE MAY INCORPORATE WELDED ON LONG RADIUS UPPER BENDS. PREFABRICATED FLANGED PIPE 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. ACCESS PLATFORM AND GATE REQUIRED ON ARV SIDE ONLY.
- 4A. ALL EXPOSED PIPING SHALL BE PAINTED AS SPECIFIED IN THE APPROVED MATERIAL LIST.
- 4B. ALL HARDWARE SHALL BE PAINTED WITH COAL-TAR EPOXY.
5. PIPE SHALL BE CRADLED ON 1/2" THICK NEOPRENE (DUROMETER GRADE 50.) CURRENT FDOT STANDARDS APPLY. NEOPRENE IS REQUIRED AT ALL STRAPS INSTALLED OVER STEEL PIPE. NEOPRENE SHALL EXTEND MIN. 1" BEYOND THE EDGES OF CRADLE AND STRAPS.
6. TIE-DOWN STRAPS MUST PROPERLY FIT AND SECURE PIPE IN CRADLE.
7. PIPE CRADLE IN CAP SHALL CONTACT 1/3 CIRCUMFERENCE OF PIPE. (SEE FAN GUARD DETAIL)
8. SHOW EXISTING CANAL CROSS SECTION ULTIMATE CANAL SECTION AND RELEVANT ELEVATIONS AND DISTANCES ON A TO SCALE DETAIL DRAWING.
9. PILE LIFT CABLE SHALL BE REMOVED BELOW SURFACE; HOLE SHALL BE FILLED WITH EPOXY CEMENT.
10. THREADED AREAS OF BRASS FITTINGS SHALL BE SPIRAL WRAPPED WITH TWO WRAPS OF TEFLON TAPE.
11. THE PRESSURE GAUGE SHALL FACE THE CLOSEST FAN GUARD.
12. THE PRESSURE GAUGE SHALL BE "ASHCROFT NO. 45-1009A" OR APPROVED EQUAL.
13. THE PILES AND CAP DESIGN SHALL BE SHOWN ON TO SCALE SIGNED AND SEALED 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 SEALED 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

PALM BEACH COUNTY CONSTRUCTION STANDARDS & DETAILS

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POTABLE WATER MAIN TYPICAL
AERIAL CANAL CROSSING - SINGLE PIPE (SINGLE PILES)

PAGE NO.
26W



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 PBCWUD 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.

PALM BEACH COUNTY CONSTRUCTION STANDARDS & DETAILS

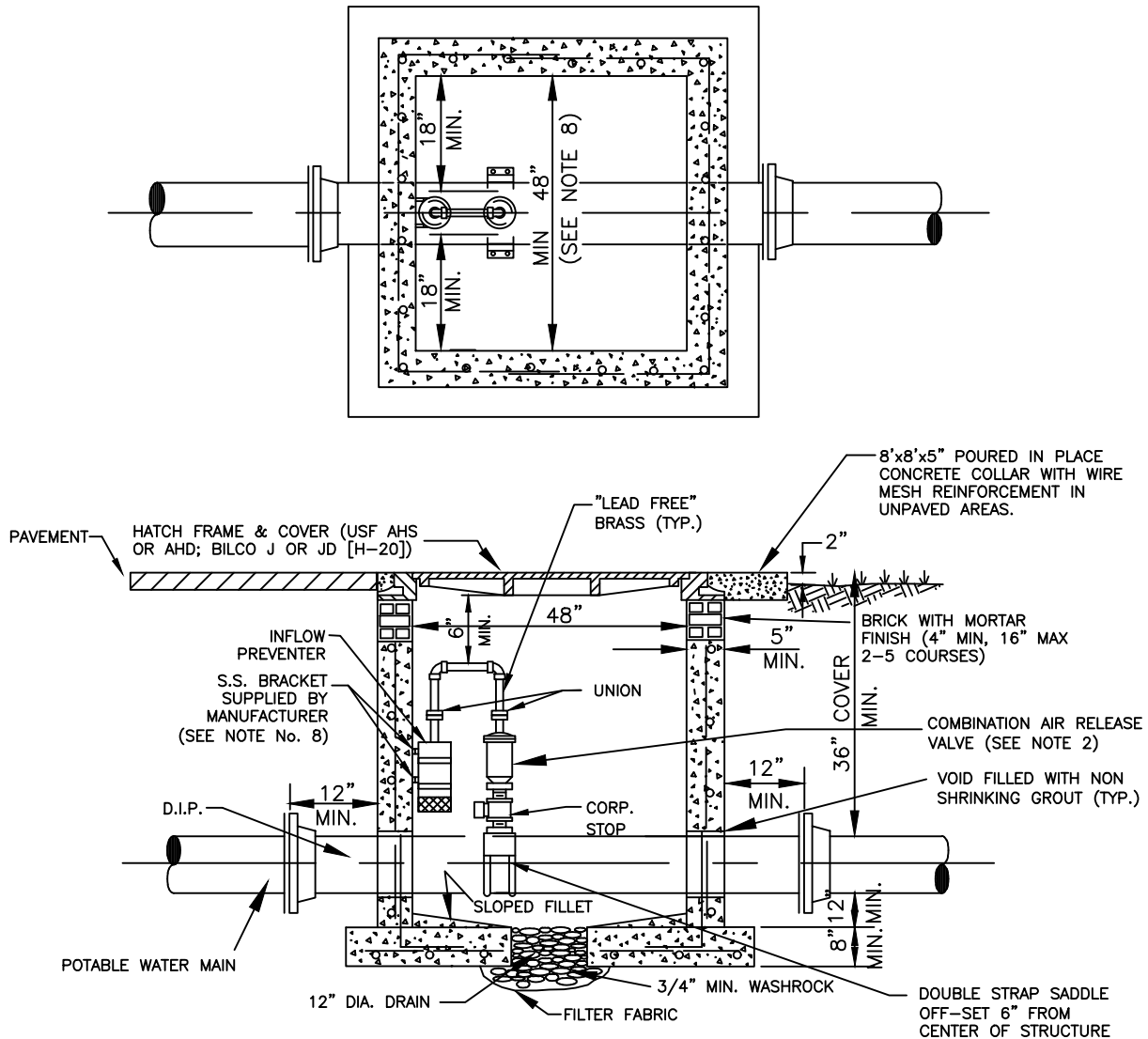
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FAN GUARD/ PILE CAP DESIGN -
SINGLE PIPE (SINGLE PILES)

PAGE NO.

27W



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 (ARV) SHALL BE TYPE AND SIZE APPROPRIATE FOR SERVICE INTENDED ALTHOUGH A 1" MINIMUM SIZED ARV 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 TEFLON TAPE.
 7. LARGER VAULTS WILL BE REQUIRED FOR PIPES LARGER THAN 12"
- | PIPE SIZE | MIN. VAULT SIZE |
|-----------|-----------------|
| 16"-24" | 4'X5' |
| 30"-42" | 4'X6' |
8. SHOP DRAWINGS ARE REQUIRED FOR CUSTOM MADE BRACKETS

PALM BEACH COUNTY CONSTRUCTION STANDARDS & DETAILS

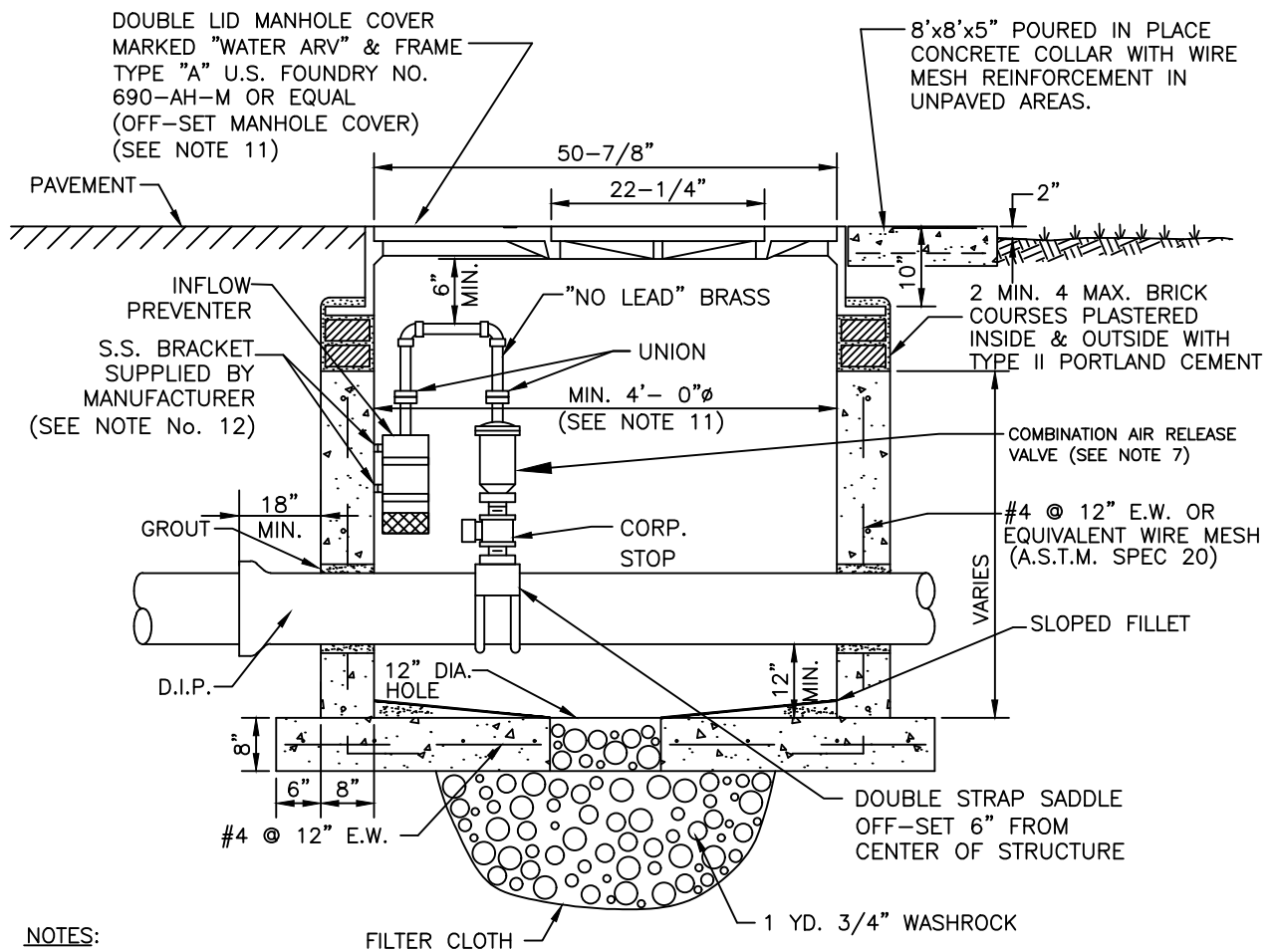
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POTABLE W.M. UNDERGROUND AIR RELEASE VALVE & VAULT IN NON-TRAFFIC AREAS OUTSIDE OF ROAD R/W

PAGE NO.

