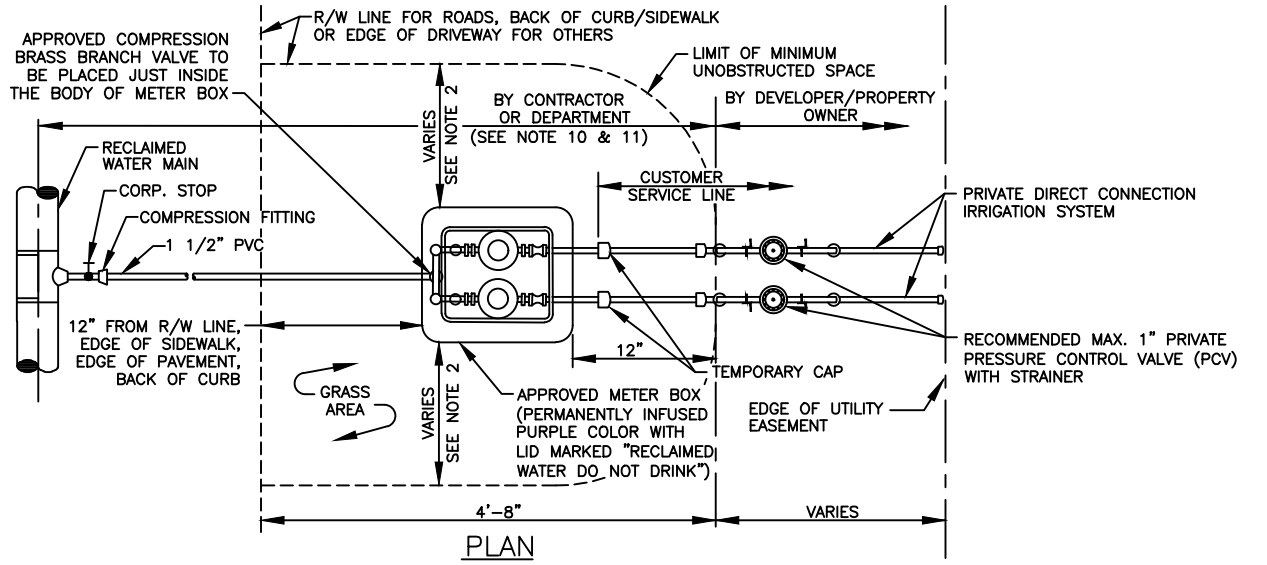


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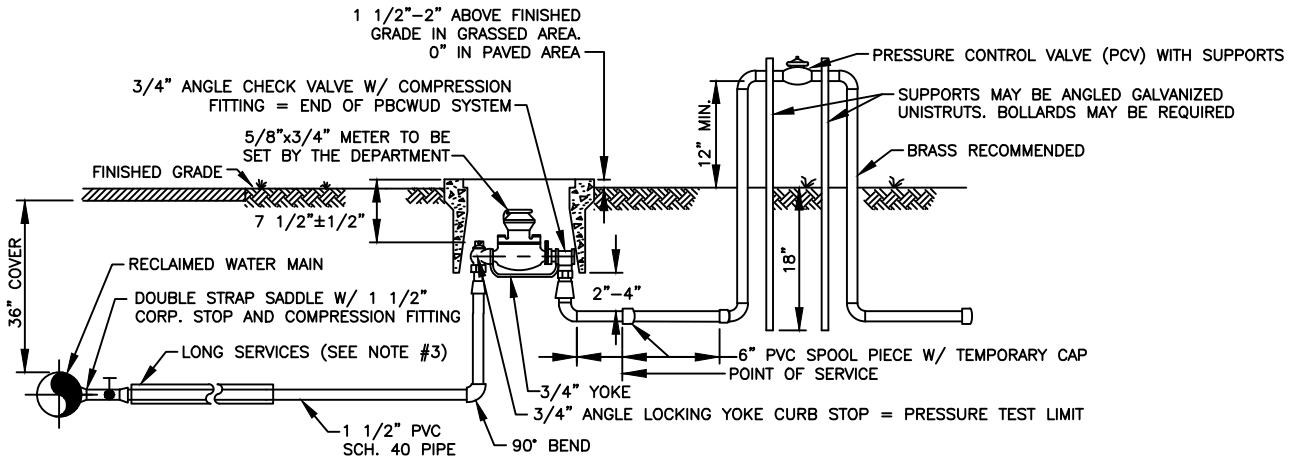


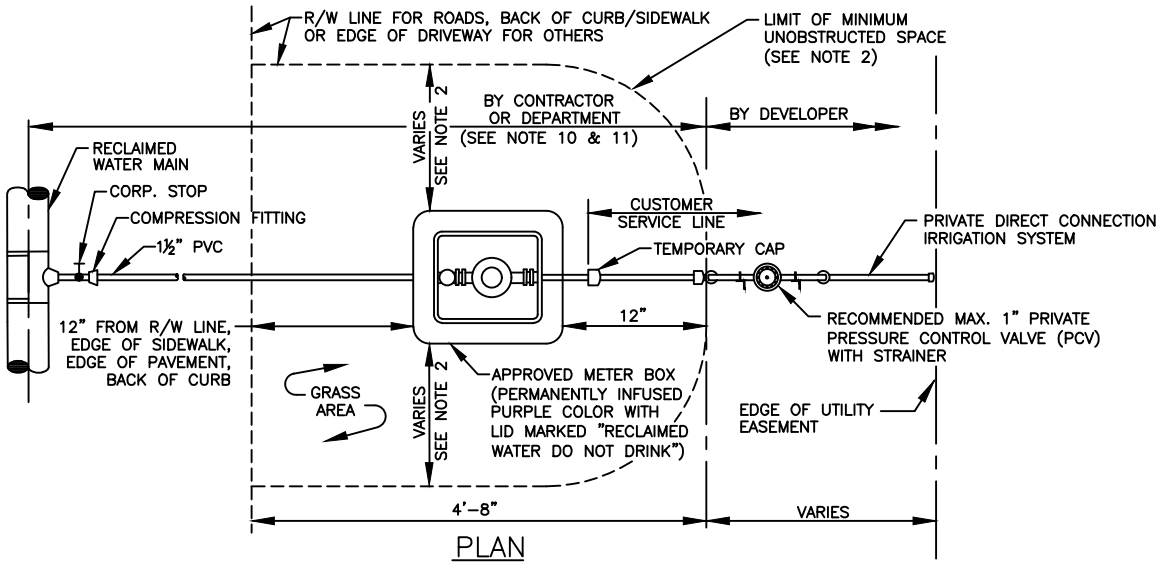

SECTION

NOTES:

1. PIPING, VALVES & METER BOX LID TO BE PERMANENTLY IDENTIFIED AS "RECLAIMED WATER SYSTEM" COMPONENTS. PVC SHALL BE SCHEDULE 40 PIPE WITH SCHEDULE 80 FITTINGS.
2. METER BOX SHALL BE LOCATED 12" MINIMUM FROM EDGE OF SIDEWALK, BACK OF CURB, OR EDGE OF DRIVEWAY WITH SOD ONLY WITHIN FIVE (5) FEET MINIMUM AND NO TREES WITHIN TEN (10) FEET MINIMUM. IF METEER BOX IS 18" OR LESS FROM A DRIVEWAY THE BOX AND LID MUST BE RATED TIER 15.*
3. FOR INSTALLATION OF SERVICES UNDER DRIVEWAYS AND ROADWAYS USE 3" DIAMETER 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 TO BE COLOR CODED PURPLE.
4. SUCCESSIVE TAPS INTO THE WATER MAIN SHALL BE SPACED A MINIMUM OF 18" APART AND SHALL NOT BE ON A COMMON LINE PARALLEL TO THE LONGITUDINAL AXIS OF THE PIPE. TAPS ON THE SAME SIDE OF A P.V.C. 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. CHECK VALVE IS REQUIRED FOR EVERY RECLAIMED WATER SERVICE.
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 AND/OR 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.
10. METER TO BE SET BY DEPARTMENT.
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.

PALM BEACH COUNTY CONSTRUCTION STANDARDS & DETAILS

| REVISION/ISSUE DATE | RECLAIMED WATER DUAL 5/8" X 3/4" METER SERVICE DETAIL – DIRECT CONNECT ONLY DIRECT SERVICE ONLY | PAGE NO. |
|---|---|---|
| 01/2023 * | | 1 R |

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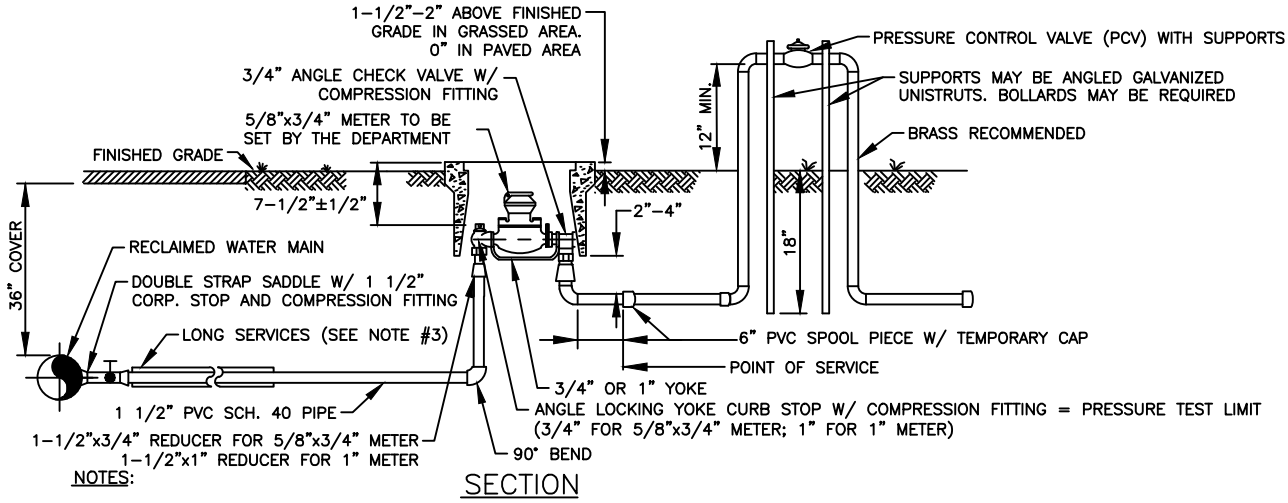


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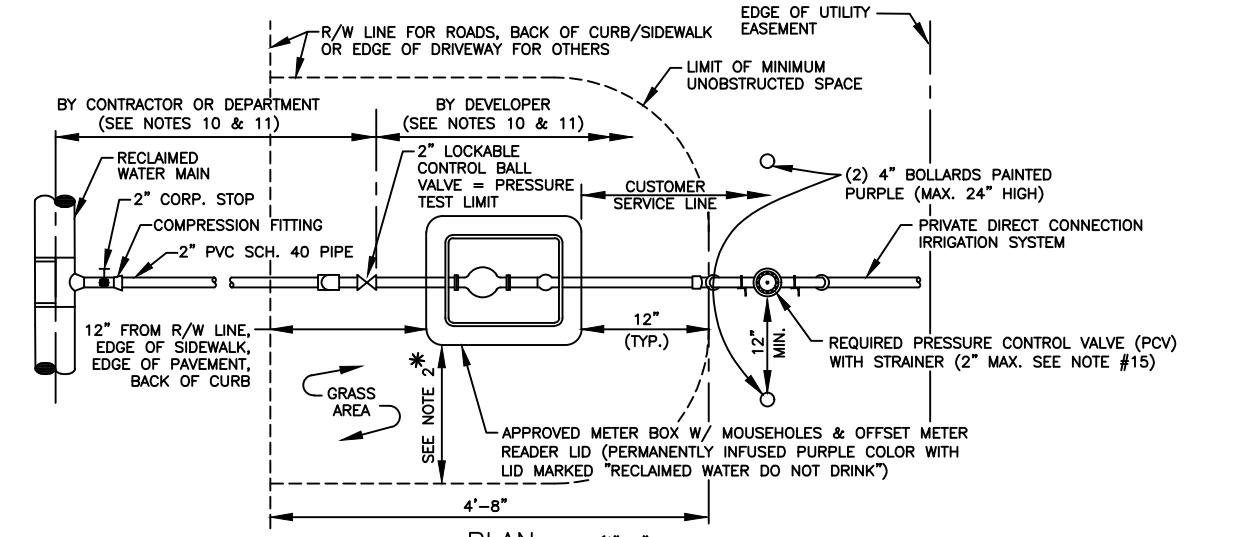