28W



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. 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"

PIPE SIZE	MIN. MANHOLE DIAMETER
16"-24"	60"
30"-42"	72"
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

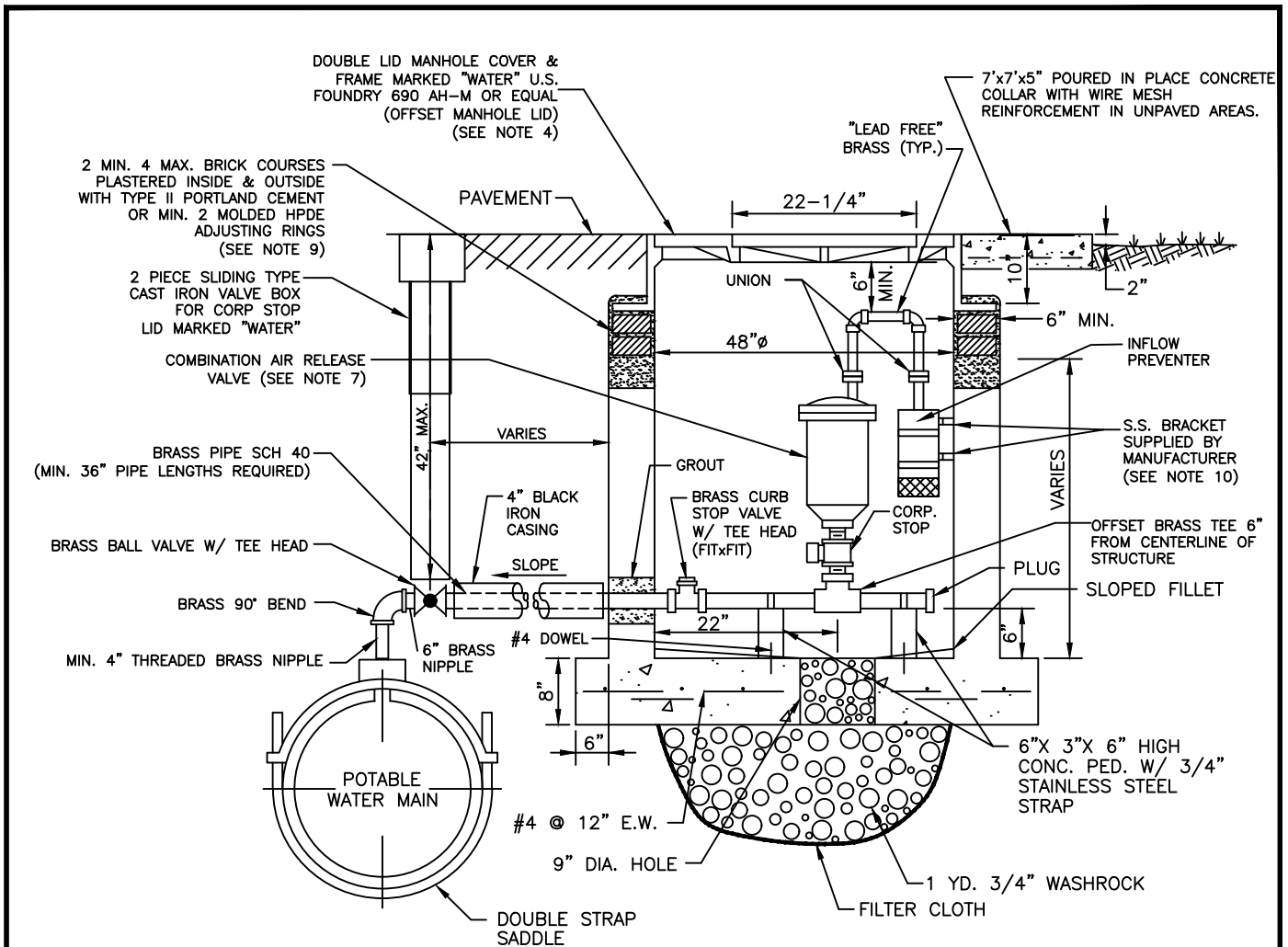
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**POTABLE WATER MAIN AIR RELEASE MANHOLE
IN PAVED AREA AND IN ROAD R/W**

PAGE NO.

29W



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 TEFLON TAPE.
9. IN LIEU OF BRICK WORK, APPROVED PRECAST CONCRETE ADJUSTING RINGS MAY BE USED. INSTALLATION SHALL FOLLOW MANUFACTURERS RECOMMENDATIONS.
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.

PALM BEACH COUNTY CONSTRUCTION STANDARDS & DETAILS

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POTABLE WATER MAIN OFF-SET
UNDERGROUND AIR RELEASE VALVE

PAGE NO.

30W

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)

AVG. TEST PRESSURE PSI	PIPE DIAMETER (INCHES)															
	2	3	4	6	8	10	12	14	16	18	20	24	30	36	42	48
150	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
200	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

FORMULA BASIS: $L = \frac{(S) \times (D) \times (P)^{1/2}}{148,000} \times 1/2$

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 ADDED 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 LINE BEING TESTED DIVIDED BY 1,000. IF THE LINE 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 AWWA 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.

PALM BEACH COUNTY CONSTRUCTION STANDARDS & DETAILS

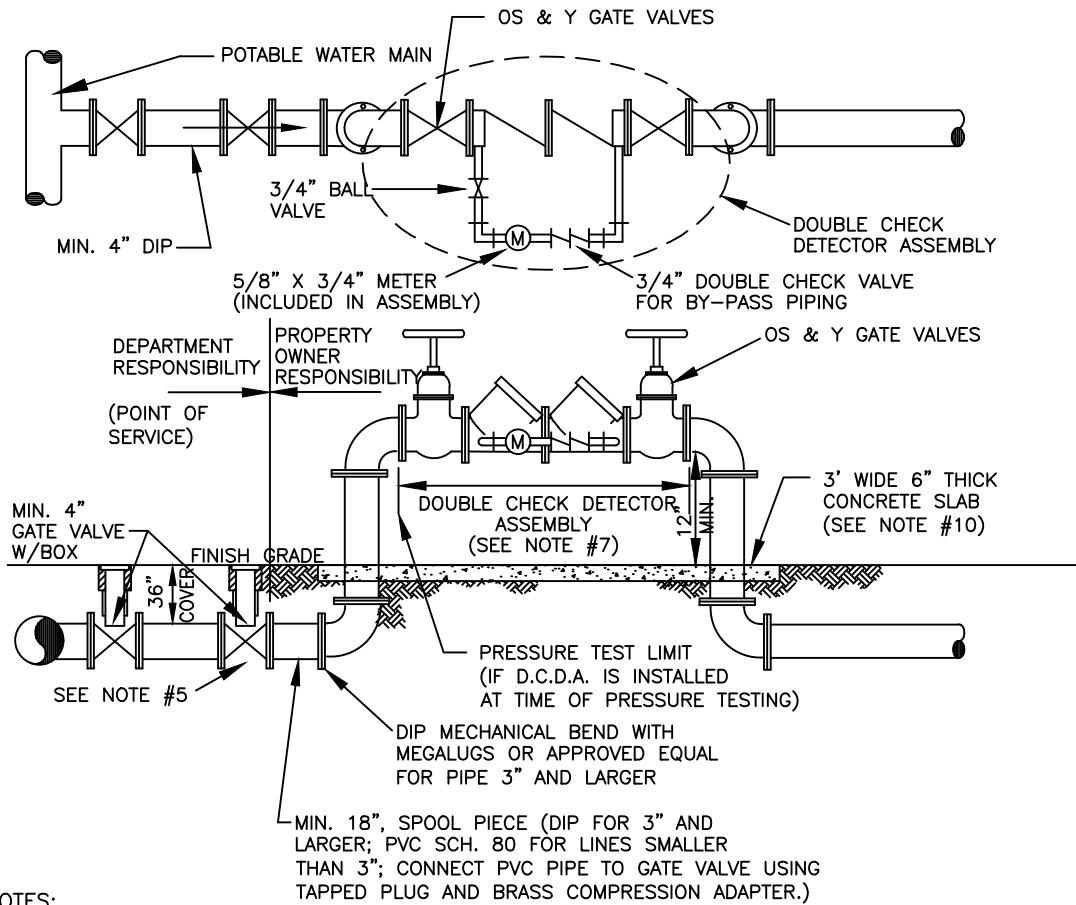
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POTABLE WATER MAIN PRESSURE TEST CRITERIA

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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 SOUTHERN CALIFORNIA (U.S.C.) OR THE A.S.S.E. (WITH ONE YEAR FIELD TESTING).
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".

PALM BEACH COUNTY CONSTRUCTION STANDARDS & DETAILS

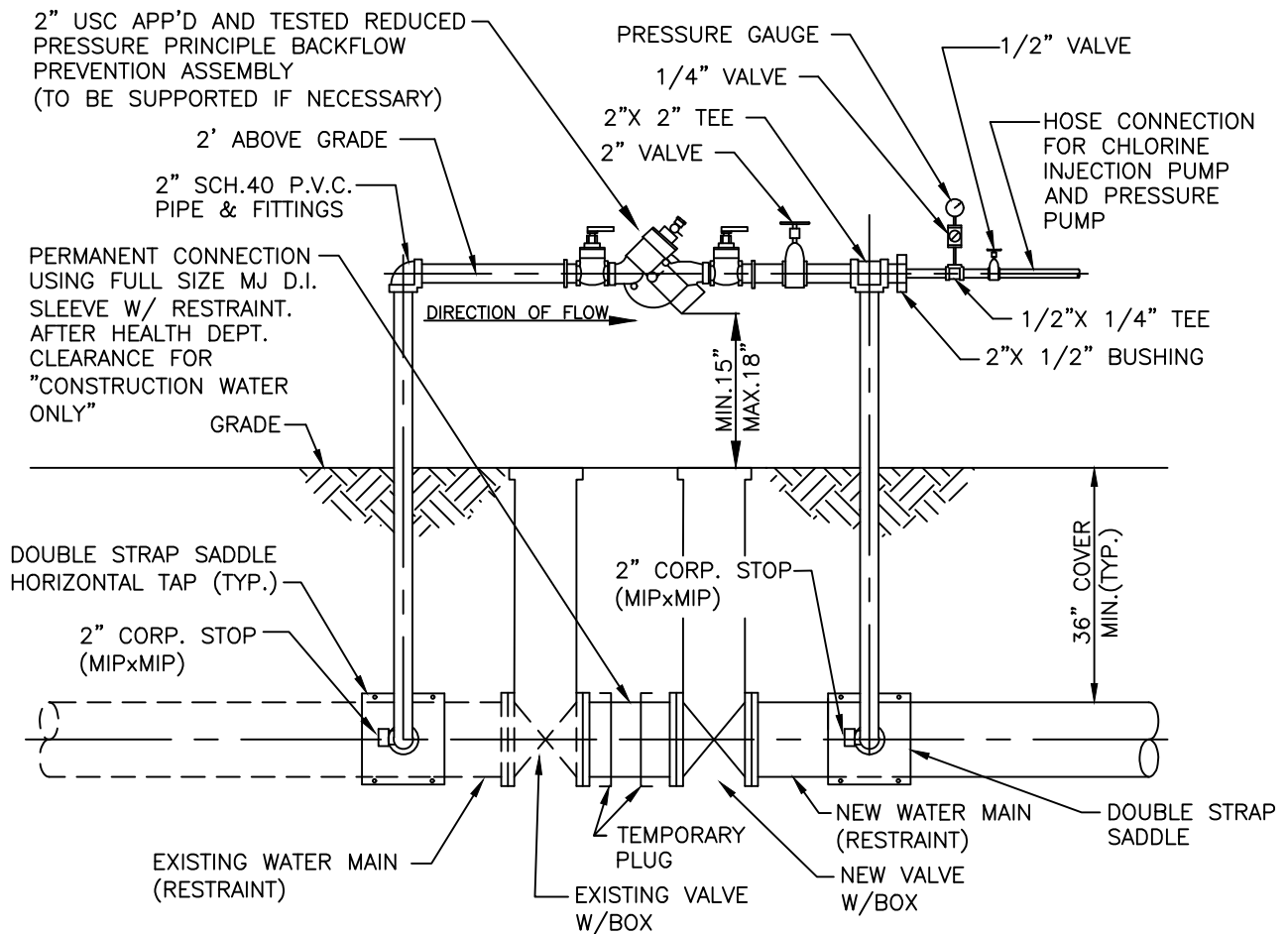
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DOUBLE CHECK DETECTOR ASSEMBLY

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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".

PALM BEACH COUNTY CONSTRUCTION STANDARDS & DETAILS

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STANDARD POTABLE WATER MAIN TIE-IN

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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)

FITTING TYPE	PIPE SIZE								200psi				
	4"	6"	8"	10"	12"	16"	20"	24"	30"	36"	42"	48"	
90° HORIZ. BEND	14	20	25	30	35	45	54	62	98	112	124	135	
45° HORIZ. BEND	6	8	11	13	15	19	22	26	41	46	51	56	
22.5° HORIZ. BEND	3	4	5	6	7	9	11	12	19	22	25	27	
11.25° HORIZ. BEND	1	2	3	3	4	4	5	6	10	11	12	13	
90° VERT. OFFSET	UPPER BEND	29	41	53	64	74	95	115	134	214	246	276	304
	LOWER BEND	7	10	13	16	19	25	30	35	57	66	74	83
45° VERT. OFFSET	UPPER BEND	12	19	24	29	34	39	48	56	89	102	114	126
	LOWER BEND	3	4	6	7	8	10	12	15	23	27	31	34
22.5° VERT. OFFSET	UPPER BEND	6	9	12	14	17	19	23	27	43	49	55	60
	LOWER BEND	1	2	4	4	4	5	6	7	11	13	15	16
11.25° VERT. OFFSET	UPPER BEND	3	4	6	7	8	9	11	13	21	24	27	30
	LOWER BEND	1	1	1	2	2	2	3	3	6	6	7	8
PLUG (DEAD END)	32	45	59	70	83	107	129	151	214	246	276	304	
IN-LINE VALVE	32	45	45	45	45	55	65	80	110	125	140	155	
TEE (BRANCH RESTRAINT)	4"X Ø	23	-	-	-	-	-	-	-	-	-	-	
	6"X Ø	21	35	-	-	-	-	-	-	-	-	-	
	8"X Ø	18	34	47	-	-	-	-	-	-	-	-	
	10"X Ø	16	32	46	58	-	-	-	-	-	-	-	
	12"X Ø	13	30	44	57	69	-	-	-	-	-	-	
	16"X Ø	7	26	41	55	67	90	-	-	-	-	-	
	20"X Ø	1	21	38	52	65	88	109	-	-	-	-	
	24"X Ø	1	16	34	49	62	86	108	129	-	-	-	
	30"X Ø	1	8	28	44	58	83	106	127	208	-	-	
	36"X Ø	1	1	22	39	54	80	103	124	206	240	-	
	42"X Ø	1	1	15	33	49	77	100	122	205	239	270	
48"X Ø	1	1	7	27	44	73	97	120	203	238	269	298	
REDUCER (LARGER PIPE RESTRAINT)	6"X Ø	23	-	-	-	-	-	-	-	-	-	-	
	8"X Ø	38	25	-	-	-	-	-	-	-	-	-	
	10"X Ø	57	43	24	-	-	-	-	-	-	-	-	
	12"X Ø	72	60	44	41	-	-	-	-	-	-	-	
	16"X Ø	99	90	78	75	45	-	-	-	-	-	-	
	20"X Ø	123	116	107	105	81	45	-	-	-	-	-	
24"X Ø	146	140	132	131	111	82	45	-	-	-	-		
200psi	30"X Ø	209	204	197	188	177	153	116	75	-	-	-	
	36"X Ø	243	236	233	226	217	196	168	135	74	-	-	
	42"X Ø	273	270	265	259	252	234	211	183	133	72	-	
	48"X Ø	301	298	294	289	283	268	249	226	183	131	71	

NOTES:

- THE DATA IN THE ABOVE TABLE ARE BASED UPON THE FOLLOWING INSTALLATION CONDITIONS:
 SOIL TYPE-SAND TEST PRESSURE-150 PSI/200 PSI DEPTH OF BURY-3'
 TRENCH TYPE-3 SAFETY FACTOR- 1.5 VERTICAL OFFSET-3'
 MINIMUM PIPE LENGTH ALONG TEE RUN-5'
- THE RESTRAINED PIPE LENGTHS APPLY TO DUCTILE IRON AND PVC PIPE.
- ALL JOINTS BETWEEN UPPER AND LOWER BENDS SHALL BE RESTRAINED.
- RESTRAINED PIPE LENGTHS APPLY TO PIPE ON BOTH SIDES OF VALVES AND FITTINGS.
- MULTIPLY PIPE LENGTH BY 1.4 FOR POLYETHYLENE ENCASED PIPE.
- RESTRAINED PIPE LENGTHS EQUAL TO AN "INLINE VALVE" CONDITION ARE REQUIRED AT EACH END OF A TRANSITION FROM HDPE PIPE TO OTHER PIPE MATERIALS.
- DESIGN ENGINEER IS RESPONSIBLE TO PROPERLY SIZE THE RESTRAINT PIPE LENGTHS FOR THE PROJECT