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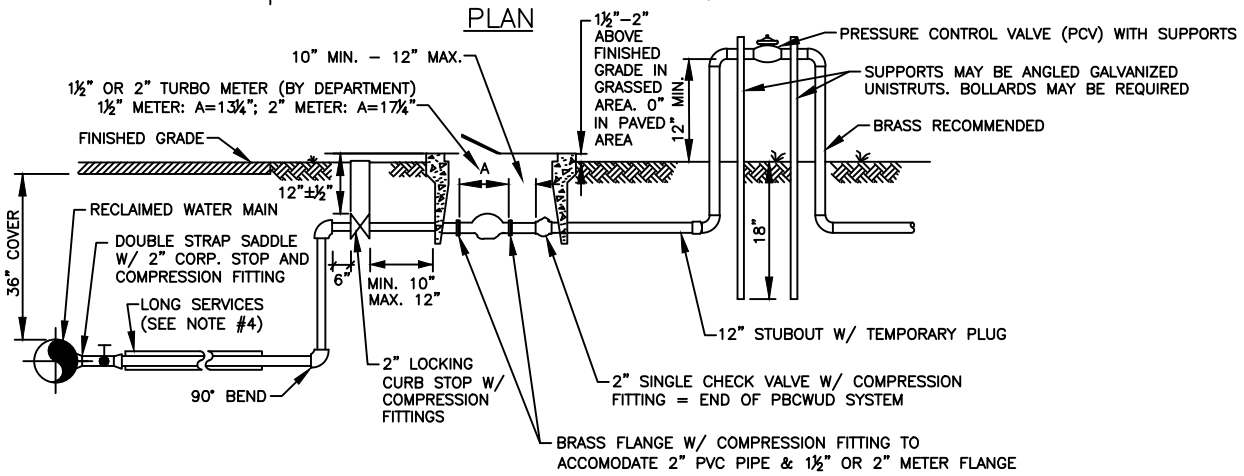


SECTION

NOTES:

1. PIPING, VALVES, AND BOX LID TO BE PERMANENTLY IDENTIFIED AS "RECLAIMED WATER SYSTEM" COMPONENT. PVC FITTINGS SHALL BE SCHEDULE 80.
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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 10' APART.
5. METER SHALL NOT BE PLACED IN SIDEWALK OR DRIVEWAY AREAS. SERVICE LINES AND TAPS SHALL NOT BE PLACED UNDER DRIVEWAYS WHENEVER POSSIBLE.
6. A CHECK VALVE IS REQUIRED FOR ALL RECLAIMED WATER SERVICES.
7. THE MAXIMUM SERVICE LENGTH IS 100' TO METER.
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9. METER SERVICE WILL NOT BE INSTALLED UNTIL:
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   B) "MINIMUM UNOBSTRUCTED SPACE" (AS SHOWN) IS PROVIDED. MINIMUM 12" VERTICAL SEPARATION IS REQUIRED TO OTHER UTILITIES.
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11. THE DEVELOPER/PROPERTY OWNER OR ASSIGNEE SHALL BE RESPONSIBLE FOR INSTALLATION OF SERVICES BEYOND PRESSURE TEST LIMITS AS SPECIFIED BY THE DEPARTMENT.
12. CONTRACTOR SHALL CONSTRUCT SERVICE COMPONENTS FOR THE METER TO BE INSTALLED "TRUE" AND "PLUMB" AND TO ALLOW METER READING THROUGH THE METER READER LID.
13. ALL HARDWARE FOR FLANGED CONNECTIONS (BOLTS, ETC.) TO BE STAINLESS STEEL.
14. THREADED AREAS OF CORPORATION STOP AND OTHER FITTINGS SHALL BE SPIRAL WRAPPED WITH TWO (2) WRAPS OF TEFLON TAPE.
15. THE PRESSURE CONTROL VALVE (PCV) SHALL BE PRIVATE FOR SERVICE WITH "DIRECT" CONNECTION TO THE IRRIGATION SYSTEM. SEE SEPARATE DETAILS FOR "LAKE DISCHARGE" CONNECTION.
16. A TIMER AND/OR REMOTE TELEMETRY UNIT MAY BE REQUIRED TO REGULATE THE AVAILABILITY OF RECLAIMED WATER FOR EACH SERVICE CONNECTION.

PALM BEACH COUNTY CONSTRUCTION STANDARDS & DETAILS

| REVISION | RECLAIMED WATER DUAL 1–1/2" AND 2" METER DETAIL<br>DIRECT CONNECT ONLY<br>PRIOR DEPARTMENT APPROVAL REQUIRED* | PAGE NO. |
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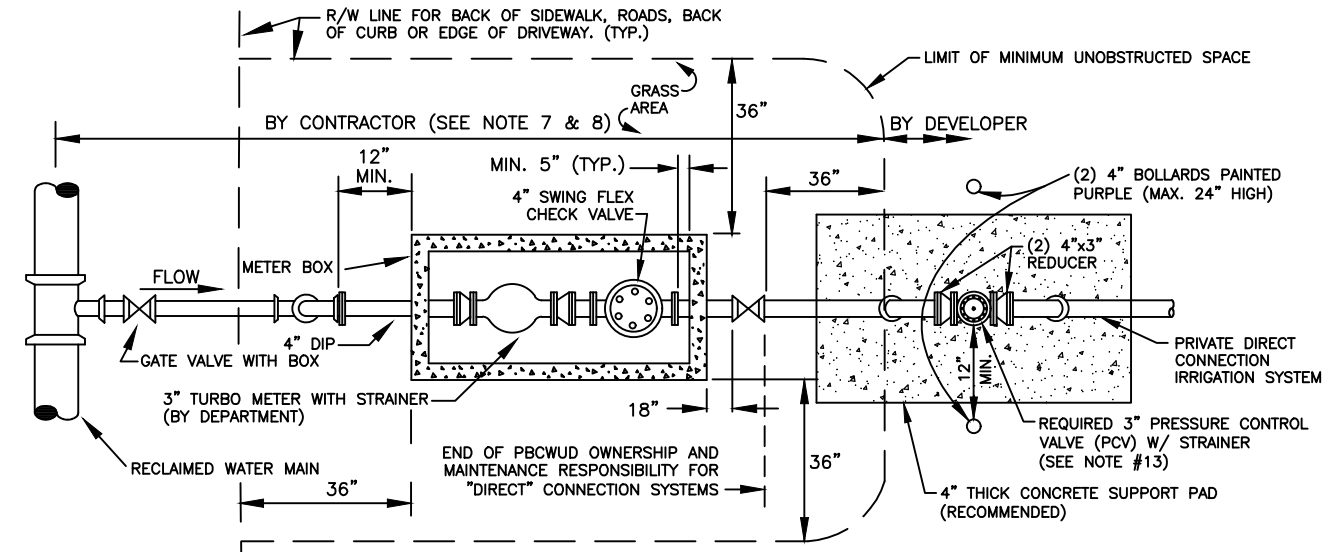
| 01/2023* | | 3R |

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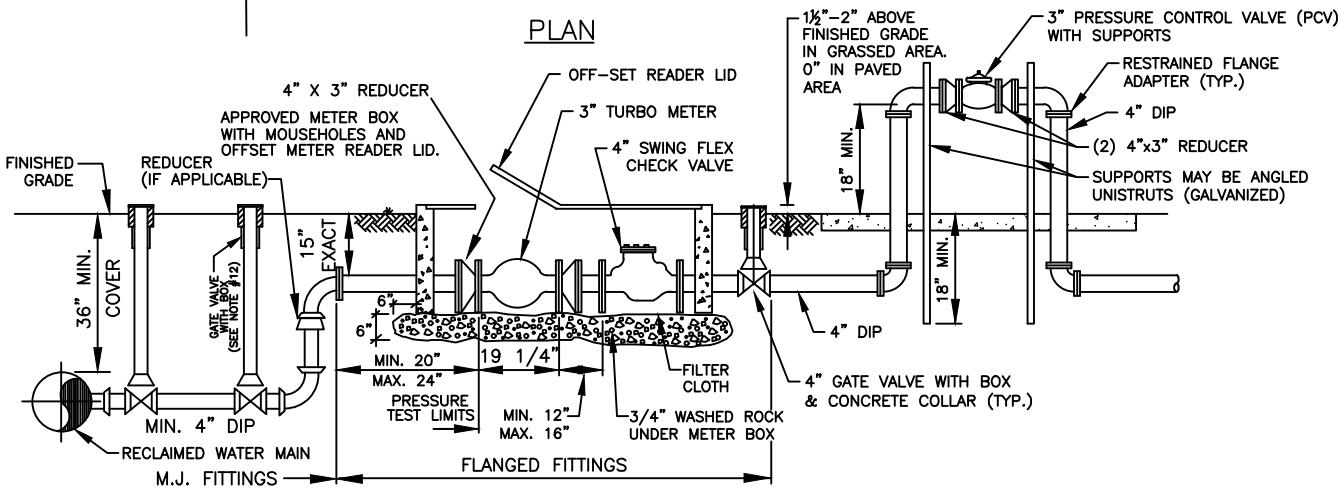


SECTION

NOTES:

1. ALL SERVICE PIPING SHALL BE DUCTILE IRON.
2. APPROVED METER BOX LID TO BE PERMANENTLY INFUSED PURPLE COLOR OR PAINTED PURPLE AND MARKED "RECLAIMED WATER – DO NOT DRINK".
3. ALL FITTINGS SHALL BE MECHANICAL JOINT OR FLANGED WITH MEGALUGS OR EQUAL.
4. PIPING AND VALVES TO BE IDENTIFIED (TAGGED) AS RECLAIMED WATER SYSTEM COMPONENTS.
5. METER SHALL NOT BE PLACED IN SIDEWALK OR DRIVEWAY AREAS.
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11. CHECK VALVE TO BE FREE OF OBSTRUCTION FOR PROPER OPERATION.
12. A GATE VALVE WITH BOX IS TO BE LOCATED WITHIN 5 FEET OF THE METER BOX.
13. THE PRESSURE CONTROL VALVE (PCV) SHALL BE PRIVATE FOR SERVICE WITH "DIRECT" CONNECTION TO THE IRRIGATION SYSTEM. SEE SEPARATE DETAILS FOR "LAKE DISCHARGE" CONNECTION.
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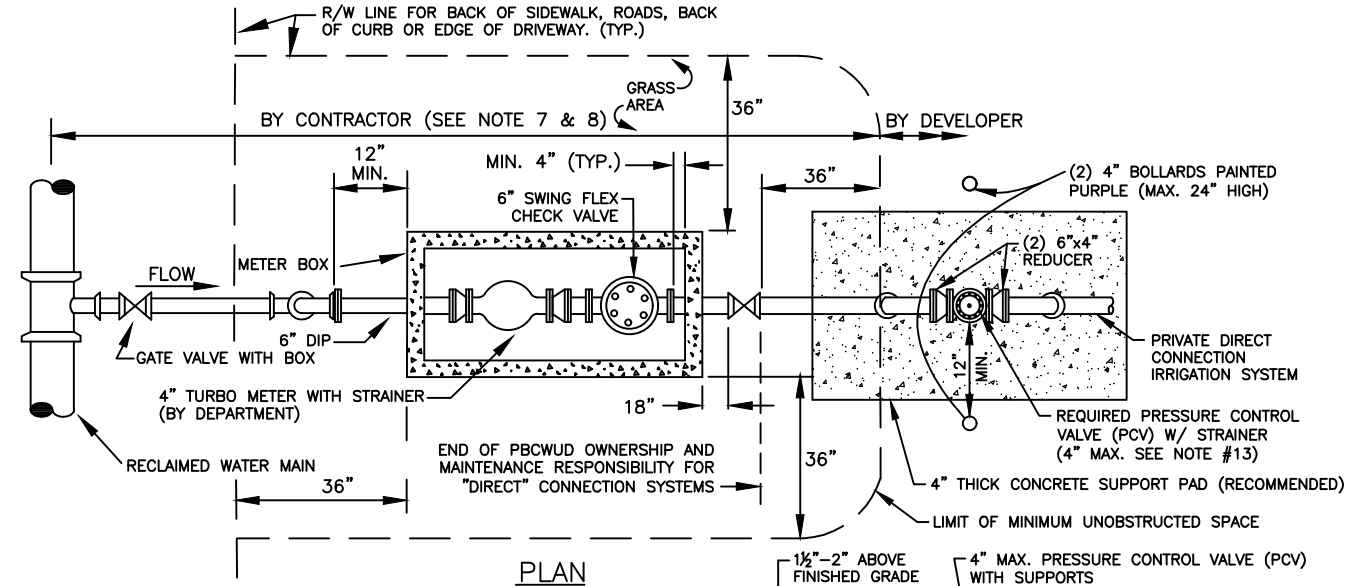


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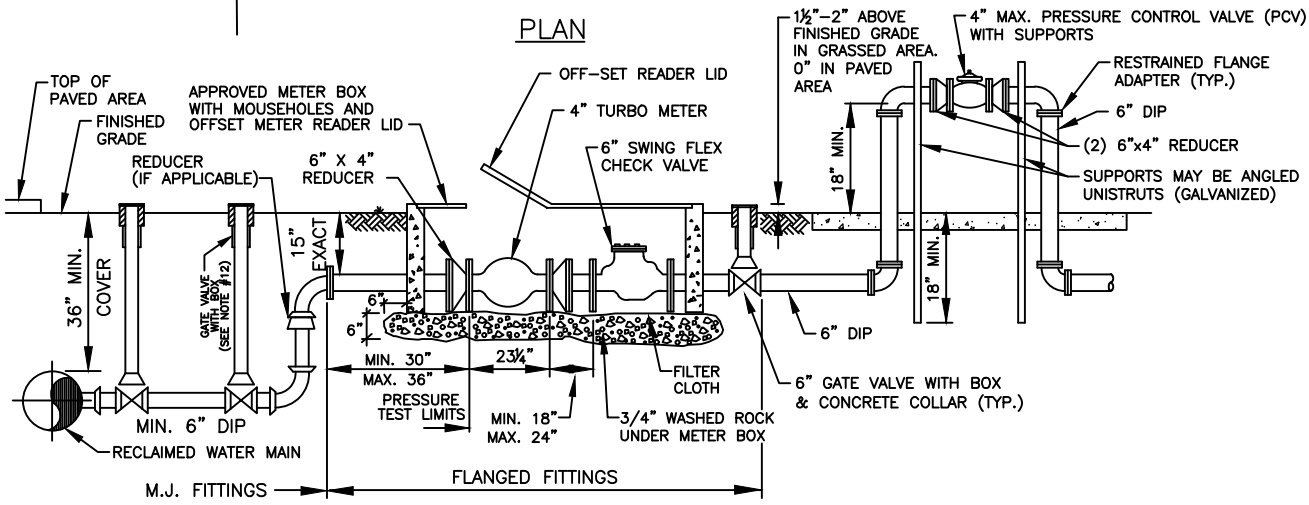