PALM BEACH COUNTY CONSTRUCTION STANDARDS & DETAILS

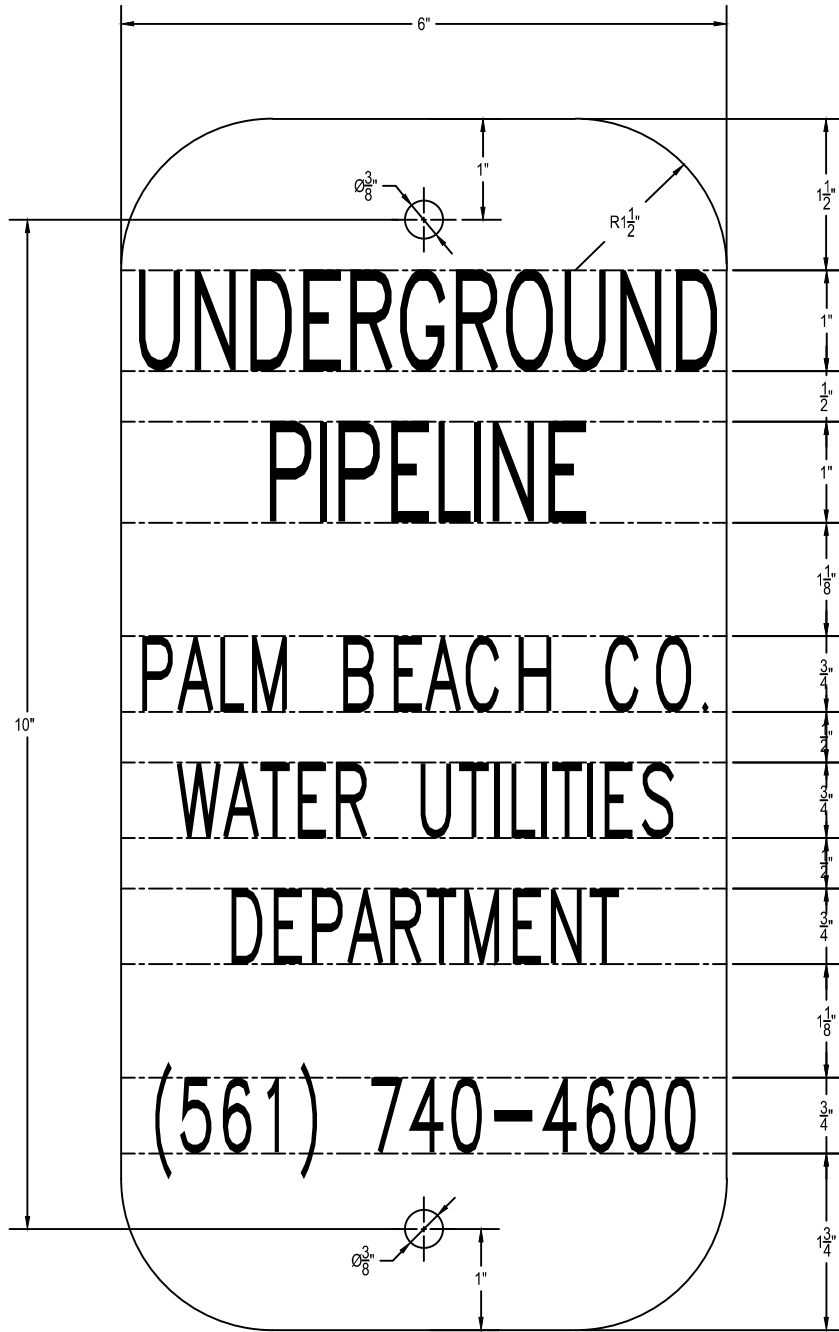
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**MECHANICAL THRUST RESTRAINT
MINIMUM PIPE LENGTHS**

PAGE NO.

34W



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 ($\frac{3}{8}$ " DIAM.), 10" O.C.

PALM BEACH COUNTY CONSTRUCTION STANDARDS & DETAILS

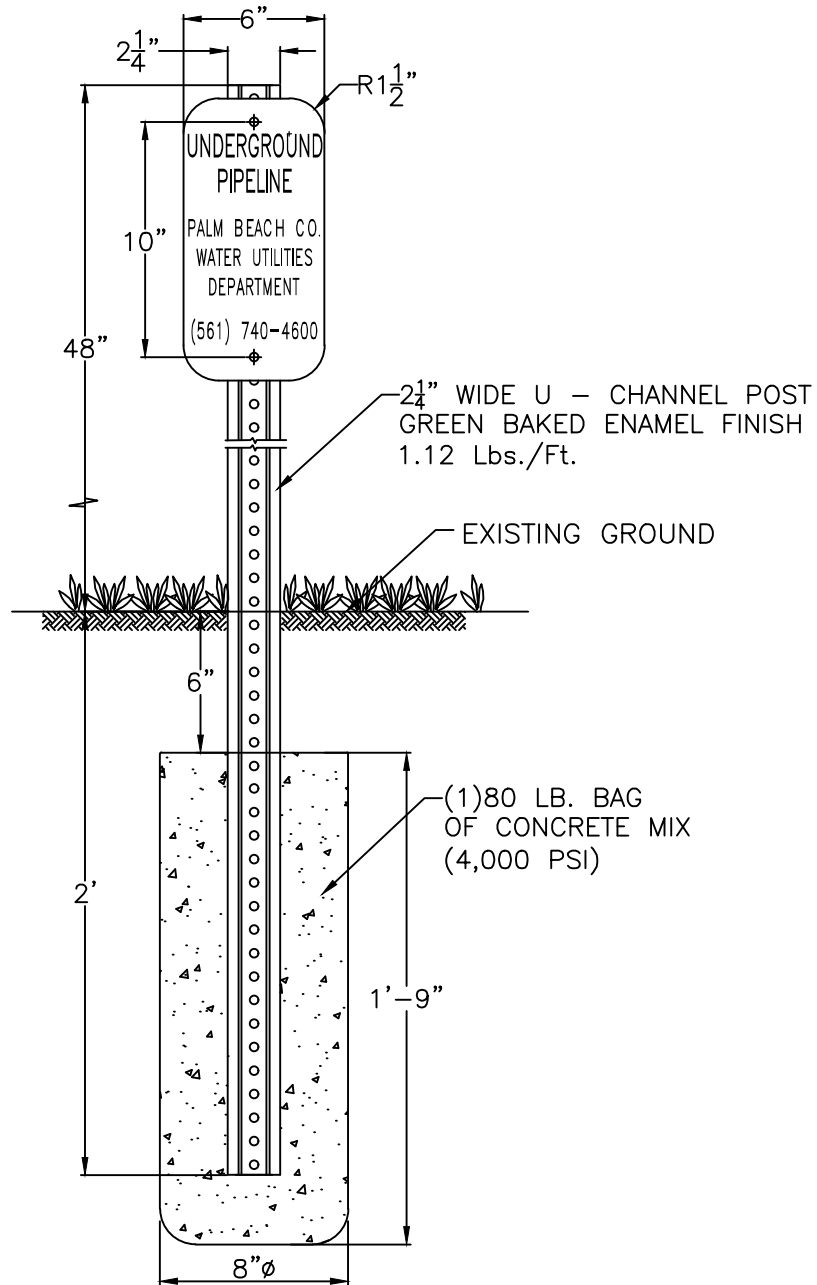
REVISION/ISSUE DATE

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UNDERGROUND PIPELINE
SIGN DETAIL

PAGE NO.

35W



- 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.

PALM BEACH COUNTY CONSTRUCTION STANDARDS & DETAILS

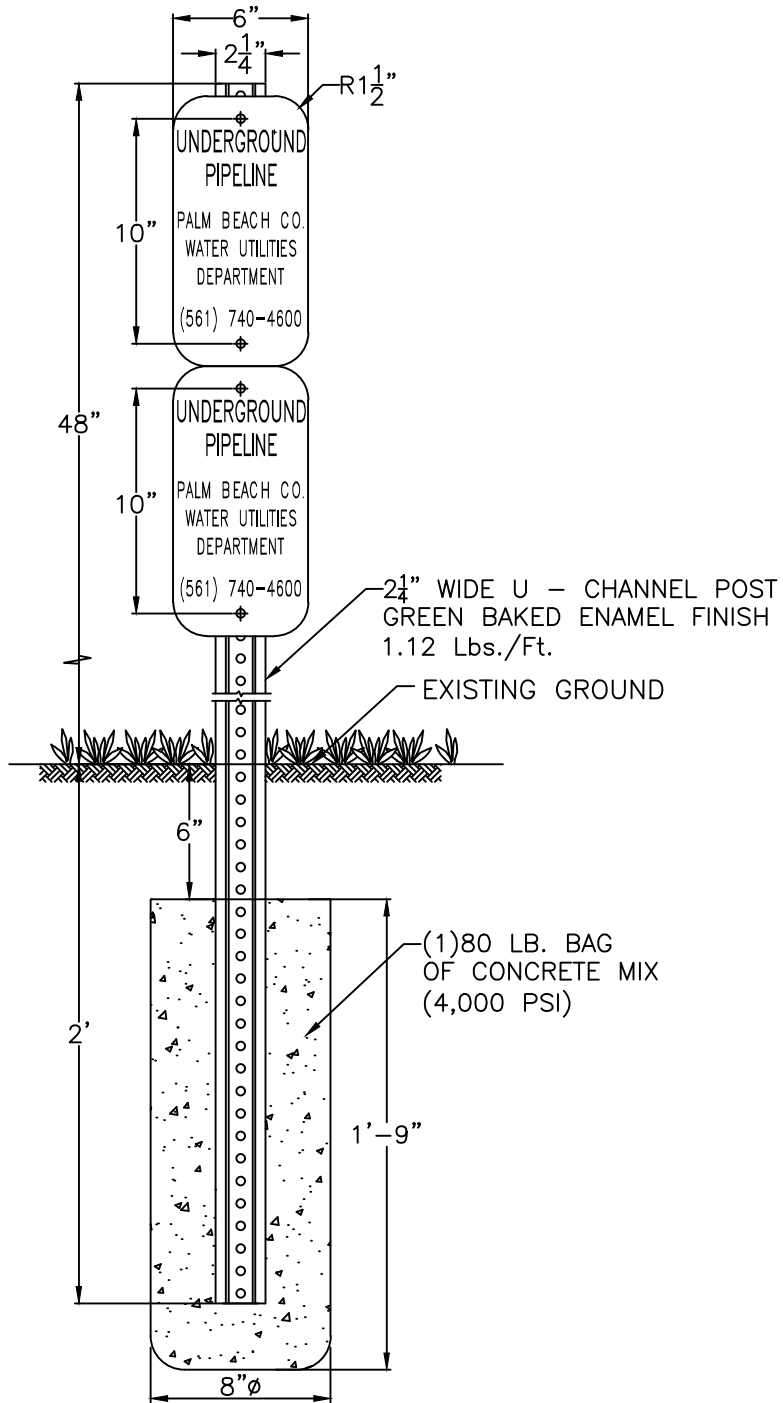
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SINGLE UNDERGROUND PIPELINE
SIGN DETAIL

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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.