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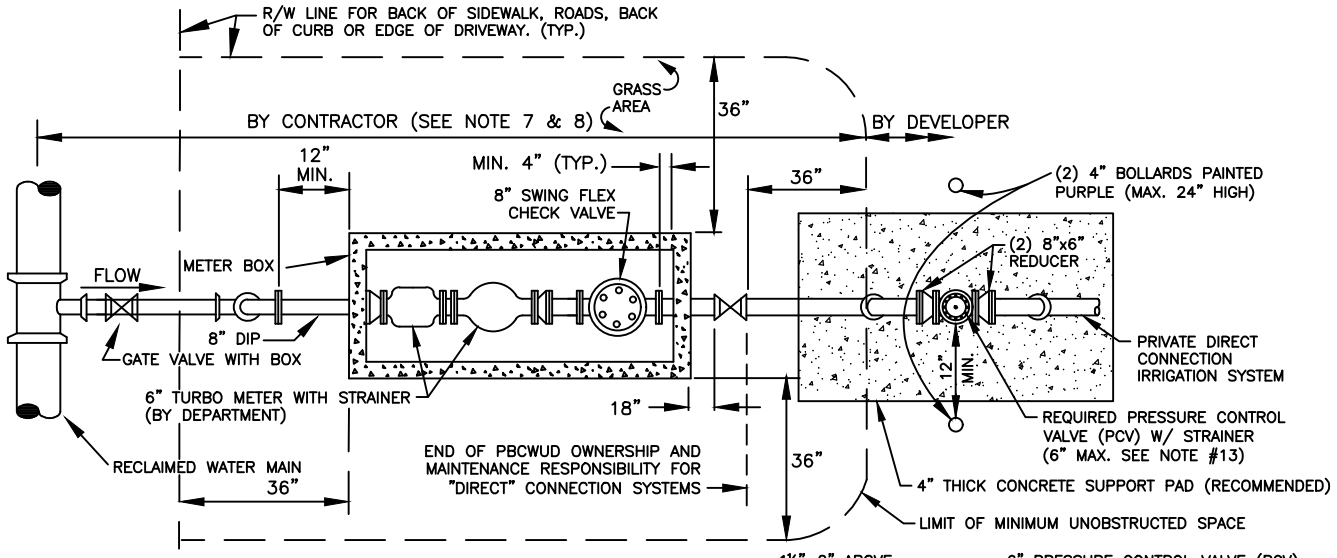


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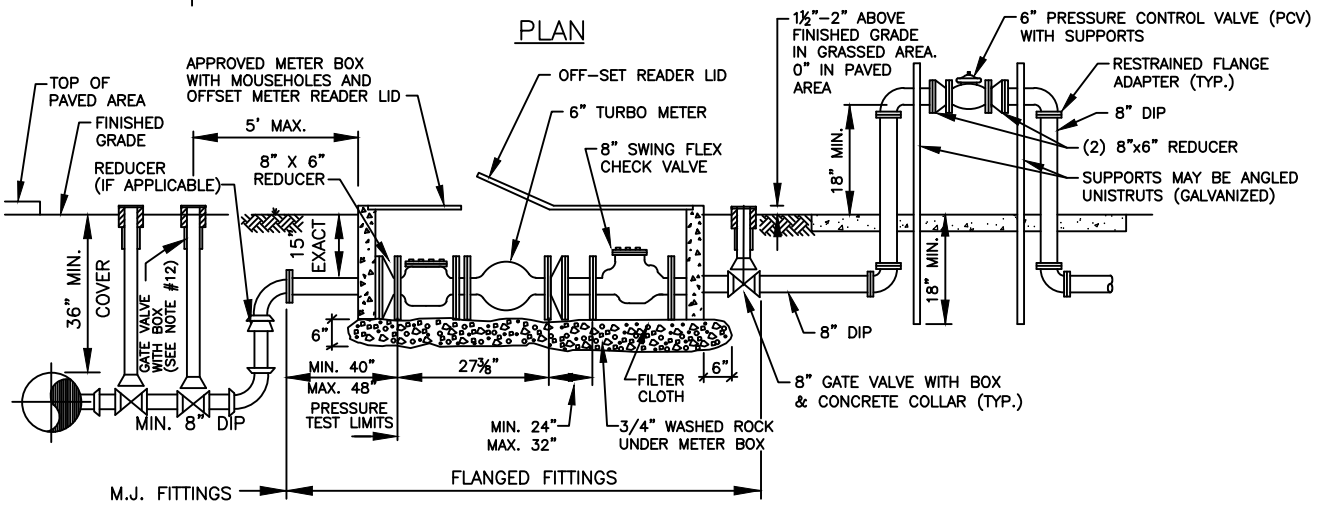


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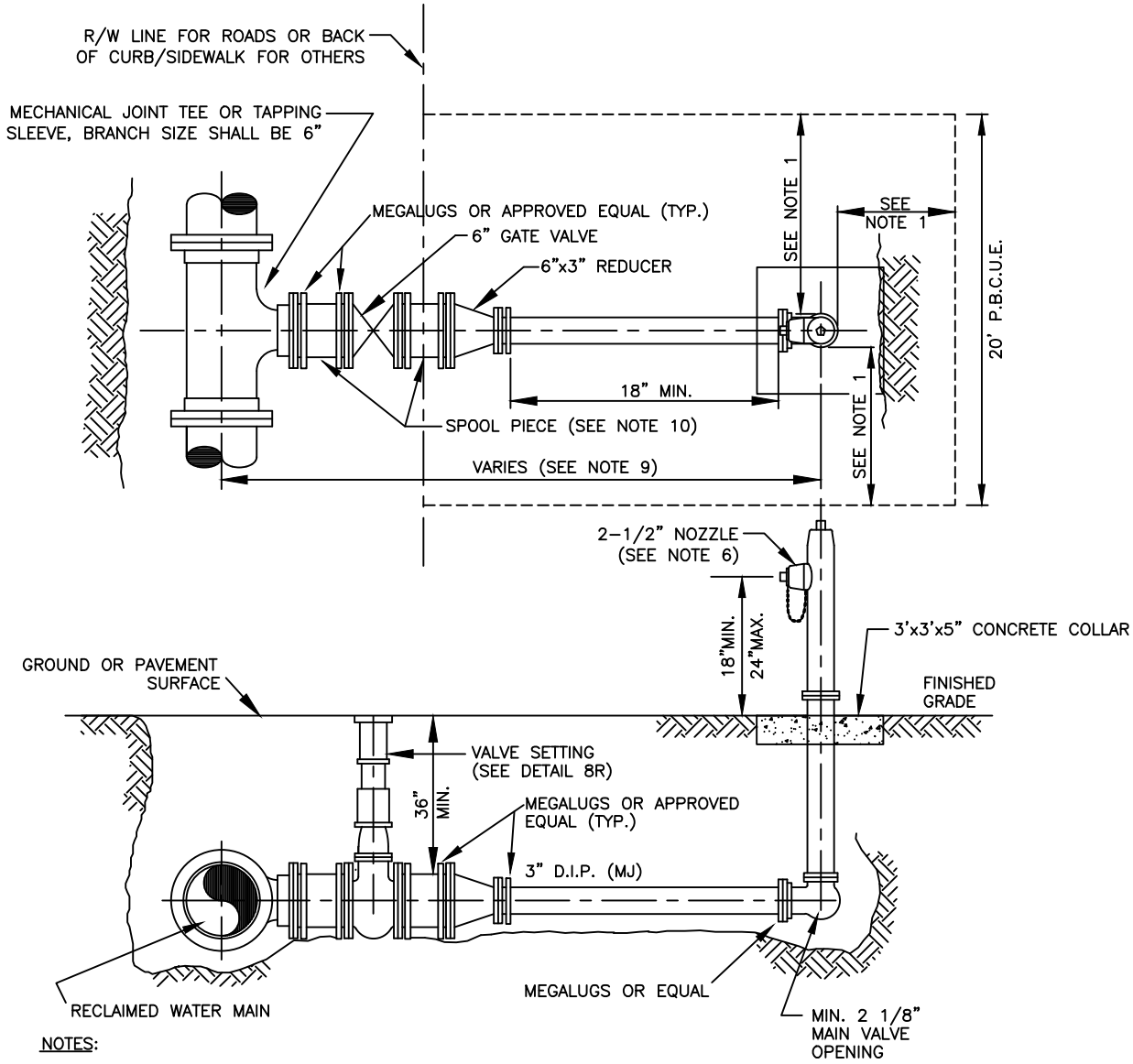
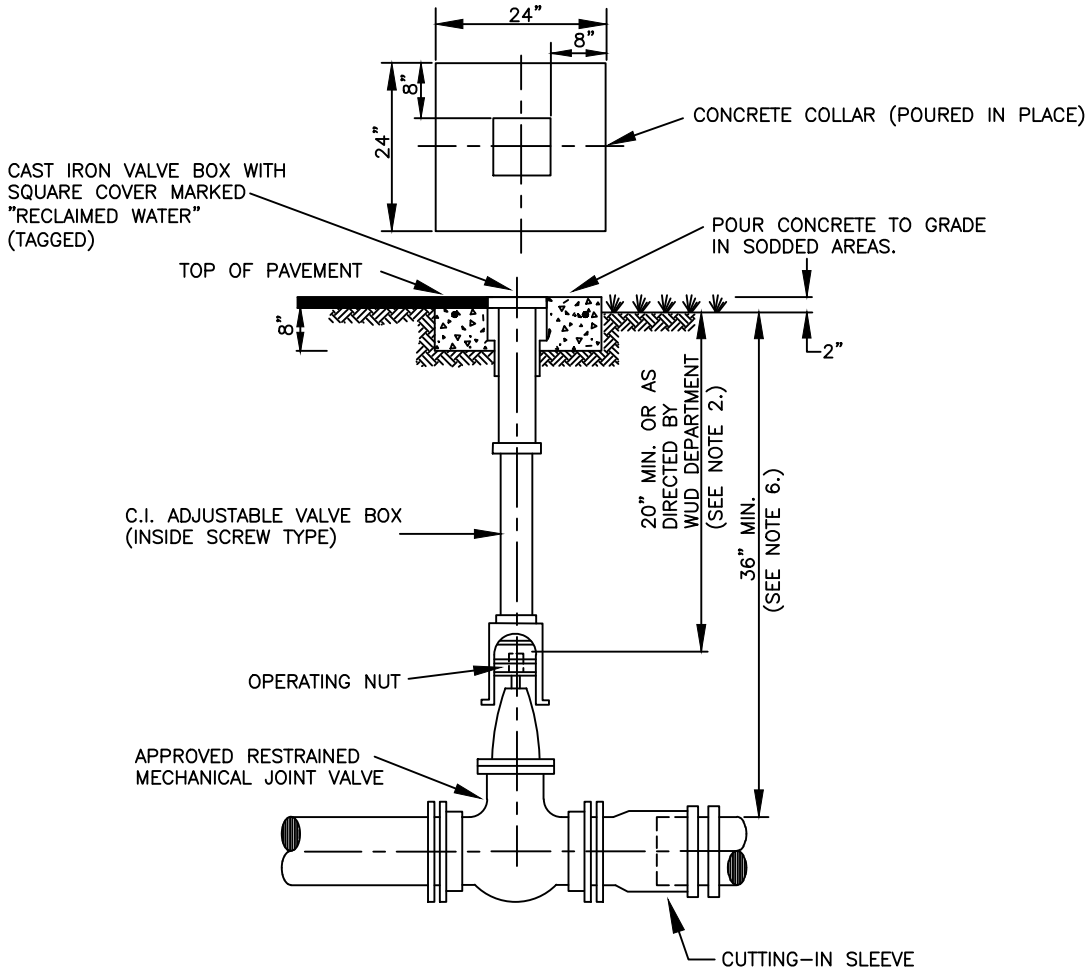



NOTES:

1. FLUSHING HYDRANT SHALL BE INSTALLED PLUMB AND TRUE IN UNOBSTRUCTED LOCATION. LIMIT OF UNOBSTRUCTED SPACE FROM SIDE OF HYDRANT SHALL BE 3'(36") MINIMUM FOR SHRUBS AND SIMILAR OBSTRUCTIONS WITH 10'(120") MINIMUM FOR TREES, WALLS, AND OTHER SIMILAR OBSTRUCTIONS. LIMIT OF UNOBSTRUCTED SPACE BEHIND HYDRANT SHALL BE 5' (60") MINIMUM.
2. THE SAME MODEL HYDRANT SHALL BE USED THROUGHOUT CURRENT CONTRACT PHASE, COLOR SHALL BE PURPLE, PANTONE 522C, OR PRIOR APPROVED EQUAL BY THE DEPARTMENT.
3. VALVE SHALL BE PLACED ADJACENT TO MAIN, AND RESTRAINED WITH MEGALUGS OR EQUAL.
4. ALL HYDRANTS SHALL BE TEED OFF OF MAINS
5. HYDRANTS SHALL NOT BE PLACED IN SIDEWALKS, ROADWAYS, OR BIKE PATHS. HYDRANT NOZZLE SHALL BE AT LEAST 24" MINIMUM FROM THE EDGE OF A SIDEWALK OR BIKE PATH.
6. NOZZLE TO FACE ROADWAY.
7. PIPING, VALVES, AND HYDRANTS TO BE IDENTIFIED (TAGGED) AS RECLAIMED WATER SYSTEM COMPONENTS.
8. ALL BURIED HYDRANT HARDWARE SHALL BE STAINLESS STEEL 304.
9. LENGTH OF RECLAIMED WATER MAIN TO FLUSHING HYDRANT VARIES BUT NOT TO EXCEED 20 FEET WITHOUT PRIOR DEPARTMENT APPROVAL.
10. MINIMUM 18" SPOOL PIECE REQUIRED. IF TAPPING SLEEVE IS INSTALLED NO SPOOL PIECE IS REQUIRED BETWEEN SLEEVE AND GATE VALVE.