PALM BEACH COUNTY CONSTRUCTION STANDARDS & DETAILS

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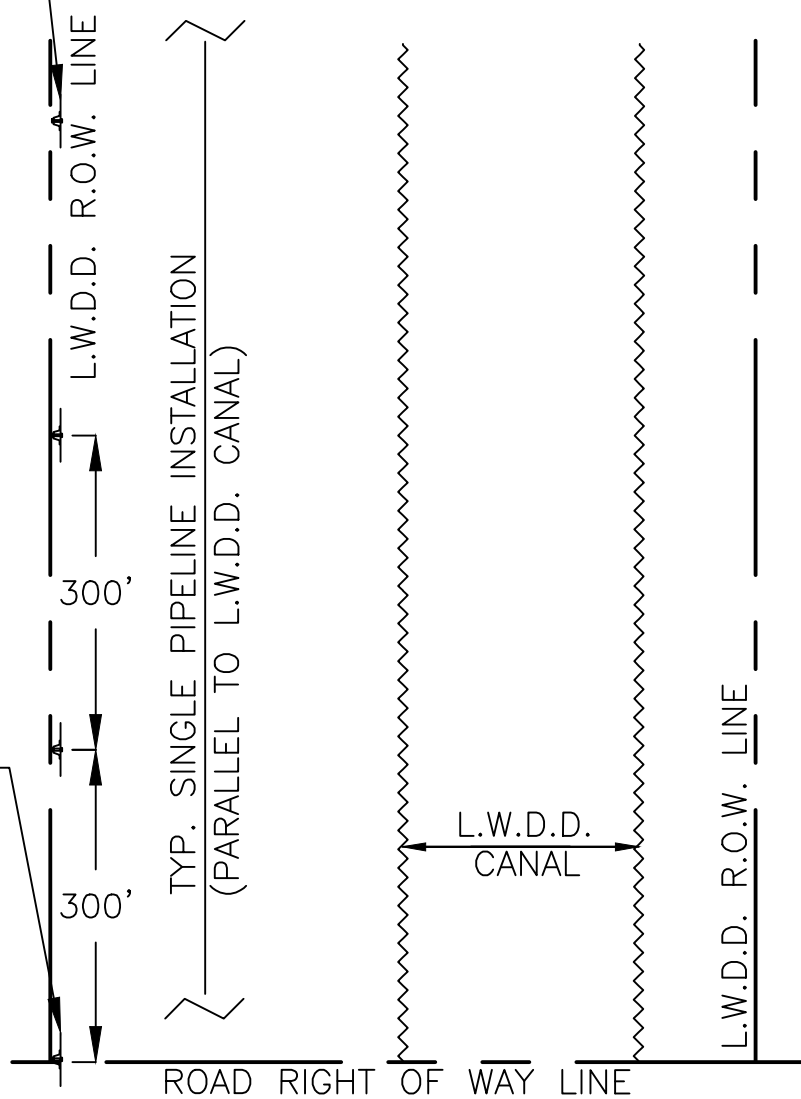
DUAL UNDERGROUND PIPELINE
SIGN DETAIL

PAGE NO.

37W

PROPOSED SINGLE
SIGN LOCATION
FACING TOWARD
PIPELINE
(300' SPACING MAX.)

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



ROADWAY

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.

PALM BEACH COUNTY CONSTRUCTION STANDARDS & DETAILS

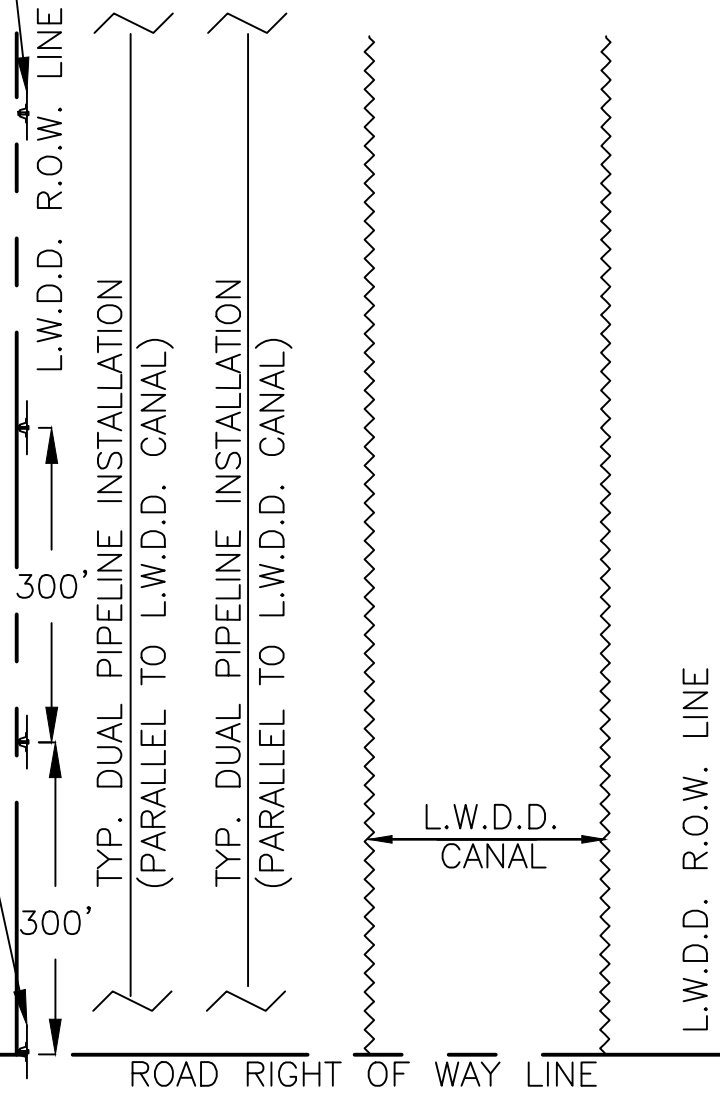
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**L.W.D.D. - SINGLE PIPE PARALLEL INSTALLATION
UNDERGROUND PIPELINE SIGN INSTALLATION DETAIL**

PAGE NO.
38W

PROPOSED SINGLE
SIGN LOCATION
FACING TOWARD
PIPELINE
(300' SPACING MAX.)

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



ROADWAY

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.

PALM BEACH COUNTY CONSTRUCTION STANDARDS & DETAILS

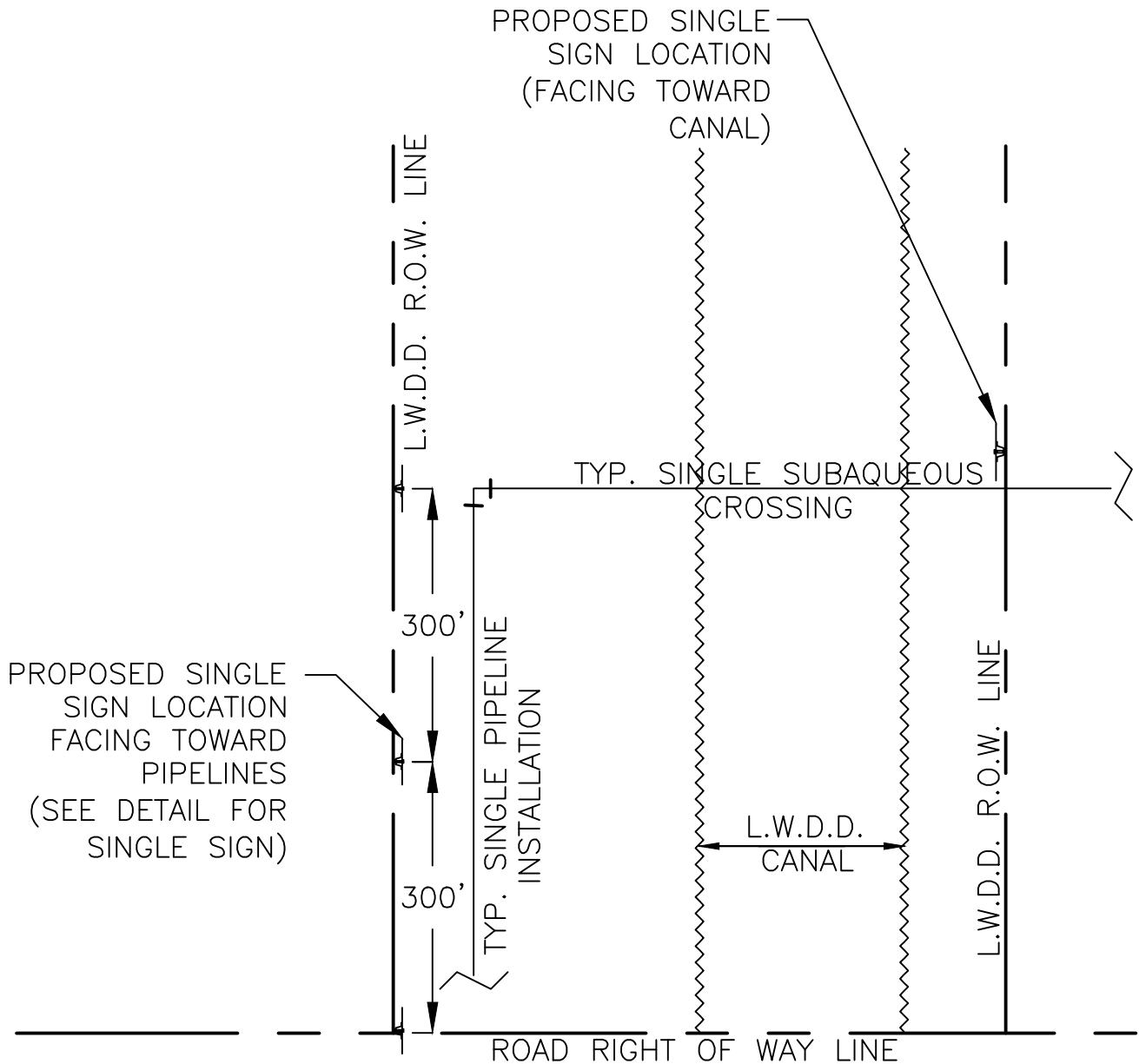
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L.W.D.D. - DUAL PARALLEL INSTALLATION
UNDERGROUND PIPELINE SIGN INSTALLATION DETAIL

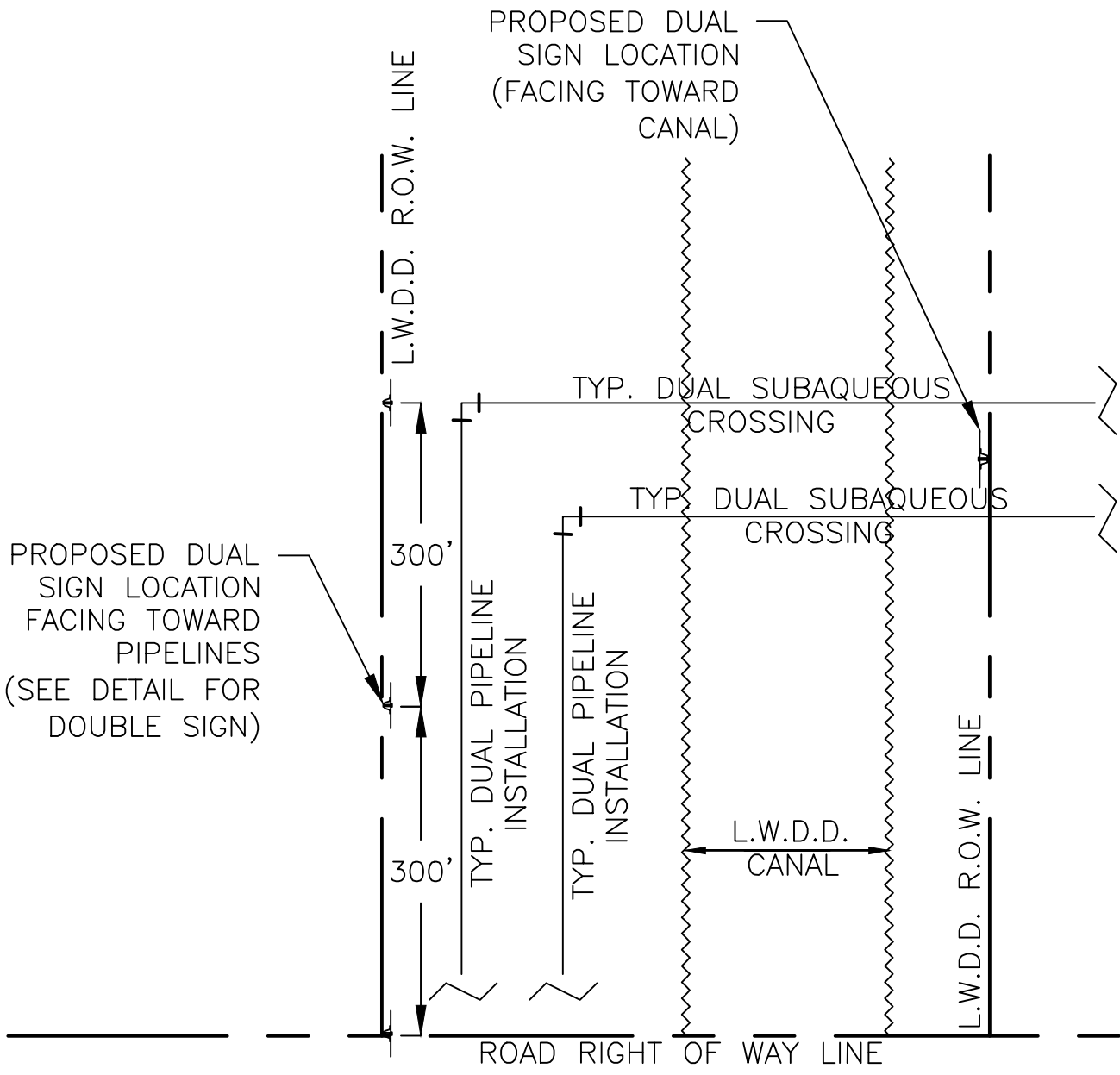
PAGE NO.

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- 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.

PALM BEACH COUNTY CONSTRUCTION STANDARDS & DETAILS		
REVISION/ISSUE DATE 6/2019	L.W.D.D. – SINGLE PIPE SUBAQUEOUS CROSSING UNDERGROUND PIPELINE SIGN INSTALLATION DETAIL	PAGE NO. 40W



ROADWAY

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.

PALM BEACH COUNTY CONSTRUCTION STANDARDS & DETAILS

REVISION/ISSUE DATE

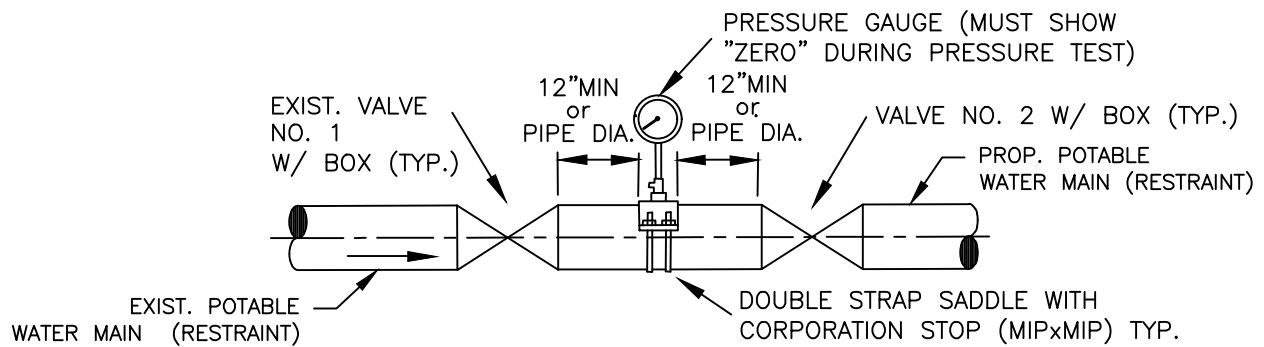
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L.W.D.D. - DUAL PIPE SUBAQUEOUS CROSSING
UNDERGROUND PIPELINE SIGN INSTALLATION DETAIL

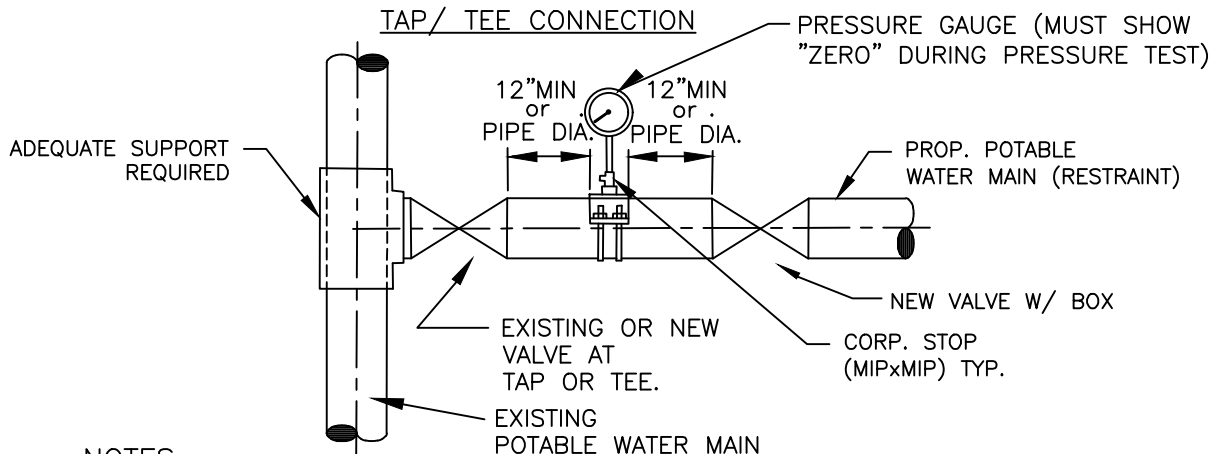
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IN-LINE CONNECTION