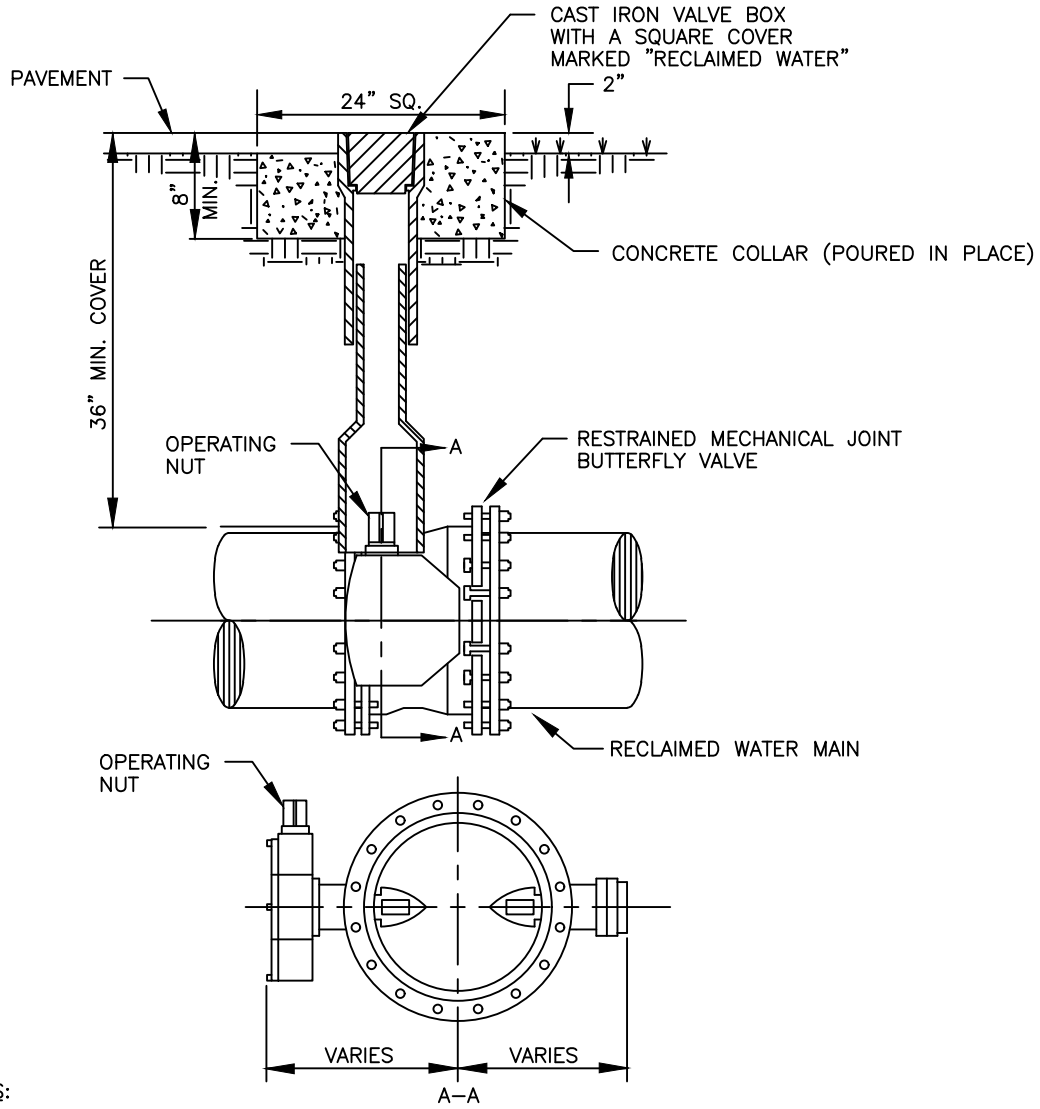



NOTES:

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 SQUARE COVERS MARKED "RECLAIMED WATER".
4. EXTENSION VALVE BOX TO BE D.I.P. OR C–900 PVC DR 18 (COLOR: PURPLE)
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" |

7. PIPE SHALL BE RESTRAINED ON BOTH SIDES OF THE VALVE AS REQUIRED.
8. VALVES IN ROADWAYS SHALL BE LOCATED OUTSIDE OF WHEEL PATHS.

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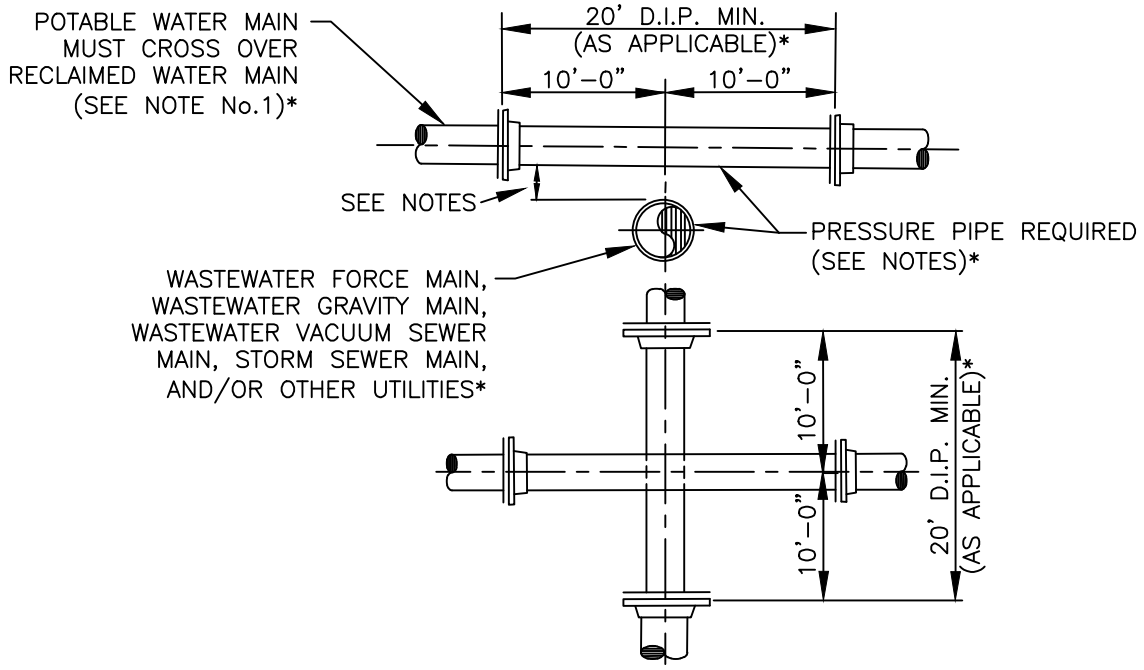
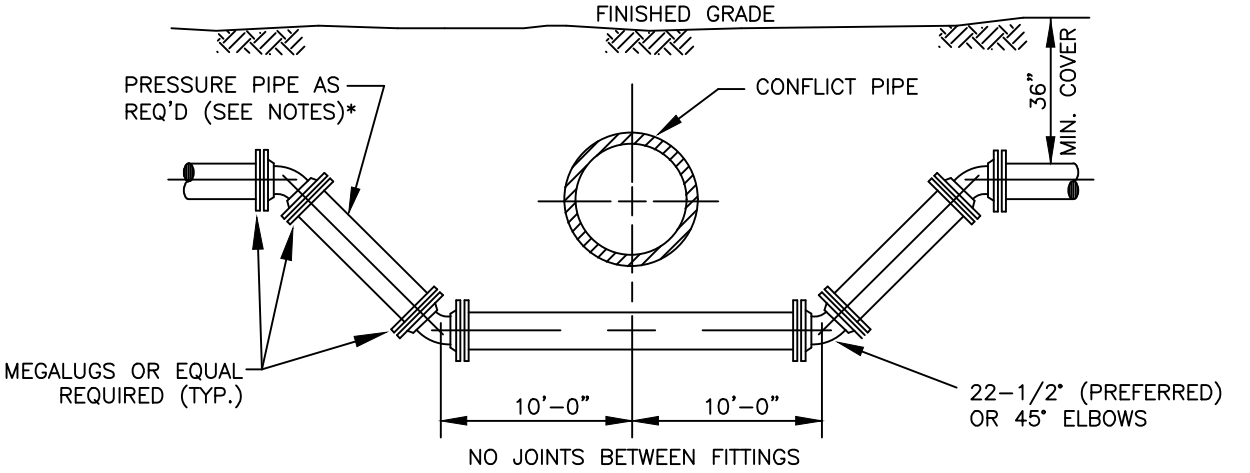
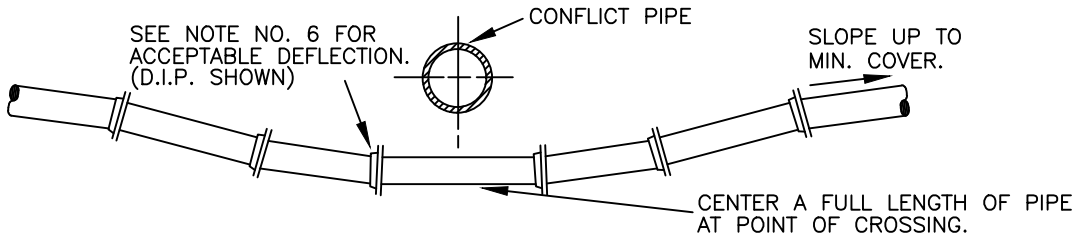



NOTES:

1. WHEN A RECLAIMED WATER MAIN CROSSES OVER AND/OR UNDER A STORM SEWER, GRAVITY WASTEWATER, VACUUM GRAVITY WASTEWATER, AND/OR RECLAIMED WATER MAIN THE WASTEWATER FORCE MAIN SHALL BE LAID TO PROVIDE A MINIMUM TWELVE (12) INCH VERTICAL SEPARATION BETWEEN THE BOTTOM OF THE UPPER PIPE AND THE CROWN OF THE LOWER PIPE. WHEN THE MINIMUM TWELVE (12) INCH VERTICAL SEPARATION CANNOT BE OBTAINED A MINIMUM SIX (6) INCH VERTICAL SEPARATION IS PERMITTED PROVIDED THAT A TWENTY (20) FOOT SECTION OF RECLAIMED WATER DUCTILE IRON PIPE MAIN IS CENTERED ON THE CROSSING WITH THE OTHER PIPE HAVING A TWENTY (20) FOOT SECTION CENTERED ON THE CROSSING AND WITH PRIOR DEPARTMENT APPROVAL. A RECLAIMED WATER MAIN MUST CROSS UNDER ANY POTABLE WATER MAIN WITH A MINIMUM TWELVE (12) INCH VERTICAL SEPARATION REQUIRED. WHEN THE MINIMUM TWELVE (12) INCH VERTICAL SEPARATION CANNOT BE OBTAINED A MINIMUM SIX (6) INCH VERTICAL SEPARATION IS PERMITTED PROVIDED THAT A TWENTY (20) FOOT SECTION OF POTABLE WATER DUCTILE IRON PIPE MAIN IS CENTERED ON THE CROSSING WITH THE RECLAIMED WATER MAIN HAVING A TWENTY (20) FOOT SECTION CENTERED ON THE CROSSING AND ONLY WITH PRIOR DEPARTMENT APPROVAL. A RECLAIMED WATER MAIN MAY CROSS OVER A POTABLE WATER MAIN ON A CASE BY CASE BASIS PROVIDED A MINIMUM TWELVE (12) INCH VERTICAL SEPARATION IS OBTAINED BETWEEN THE BOTTOM OF THE UPPER PIPE AND THE CROWN OF THE LOWER PIPE AND ONLY WITH PRIOR DEPARTMENT APPROVAL.*
2. TEN (10) FOOT MINIMUM HORIZONTAL SEPARATION (OUTSIDE WALL TO OUTSIDE WALL) IS REQUIRED BETWEEN A RECLAIMED WATER MAIN AND POTABLE WATER MAIN, A STORM SEWER, AND/OR WASTEWATER MAIN. A SIX (6) FOOT MINIMUM HORIZONTAL SEPARATION (OUTSIDE WALL TO OUTSIDE WALL) IS ACCEPTABLE WITH PRIOR DEPARTMENT APPROVAL BEFORE THE INSTALLATION OF THE RECLAIMED WATER MAIN. A THREE (3) FOOT MINIMUM HORIZONTAL SEPARATION (OUTSIDE WALL TO OUTSIDE WALL) BETWEEN A RECLAIMED WATER MAIN AND A WASTEWATER WATER MAIN IS ACCEPTABLE WITH PRIOR DEPARTMENT APPROVAL BEFORE THE INSTALLATION OF THE RECLAIMED WATER MAIN.*
3. WHEN A RECLAIMED WATER MAIN CROSSES ANY ELECTRICAL CONDUIT(S), COMMUNICATION CONDUIT(S), AND/OR GAS MAIN, A MINIMUM OF EIGHTEEN (18) INCH VERTICAL SEPARATION IS REQUIRED BETWEEN THE BOTTOM OF THE UPPER PIPE AND THE CROWN OF THE LOWER PIPE. A RECLAIMED WATER MAIN SHALL ALWAYS CROSS OVER THE OTHER UTILITY MAINS UNLESS OTHERWISE APPROVED BY THE DEPARTMENT BEFORE THE INSTALLATION OF THE RECLAIMED WATER MAIN. WHEN THE RECLAIMED WATER MAIN IS D.I.P. AND THE GAS MAIN IS STEEL PIPE, THE RECLAIMED WATER MAIN SHALL BE POLY-WRAPPED PER DEPARTMENT STANDARDS.*
4. RECLAIMED WATER MAINS SHALL CROSS PERPENDICULAR TO ALL POTABLE WATER MAINS, STORM MAINS, STORM SEWER MAINS, WASTEWATER MAINS, AND/OR OTHER UTILITIES WHENEVER POSSIBLE.*