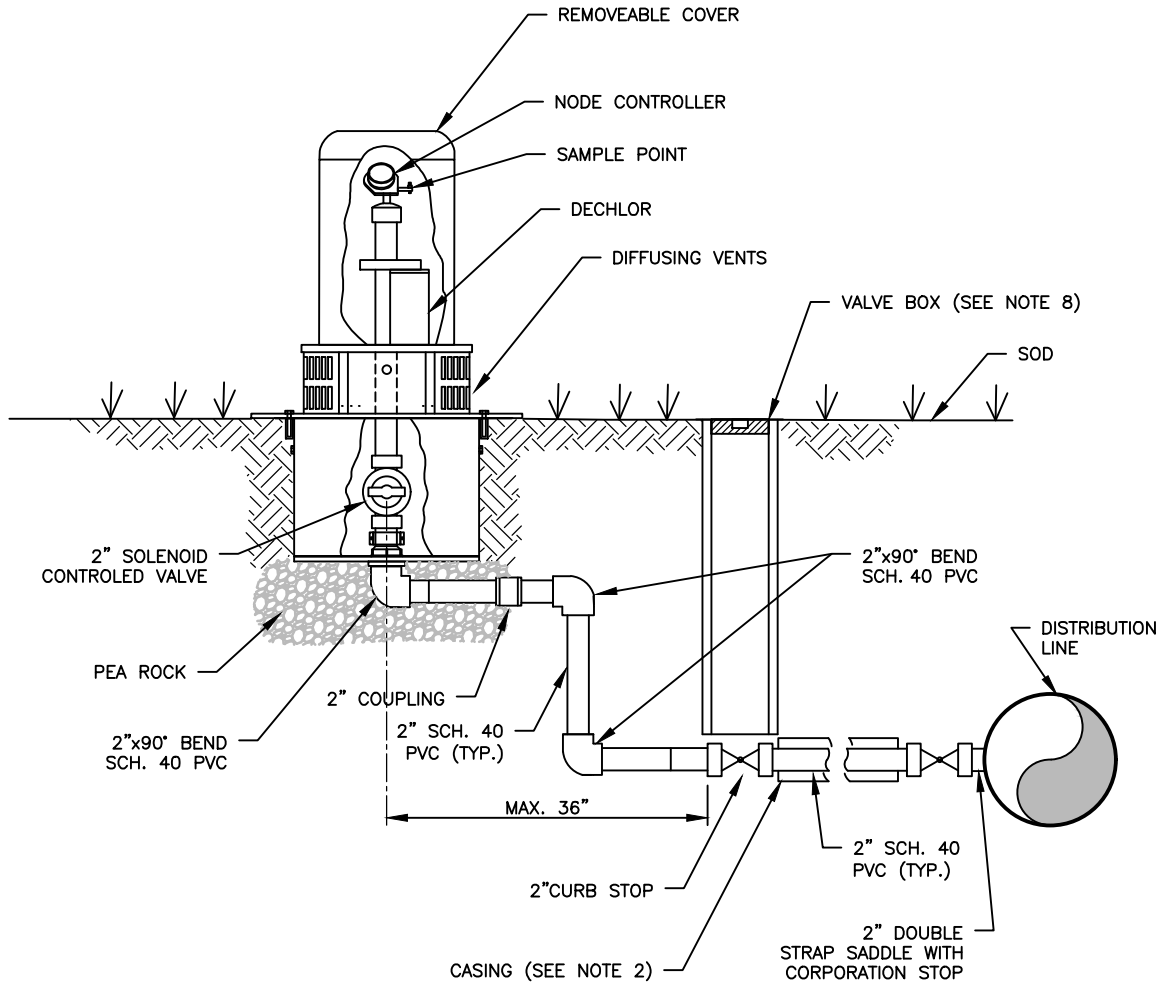


TAP/ TEE CONNECTION



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 TEFLON 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".



NOTES:

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 TEFLON 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.
8. WHEN VALVE BOX IS LOCATED IN GRASS A CONCRETE COLLAR IS REQUIRED PER DEPARTMENT STANDARDS.

PALM BEACH COUNTY CONSTRUCTION STANDARDS & DETAILS

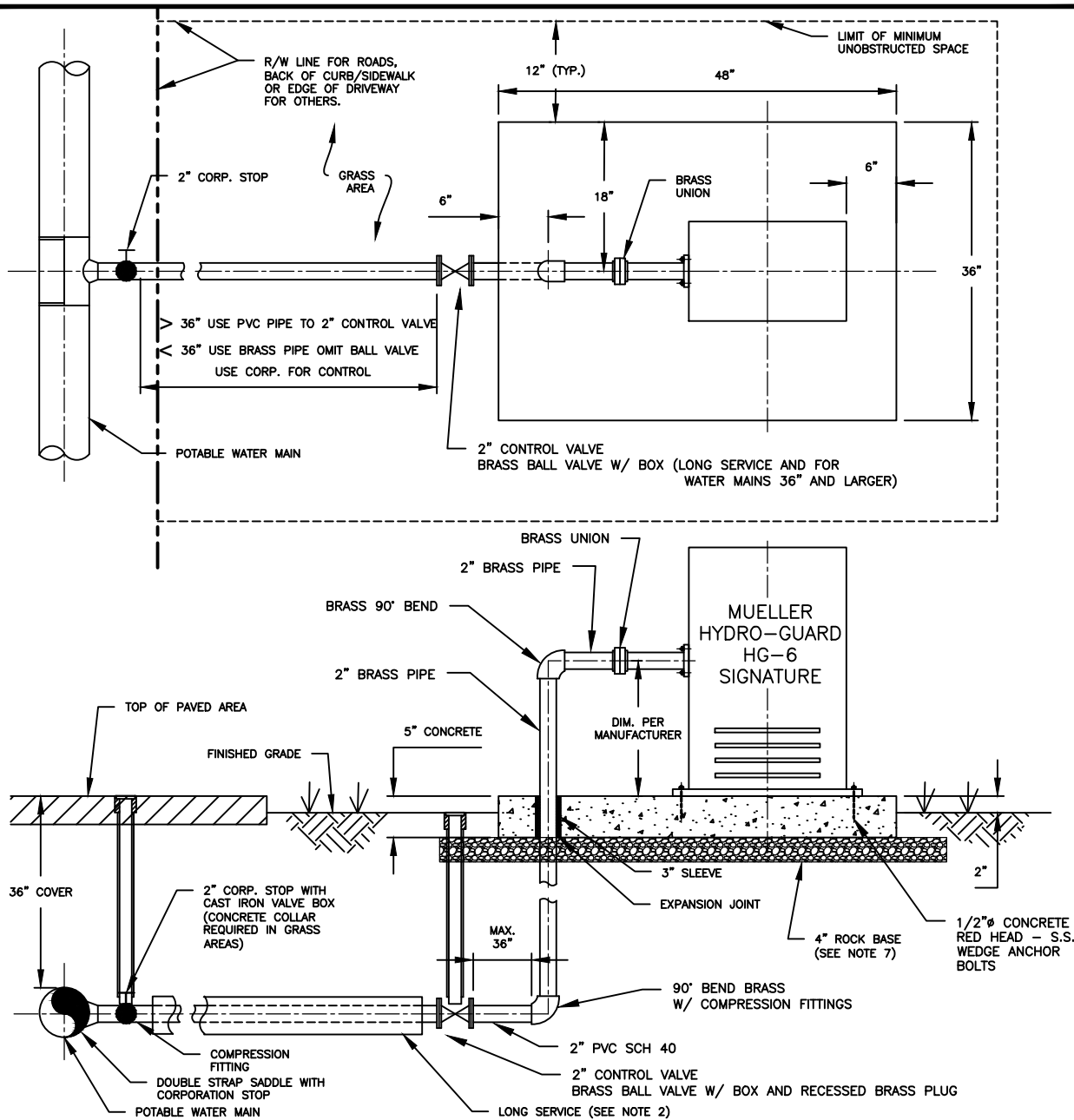
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AUTOMATIC FLUSHING ASSEMBLY (TYPE A)

PAGE NO.

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NOTES:

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. THREADED AREAS OF CORPORATION STOP AND OTHER FITTINGS SHALL BE SPIRAL WRAPPED WITH TWO (2) WRAPS OF TEFLON 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.

PALM BEACH COUNTY CONSTRUCTION STANDARDS & DETAILS

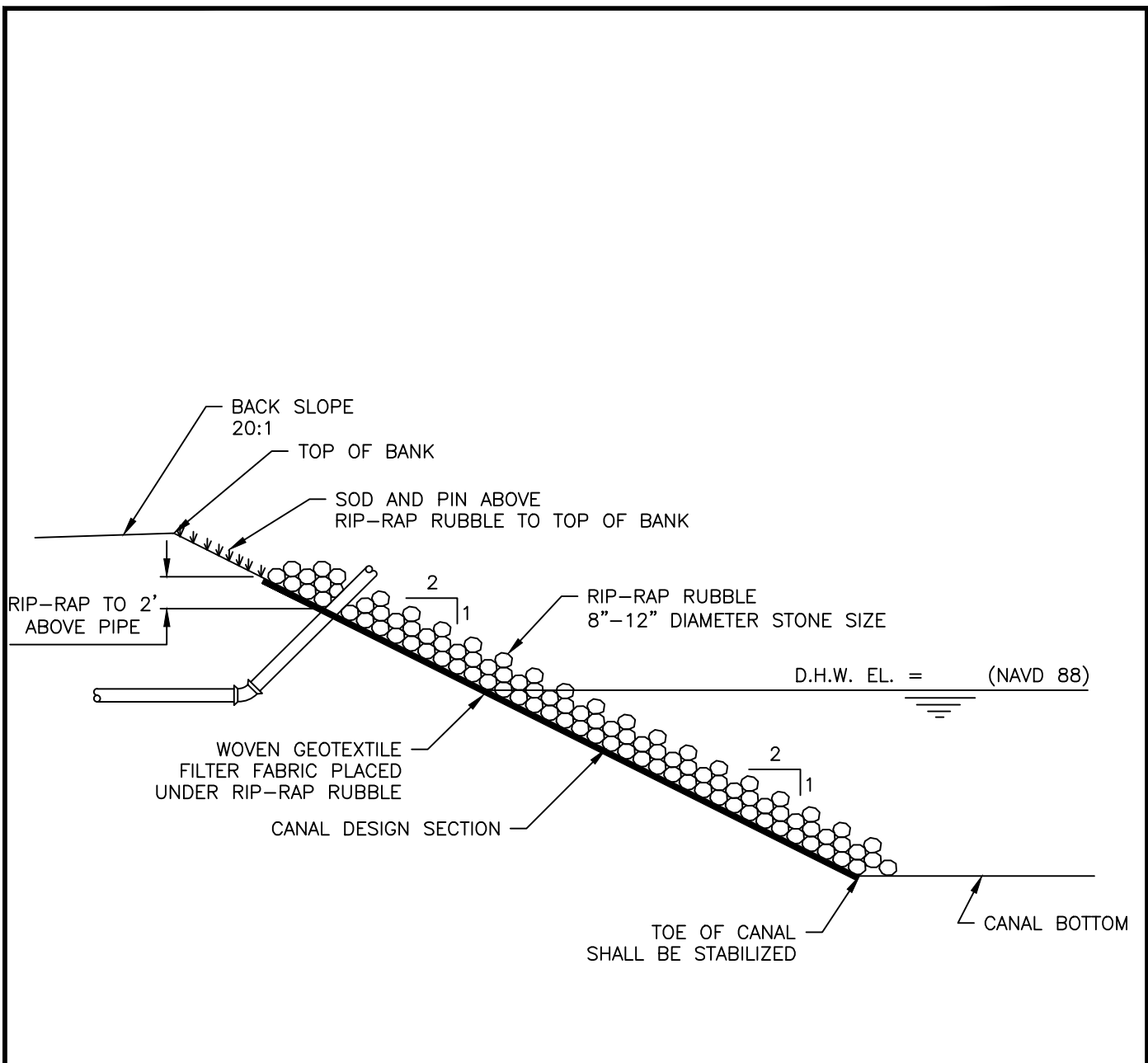
REVISION/ISSUE DATE

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AUTOMATIC FLUSHING ASSEMBLY (TYPE B)

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44W



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

PALM BEACH COUNTY CONSTRUCTION STANDARDS & DETAILS

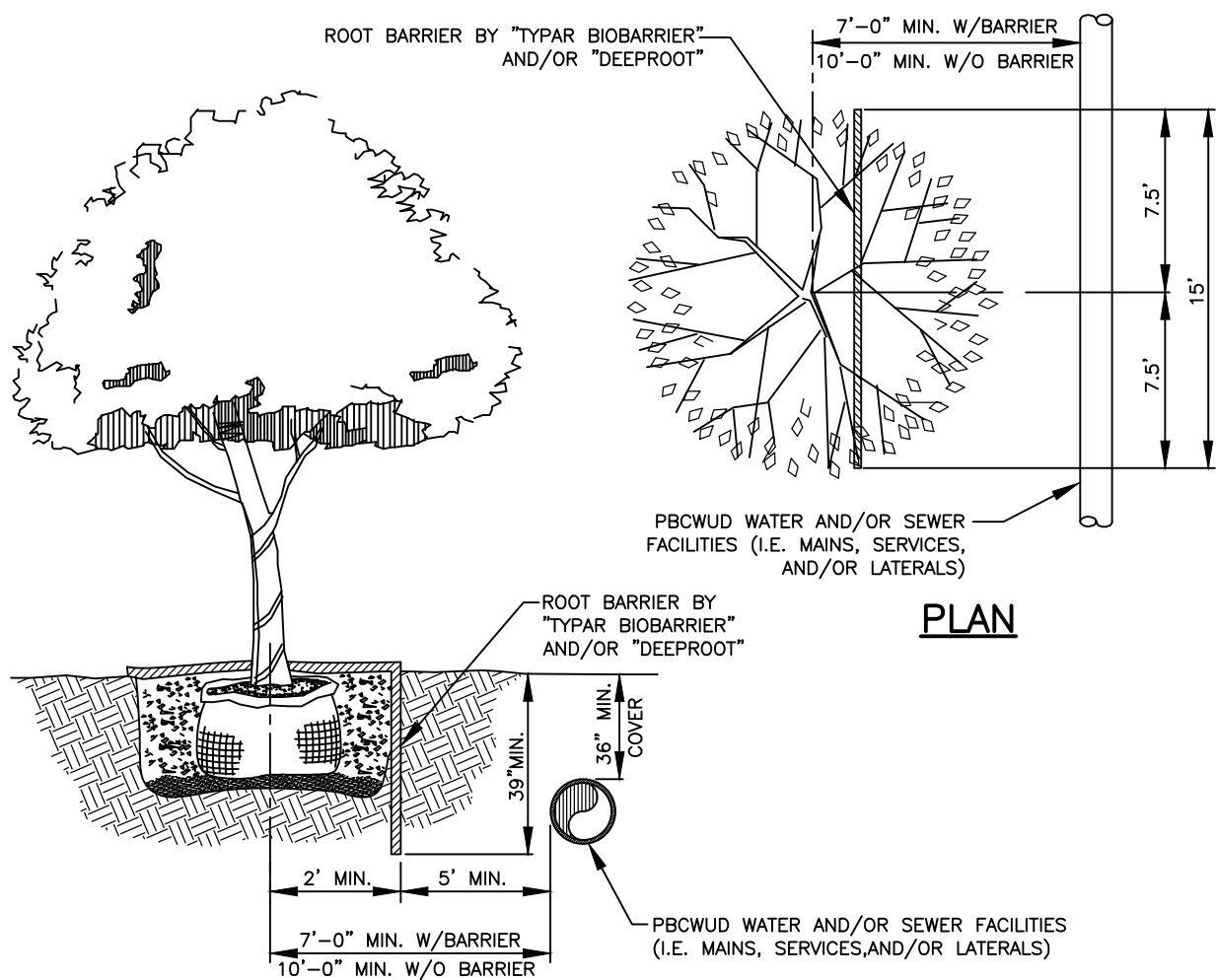
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RIP-RAP RUBBLE DETAIL

PAGE NO.

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PLAN

SECTION

NOTES:

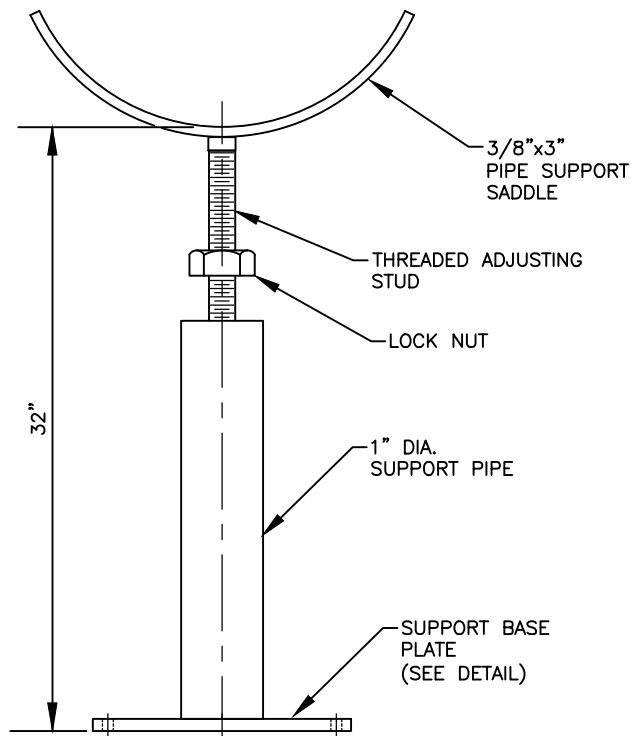
1. TREES SHOWN ON THIS PLAN ARE FOR GRAPHIC REPRESENTATION ONLY. TREE SPACING IS BASED ON DESIGN REQUIREMENTS AND THE TREES SHOWN ON THESE PLANS ATTEMPT TO ACCOMPLISH THAT SPACING WHILE MAINTAINING THE REQUIRED SETBACKS FROM UTILITIES. TREES MAY BE FIELD ADJUSTED TO AVOID CONFLICTS WITH DRIVEWAYS AND 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 PBCUE 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.

PALM BEACH COUNTY CONSTRUCTION STANDARDS & DETAILS

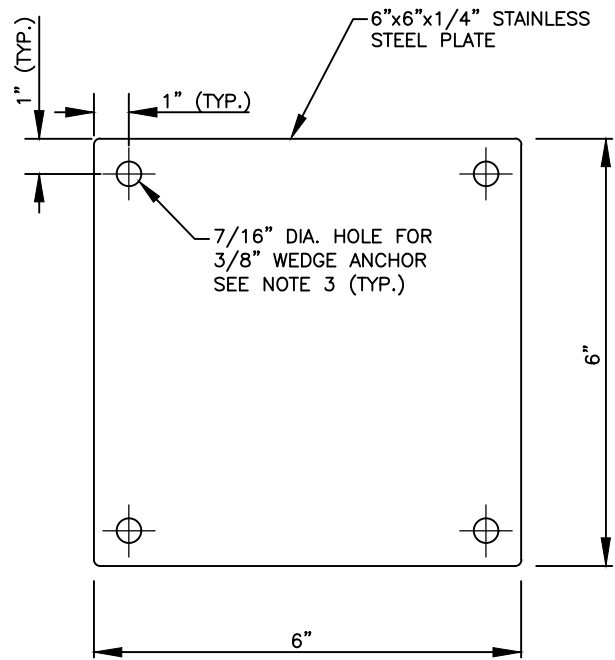
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**LANDSCAPE AND
 ROOT BARRIER DETAIL**

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PIPE SUPPORT



SUPPORT BASE PLATE DETAIL

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.

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**ABOVE GROUND WATER METER INSTALLATION
 PIPE SUPPORT**

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