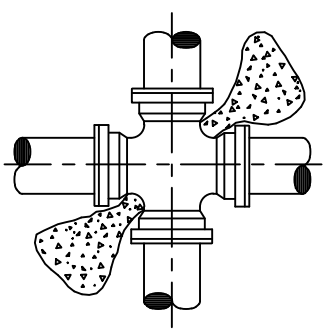

DEFLECTION BY FITTING METHOD WITH RECLAIMED WATER MAIN GOING UNDER OR OVER CONFLICT PIPE – SEE NOTES 1&2*



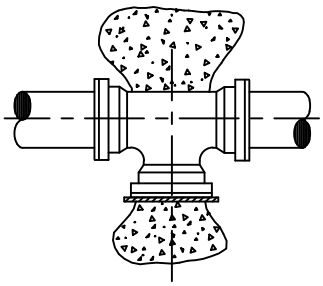

DEFLECTION BY PIPE JOINT METHOD WITH RECLAIMED WATER MAIN GOING UNDER OR OVER CONFLICT PIPE – SEE NOTES 1,3,&4*

NOTES:

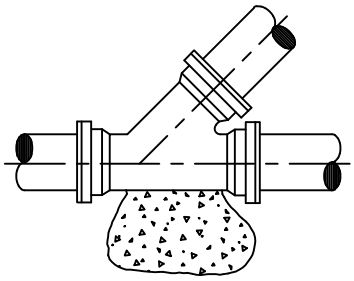
1. DEFLECTION BY FITTINGS AND/OR PIPE JOINT METHODS APPLIES TO RECLAIMED WATER MAIN CROSSING OVER OR UNDER CONFLICT PIPE WITH CROSSING OVER CONFLICT PIPE PREFERRED. WHEN A RECLAIMED WATER MAIN CROSSES OVER A STORM SEWER, WASTEWATER FORCE MAIN, GRAVITY WASTEWATER AND/OR VACUUM GRAVITY WASTEWATER THE RECLAIMED WATER MAIN SHALL BE LAID TO PROVIDE A MINIMUM TWELVE (12) INCH VERTICAL SEPARATION BETWEEN THE BOTTOM OF THE UPPER PIPE AND THE CROWN OF THE LOWER PIPE. WHEN THE MINIMUM OF TWELVE (12) INCH VERTICAL SEPARATION CANNOT BE OBTAINED A MINIMUM SIX (6) INCH VERTICAL SEPARATION IS PERMITTED PROVIDED THAT A TWENTY (20) FOOT SECTION OF RECLAIMED WATER DUCTILE IRON PIPE MAIN IS CENTERED ON THE CROSSING WITH THE LOWER PIPE HAVING A TWENTY (20) FOOT SECTION CENTERED ON THE CROSSING. A RECLAIMED WATER MAIN MUST CROSS UNDER ANY POTABLE WATER MAIN WITH A MINIMUM TWELVE (12) INCH VERTICAL SEPARATION REQUIRED. WHEN THE MINIMUM TWELVE (12) INCH VERTICAL SEPARATION CANNOT BE OBTAINED A MINIMUM SIX (6) INCH VERTICAL SEPARATION IS PERMITTED PROVIDED THAT A TWENTY (20) FOOT DUCTILE IRON PIPE SECTION OF POTABLE WATER MAIN IS CENTERED ON THE CROSSING WITH THE RECLAIMED WATER MAIN HAVING A TWENTY (20) FOOT DUCTILE IRON PIPE SECTION CENTERED ON THE CROSSING. A RECLAIMED WATER MAIN MAY CROSS OVER A POTABLE WATER MAIN ON A CASE BY CASE BASIS PROVIDED A MINIMUM OF TWELVE (12) INCH VERTICAL SEPARATION IS OBTAINED BETWEEN THE BOTTOM OF THE UPPER PIPE AND THE CROWN OF THE LOWER PIPE AND ONLY WITH PRIOR DEPARTMENT APPROVAL.*
2. THE PREFERRED PIPE DEFLECTION METHOD IS BY USING MECHANICAL RESTRAINT FITTINGS.*
3. RECLAIMED WATER MAIN DEFLECTION BY PIPE JOINT METHOD REQUIRES DEPARTMENT APPROVAL PRIOR TO THE INSTALLATION OF THE RECLAIMED WATER MAIN.*
4. DEFLECTION BY PIPE JOINT SHALL NOT EXCEED SEVENTY-FIVE PERCENT (75%) OF MANUFACTURER'S RECOMMENDED MAXIMUM JOINT DEFLECTION FOR DUCTILE IRON PIPE AND PVC PIPE DEFLECTION CAN ONLY BE ALLOWED BY INSTALLING THE APPROPRIATE FITTINGS – NO EXCEPTIONS.*



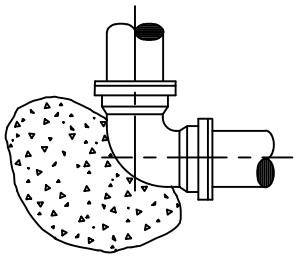
CROSS



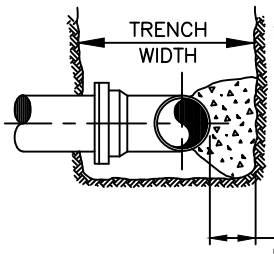
TEE WITH PLUG



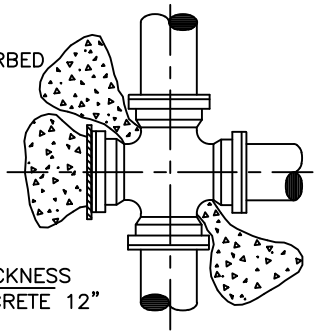
WYE or TEE



ELBOW




TYPICAL SECTION

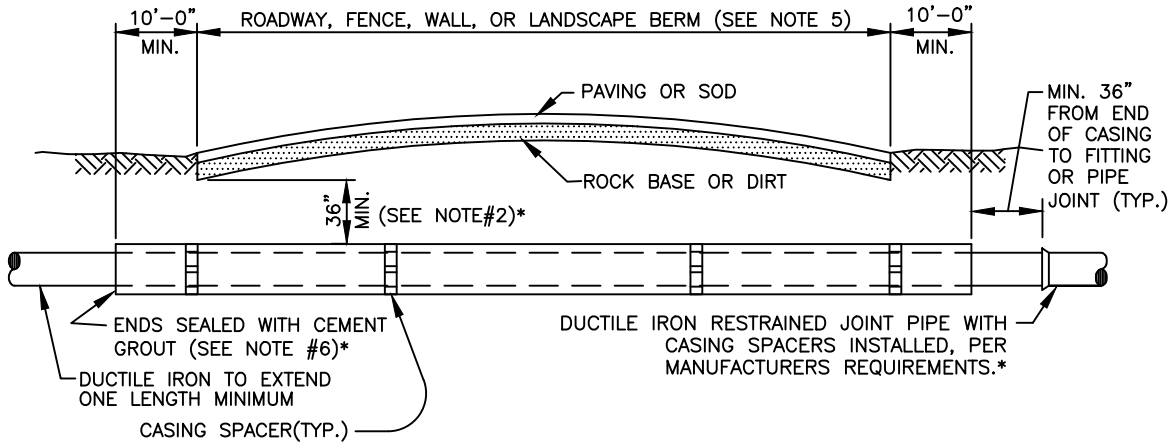


CROSS WITH PLUG

| PIPE | THRUST BLOCK AREA REQ'D | REMARKS | NOTE: FOR OTHER FITTINGS USE THE FOLLOWING FACTORS. |
|---|---|---|---|
| 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 | TEE 100%<br>45° BEND 71%<br>22 1/2° BEND 39%<br>11 1/4° BEND 20%<br>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:

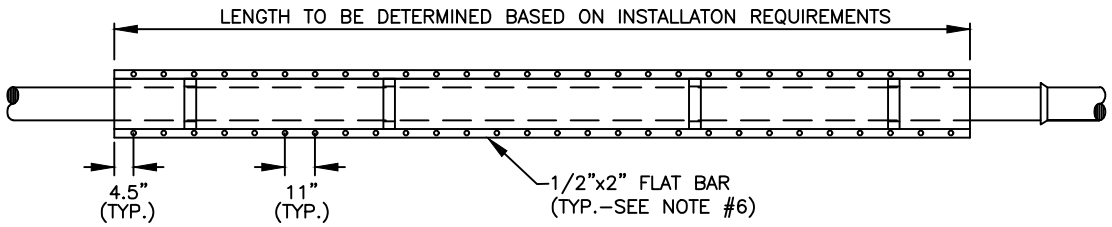
1. CONCRETE THRUST BLOCKS OR THRUST COLLARS MAY BE UTILIZED ONLY IF NECESSARY FOR CONNECTIONS TO AN EXISTING PIPING SYSTEM, OTHERWISE MECHANICAL RESTRAINTS SHALL BE USED. KEEP "T" BOLTS CLEAR OF CONCRETE, WRAPPED IN VISQUEEN FOR FUTURE ACCESS, WITH A MINIMUM OF 1' THICKNESS BETWEEN THE FITTING AND SOIL.
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.



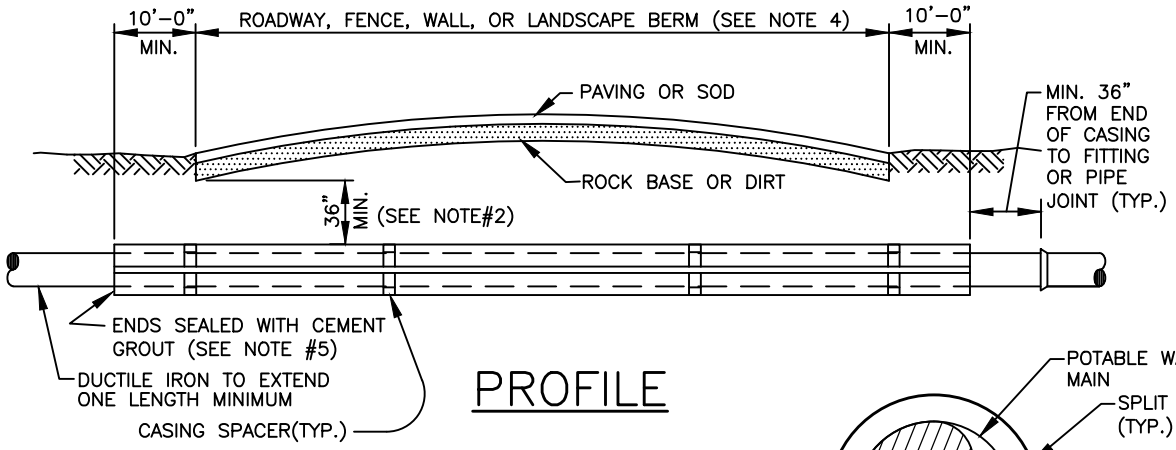

| CARRIER PIPE SIZE | STEEL CASING INSIDE DIAMETER (MIN) | MINIMUM WALL THICKNESS (SEE NOTE 2) |
|---|---|---|
| 4" | 12" | .188 |
| 6" | 14" | .250 |
| 8" | 20" | .250 |
| 10" | 20" | .250 |
| 12" | 24" | .250 |
| 14" | 24" | .250 |
| 16" | 30" | .312 |
| 18" | 30" | .312 |
| 20" | 36" | .372 |
| 24"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

NOTES:*

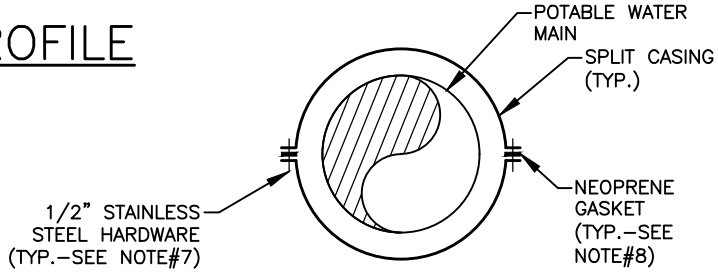
1. A PROFILE DRAWING TO SCALE FOR EACH JACK AND BORE, DIRECTIONAL DRILL, OR DIRECT BURIED INSTALLATION IS REQUIRED TO BE APPROVED BY THE DEPARTMENT PRIOR TO INSTALLATION. IF A SPLIT CASING IS REQUIRED SEE WUD DETAIL 13RB.*
2. THE RIGHT-OF-WAY OWNER MAY REQUIRE THICKER WALL CASING AND LARGER COVER OVER CASING.*
3. STEEL CASING SHALL BE COATED OUTSIDE WITH COAL TAR EPOXY (MIN. 16 MILS DFT) AND BE PAINTED WITH A 4" MINIMUM CONTINUOUS STRIPE, PANTONE 5226 IN COLOR, ALONG THE TOP SIDE OF THE CASING.*
4. PIPE IN CASING SHALL BE PULLED TO FULLY ENGAGE RESTRAINT.
5. STEEL CASING IS REQUIRED FOR ALL POTABLE WATER MAIN INSTALLATIONS UTILIZING JACK AND BORE OR WHEN MAINS ARE INSTALLED UNDER FENCES, WALLS, OR LANDSCAPE BERMS. WHEN A CASING IS INSTALLED UNDER A FENCE, WALL, OR BERM SEE WUD STANDARD DETAIL 48W FOR INSTALLATION REQUIREMENTS.*
6. NON-SHRINKABLE CEMENT GROUT TO BE INSTALLED TO OBTAIN WATERTIGHT SEAL AT EACH END OF CASING.*




PLAN




PROFILE

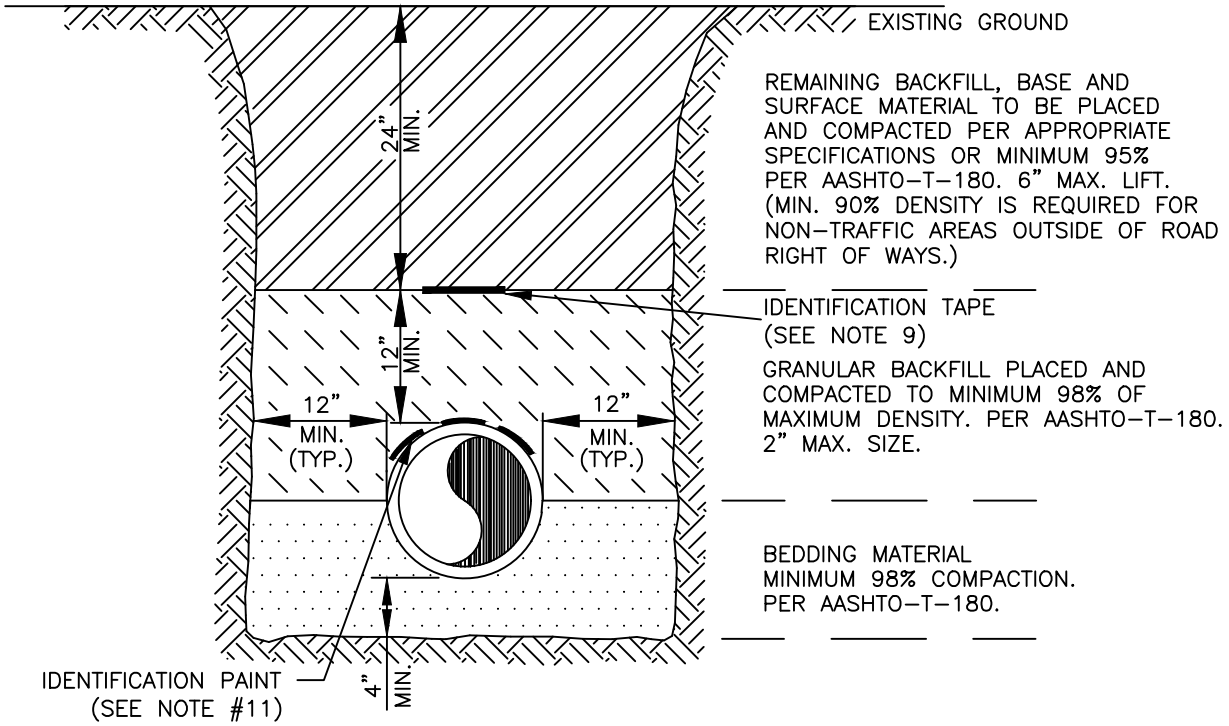



SECTION

| 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 |

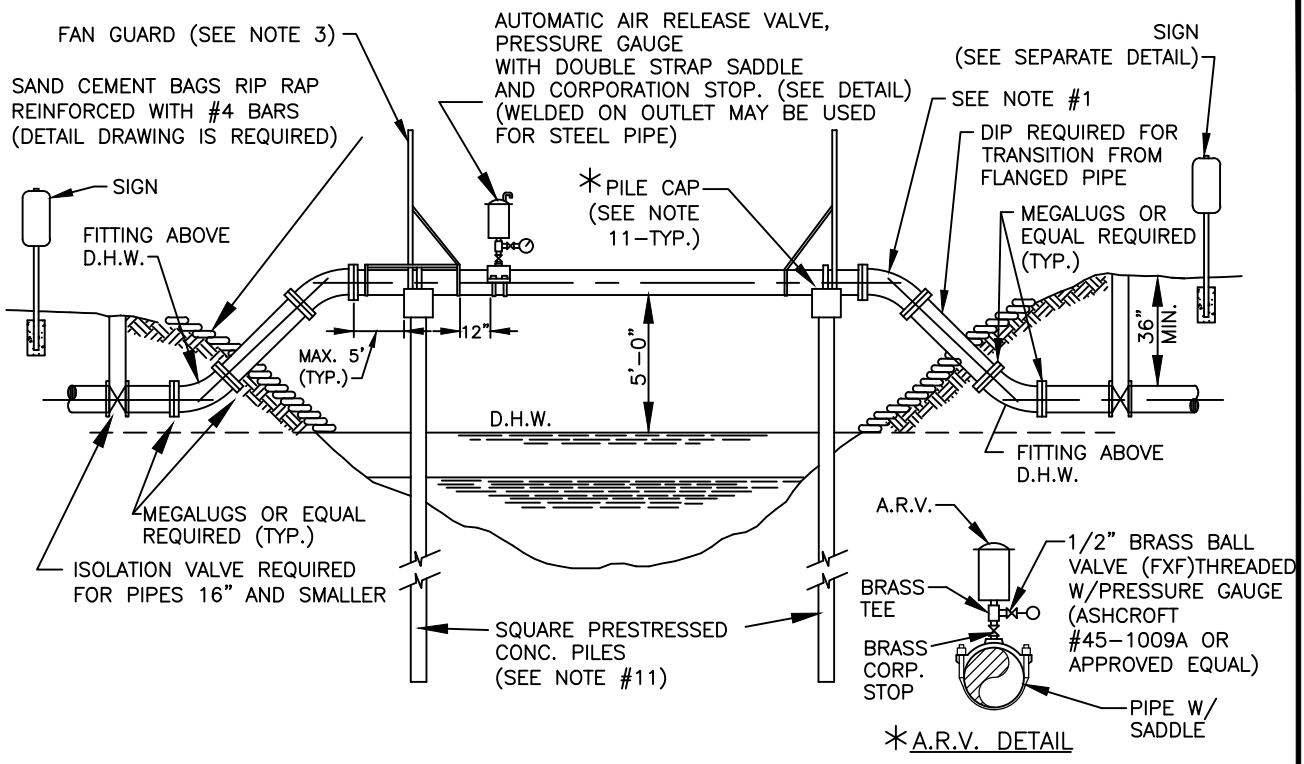
NOTES:

1. A SHOP DRAWING TO SCALE FOR EACH SPLIT CASING INSTALLATION IS REQUIRED AND TO BE APPROVED BY THE DEPARTMENT PRIOR TO INSTALLATION.
2. THE RIGHT–OF–WAY OWNER MAY REQUIRE THICKER WALL CASING AND LARGER COVER OVER CASING.
3. STEEL CASING SHALL BE COATED OUTSIDE WITH COAL TAR EPOXY (MIN. 16 MILS DFT) AND BE PAINTED WITH A 4" MINIMUM CONTINUOUS STRIPE, PURPLE IN COLOR, ALONG THE TOP SIDE OF THE CASING.
4. SPLIT STEEL CASING IS REQUIRED ON ALL EXISTING RECLAIMED WATER INSTALLATIONS WHEN A NEW STORM DRAINAGE OR OTHER UTILITY PIPE IS INSTALLED AND CANNOT ACHIEVE THE PROPER VERTICAL SEPARATION PER WUD STANDARDS ALONG WITH WHEN A NEW FENCE, WALL, OR LANDSCAPE BERM IS INSTALLED OVER AN EXISTING RECLAIMED WATER MAIN. WHEN A SPLIT CASING IS INSTALLED UNDER A FENCE, WALL, OR LANDSCAPE BERM SEE WUD STANDARD DETAIL 48R FOR INSTALLATION REQUIREMENTS.
5. NON–SHRINKABLE CEMENT GROUT TO BE INSTALLED TO OBTAIN WATERTIGHT SEAL AT EACH END OF CASING.
6. FLAT BARS TO BE STITCH WELDED AT 6" LENGTHS TO EDGE OF CASING ON EACH SIDE.
7. CASING TO BE ASSEMBLED IN FIELD WITH 1/2" STAINLESS STEEL BOLTS, WASHERS, AND NUTS ON EACH SIDE.
8. 1/4" NEOPRENE GASKET MATERIAL EXTENDING PAST CASING JOINT FOR POSITIVE SEAL ON EACH SIDE.



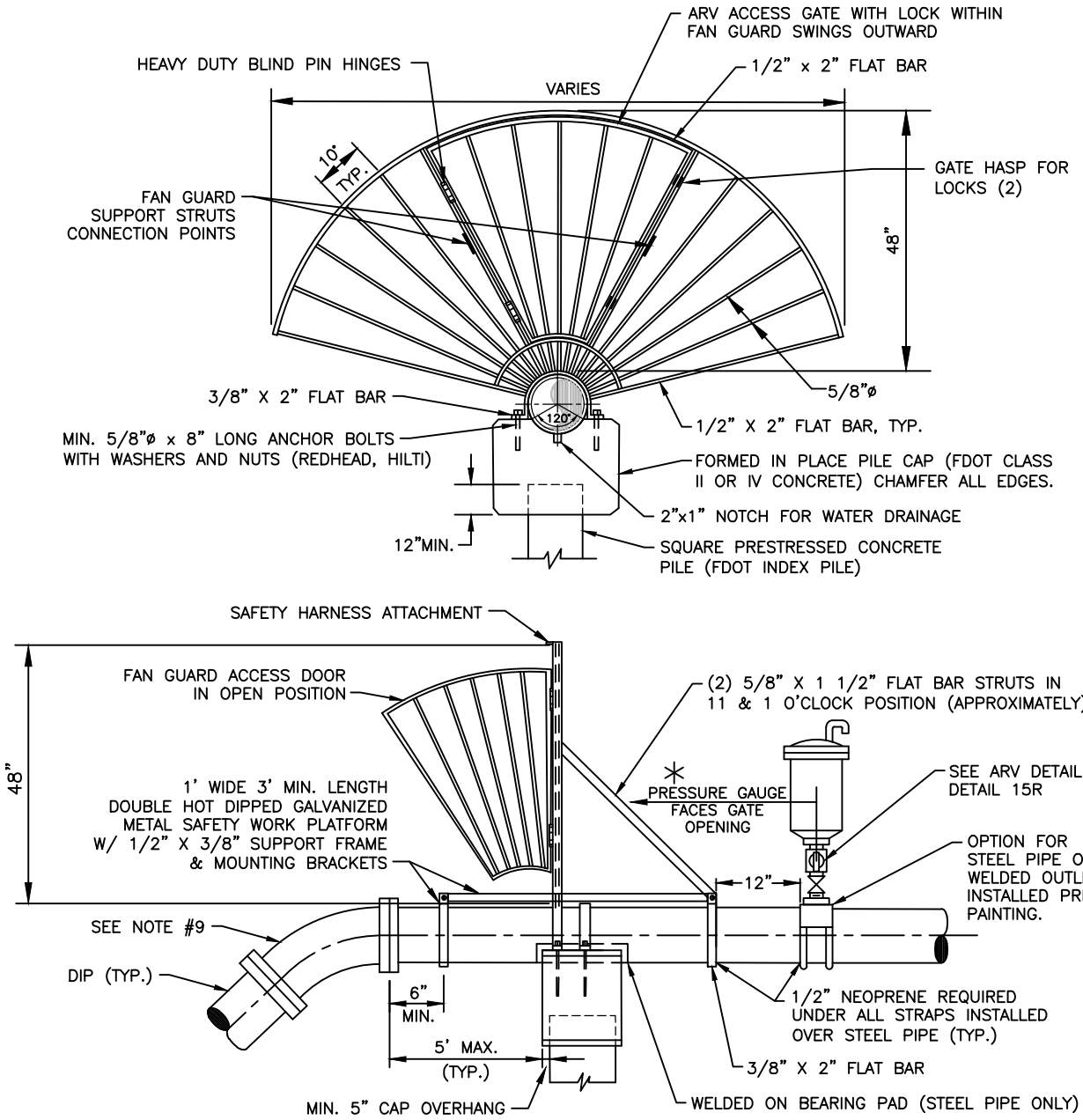

NOTES:*

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 6" WIDE MAGNETIC TAPE IS REQUIRED ON ALL RECLAIMED WATER MAINS.*
10. CONTINUOUS FOUR (4) INCH WIDE PURPLE PAINT STRIPPING IS REQUIRED FOR RECLAIMED WATER DUCTILE IRON PIPE (D.I.P.) INSTALLED BELOW GRADE ONLY.*
11. A CONTINUOUS 4" WIDE PAINTED STRIP (PURPLE) IS REQUIRED FOR ALL DIP RECLAIMED WATER MAINS.*
12. RECLAIMED WATER MAIN INSTALLATIONS WITHIN PUBLIC ROAD RIGHT-OF-WAYS SHALL BE BY THE SPECIFICATIONS OF THE JURISDICTION GRANTING THE RIGHT-OF-WAY UTILITY PERMIT.*
13. FOR PIPE INSTALLATIONS IN ROAD RIGHTS-OF-WAY, ROAD OWNER'S PERMIT SPECIFICATIONS SHALL APPLY.




*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 DETAIL 16r FOR ADDITIONAL REQUIREMENTS. ACCESS PLATFORM AND GATE REQUIRED ON ARV SIDE ONLY.
4. ALL STEEL PIPE SHALL HAVE WELDED ON BEARING PADS EXTENDED 1" MINIMUM BEYOND PIPE CRADLE WITH PAD INSTALLED PRIOR TO PAINTING. ALL EXPOSED STEEL PIPING SHALL BE PAINTED AS SPECIFIED IN THE APPROVED MATERIALS LIST WITH ALL HARDWARE BEING PAINTED WITH COAL–TAR EPOXY.
5. PIPE SHALL BE CRADLED ON ½" 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 ⅓ CIRCUMFERENCE OF PIPE. (SEE FAN GUARD DETAIL 16R)
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 PILES AND CAP DESIGN TO BE ON DETAILED SHOP DRAWINGS. THE REQUIRED PILES SHALL BE 14"x14" MIN. – TYPE 1A PER FLORIDA DOT INDEX PILES. PILE PENETRATION BELOW CANAL BOTTOM SHALL BE 15' MINIMUM WITH EACH PILE LOAD CAPACITY BEING 20 TONS MINIMUM (FDOT STANDARDS APPLY). ALL REQUIRED AERIAL CROSSING SHOP DRAWINGS SHALL BE TO SCALE AND SIGNED AND SEALED BY A STRUCTURAL ENGINEER.
12. THE AERIAL CROSSING STRUCTURAL ENGINEER OF RECORD SHALL PROVIDE IN WRITING A SIGNED AND SEALED LETTER CERTIFYING THE AERIAL CROSSING INSTALLATION WAS COMPLETED PER HIS/HER DESIGN AND ALL APPLICABLE STANDARDS AND PERMITS.

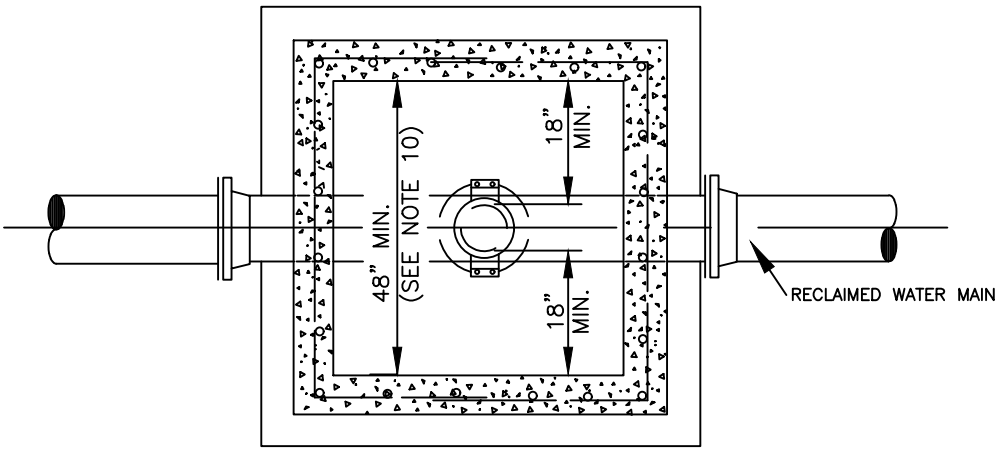


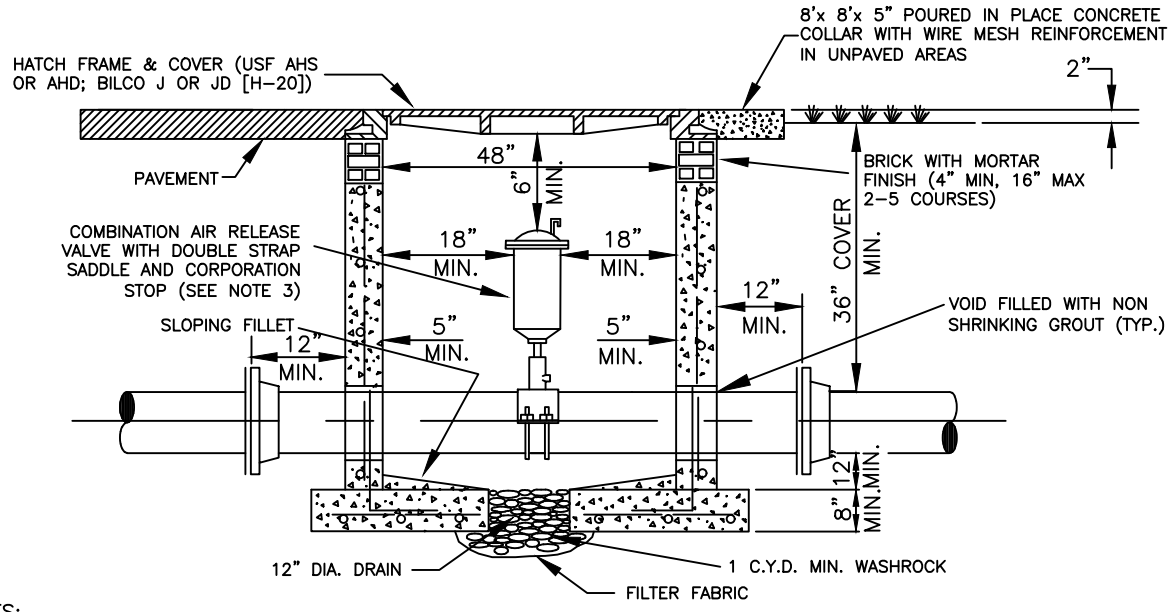




*NOTES:

1. FAN GUARDS SHALL BE PLACED AT EACH END OF CANAL CROSSING.
2. FANGUARD WITH HARDWARE SHALL BE FABRICATED FROM DOUBLE HOT DIPPED GALVANIZED STEEL.
3. SHOP DRAWINGS FOR FANGUARDS, CAPS, AND PILES MUST BE SUBMITTED TO PBCWUD FOR REVIEW AND APPROVAL PRIOR TO PRE-CONSTRUCTION MEETING.
4. REINFORCING STEEL SHALL CONFORM TO ASTM A-615, GRADE 60. MIN. 2" CONCRETE COVER OVER ALL STEEL.
5. NO WELDING OF REBAR TO REBAR OR REBAR TO PILE STRANDS SHALL BE ALLOWED.
6. LONG RADIUS WELDED ON UPPER BENDS ARE ACCEPTABLE FOR STEEL PIPE.
7. THE PILE/CAP STEEL CONNECTION SHALL BE WITH A MINIMUM OF 4-#8 REINFORCEMENT BARS. THE BARS SHALL BE DRILLED AND DOWLED (EPOXIED) A MINIMUM OF 14" IN DEPTH INTO THE PILE AND TIED TO THE CAP STEEL.
8. ACCESS PLATFORM AND GATE REQUIRED ON ARV SIDE ONLY.
9. SEE TYPICAL AERIAL CROSSING DETAIL 15R FOR ADDITIONAL REQUIREMENTS.

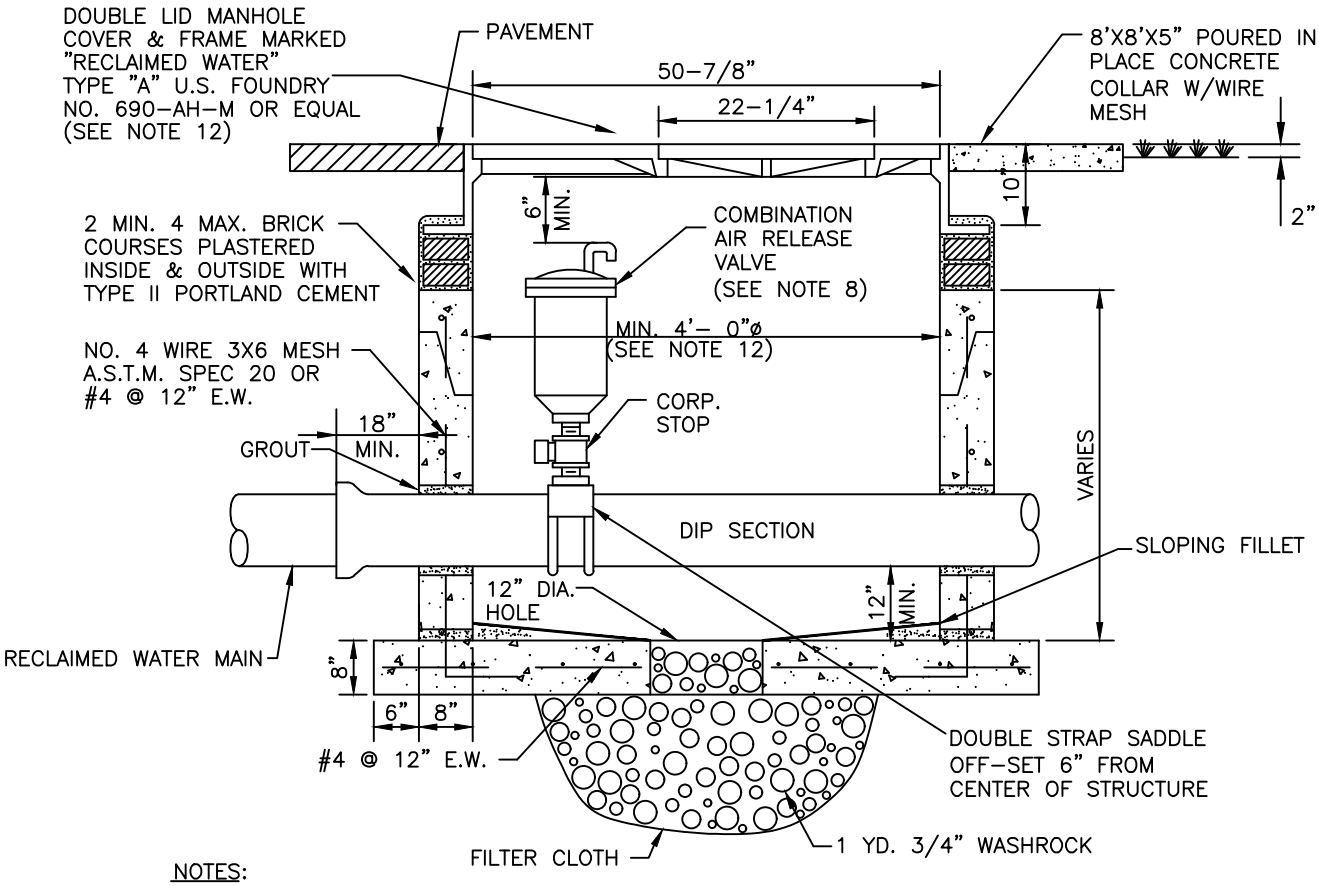



NOTES:

1. 4000 P.S.I. TYPE II CONCRETE
2. VAULT SHALL BE PRECAST WITH STEEL REINFORCING. SHOP DRAWING IS REQUIRED TO BE APPROVED BY THE DEPARTMENT PRIOR TO VAULT CONSTRUCTION AND/OR INSTALLATION.
3. COMBINATION AIR RELEASE VALVE (ARV) SHALL BE SIZED APPROPRIATE FOR SERVICE INTENDED ALTHOUGH A 2" MINIMUM SIZED ARV IS REQUIRED ON FORCE MAIN INSTALLATIONS.
4. ALL OPENINGS SHALL BE SEALED WITH WATERPROOF NON-SHRINKING GROUT.
5. 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.
6. AIR RELEASE VALVE AND PIPING TO BE IDENTIFIED AS "RECLAIMED WATER".
7. DUCTILE IRON PIPE IS REQUIRED THROUGH THE VAULT. NO PIPE JOINTS ARE ALLOWED IN VAULT.
8. THREADED AREAS OF CORPORATION STOP SHALL BE COMPLETELY SPIRAL WRAPPED WITH TWO WRAPS OF TEFLON TAPE.
9. LARGER VAULTS WILL BE REQUIRED FOR PIPES LARGER THAN 12"

| PIPE SIZE | MIN. VAULT SIZE |
|---|---|
| 16"-24" | 4'X5' |
| 30"-42" | 4'X6' |




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 PAVEMENT.
7. AIR RELEASE VALVE SHALL BE TYPE AND SIZE APPROPRIATE FOR SERVICE INTENDED.
8. COMBINATION AIR RELEASE VALVE (ARV) SHALL BE SIZED APPROPRIATE FOR SERVICE INTENDED ALTHOUGH A 2" MINIMUM SIZED ARV IS REQUIRED ON FORCE MAIN INSTALLATIONS.
9. DUCTILE IRON PIPE IS REQUIRED THROUGH THE MANHOLE. NO PIPE JOINTS ARE ALLOWED IN MANHOLE.
10. THREADED AREAS OF CORPORATION STOP SHALL BE COMPLETELY SPIRAL WRAPPED WITH TWO WRAPS OF TEFLON TAPE.
11. RECLAIMED WATER MAINS 12" AND SMALLER, AN ALTERNATIVE 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.
12. LARGER MANHOLES WILL BE REQUIRED FOR PIPES LARGER THAN 12"

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

13. MANHOLES IN ROADWAYS SHALL BE LOCATED OUTSIDE OF WHEEL PATHS.

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)

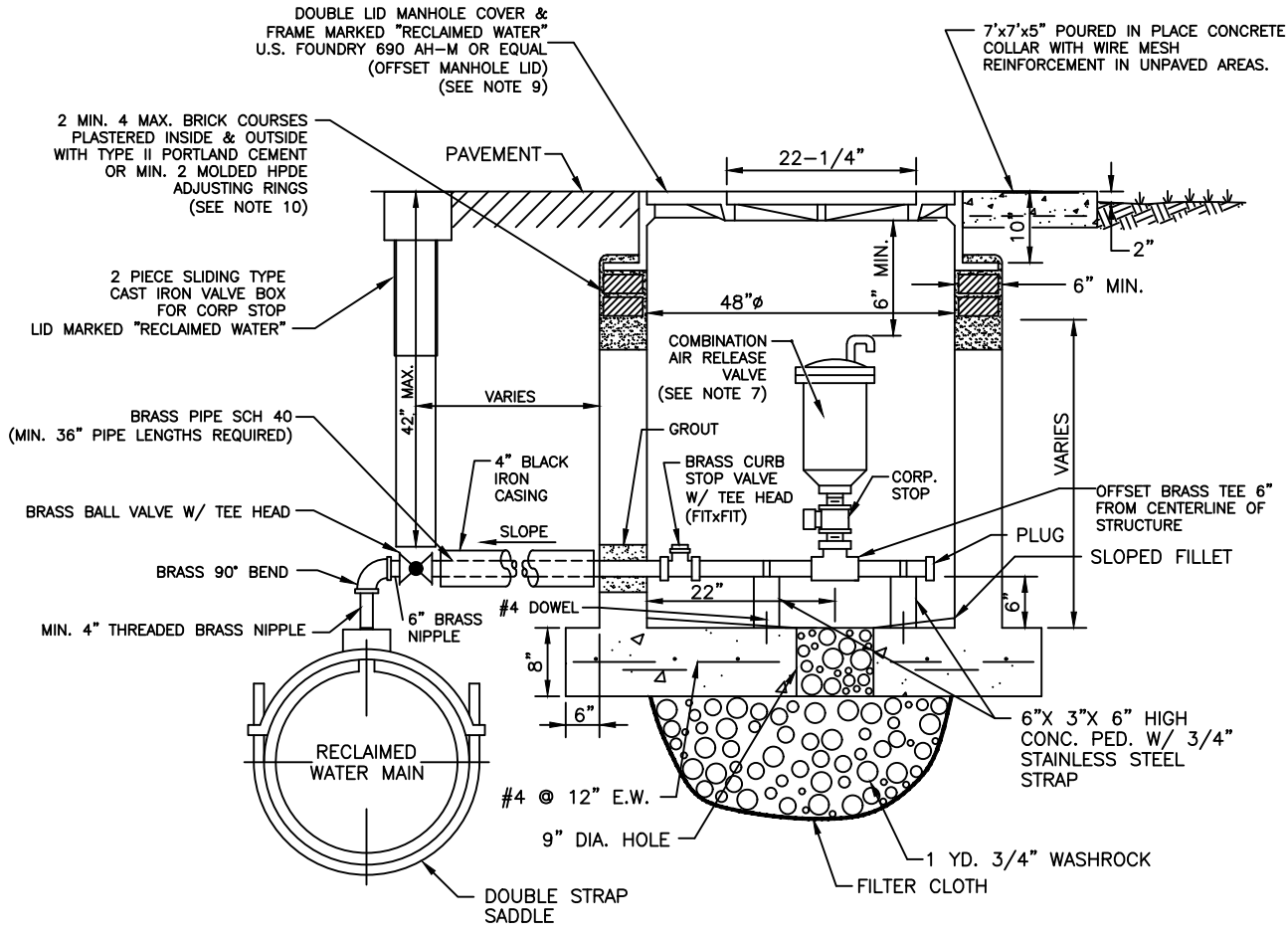
| AVG. TEST PRESSURE PSI | PIPE DIAMETER (INCHES) 2 | 3 | 4 | 6 | 8 | 10 | 12 | 14 | 16 | 18 | 20 | 24 | 30 | 36 | 42 | 48 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 150 | 0.10 | 0.14 | 0.18 | 0.27 | 0.37 | 0.46 | 0.55 | 0.64 | 0.73 | 0.83 | 0.92 | 1.10 | 1.38 | 1.65 | 1.93 | 2.20 |
| 200 | 0.10 | 0.15 | 0.21 | 0.31 | 0.42 | 0.53 | 0.64 | 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.
6. PRESSURE TEST DURATION TO BE MIN. 2 HOURS.




NOTES:

1. PRECAST MONOLITHIC POURED 4,000 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. PIPING AND STRUCTURE TO BE IDENTIFIED AS "RECLAIMED WATER SYSTEM" COMPONENTS.
5. THREADED AREAS OF CORPORATION STOP AND OTHER FITTINGS SHALL BE SPIRAL WRAPPED WITH TWO WRAPS OF TEFLON TAPE.
6. COMBINATION AIR RELEASE VALVE (ARV) SHALL BE SIZED APPROPRIATE FOR SERVICE INTENDED ALTHOUGH A 1" MINIMUM SIZED ARV IS REQUIRED ON RECLAIMED WATER MAIN INSTALLATIONS.
7. CONCRETE COLLAR REQUIRED IN UNPAVED AREAS AND WHEN PAVEMENT IS TO BE INSTALLED IN FUTURE.
8. ALTERNATE VAULT DESIGN MAY BE USED WITH AN APPROVED 32" DIAMETER HINGED MANHOLE COVER IS USED PROVIDED AN ALTERNATE VAULT SHOP DRAWING WAS SUBMITTED AND APPROVED BY THE DEPARTMENT PRIOR TO THE VAULT AND COVER BEING INSTALLED.
9. IN LIEU OF BRICK WORK APPROVED PRECAST CONCRETE ADJUSTING RINGS MAY BE USED WITH INSTALLATION PER MANUFACTURER'S RECOMMENDATION.
10. PIPE AND FITTINGS SHALL BE STANDARD BRASS.
11. MANHOLE SHALL BE INSTALLED OUTSIDE OF TRAFFIC AREA

CONSTRUCTION PROCEDURES

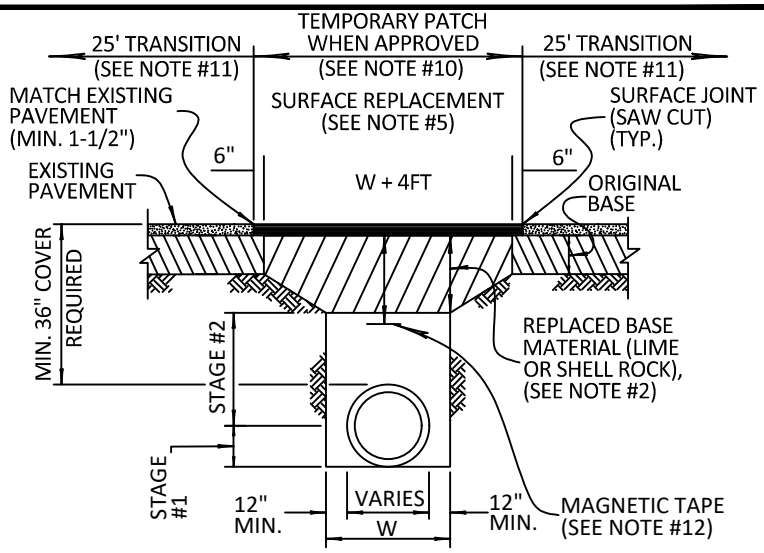
THE BACKFILL FOR THE FIRST AND SECOND STAGES SHALL BE PLACED IN 6" LAYERS (COMPACTED THICKNESS) AND SHALL BE COMPACTED TO 100% OF MAXIMUM DENSITY AS DETERMINED BY AASHTO T-99.

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

## 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 AND MATCH THE TYPE OF MATERIAL OF THE ORIGINAL BASE OR 12" MINIMUM, WHICHEVER 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 TAMPED TO THE SPECIFIED DENSITY (MINIMUM 98% AASHTO – T-180)

5) SURFACE MATERIAL WILL BE CONSISTENT WITH THE EXISTING SURFACE OR 1-1/2" SP 12.5 STRUCTURAL COURSE (TRAFFIC LEVEL A) ASPHALTIC CONCRETE WITH RC-70 PRIME COAT AT 0.10 GAL/SQ. YD. FOR LIMEROCK BASE AND TACK COAT AT 0.05 GAL/S.Y FOLLOW THE LATEST FDOT SPECIFICATIONS FOR APPLICATION RATES OF PRIME AND TACK COATS, CONTRACTOR TO SUBMIT MATERIALS AND RATES TO ENGINEER FOR APPROVAL PRIOR TO BEGINNING WORK.

6) PIPE SHALL BE PLACED IN A DRY TRENCH.

7) 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.

8) 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.

9) 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.

10) IF THE PAVEMENT IS NOT COMPLETELY RESTORED IMMEDIATELY FOLLOWING THE OPEN CUT, A SMOOTH TEMPORARY PATCH (MINIMUM 1.5" SP 12.5 STRUCTURAL COURSE 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 DAY PERIOD. ALTERNATIVE TEMPORARY TRENCH PROTECTION (STEEL PLATES OR OTHERS) MAY BE APPROVED BY THE CONSTRUCTION COORDINATION DIVISION.

11) FOR THE FINAL RESTORATION (INCLUDES THE PATCHED/SURFACE REPLACEMENT AREA OVER THE TRENCH), THE ROAD SHALL BE MILLED AND RESURFACED WITH 1-1/2" (ONE AND A HALF INCH) OF SP 12.5 STRUCTURAL COURSE (TRAFFIC LEVEL A) WITH TACK COAT AT 0.05 GAL/SY AND RC-70 PRIME COAT AT 0.10 GAL./SY. FOR A FULL LANE WIDTH ENCROACHED BY THE TRENCH INCLUDING A TRANSITION AREA OF 25 FT. EACH SIDE MEASURED FROM TOP OF TRENCH.

12) 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.

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

**WUD ONLY UTILITY NOTE:**
**THE CONTINUOUS PAINTED STRIPE REFERENCED IN NOTE #13 ABOVE SHALL BE PURPLE - PANATONE 522C IN COLOR PER WUD STANDARDS.**

## CONSTRUCTION PROCEDURES

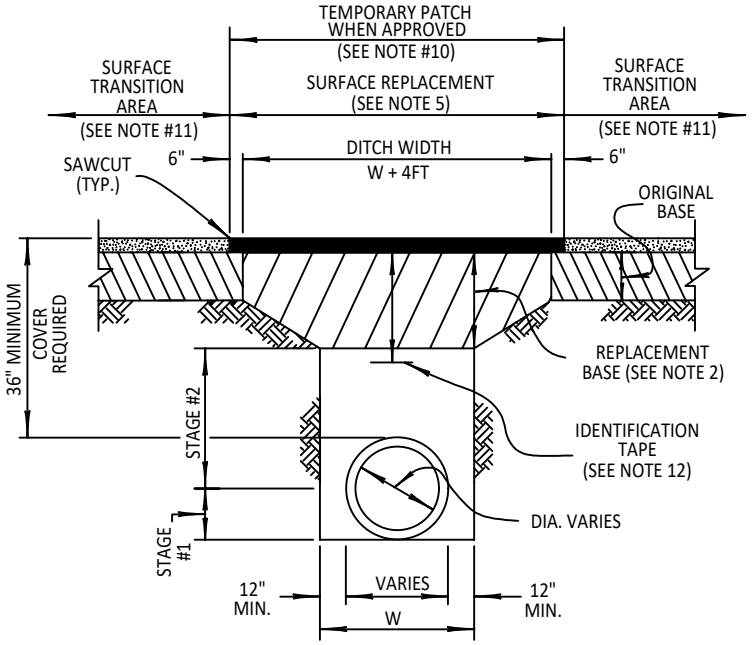
THE BACKFILL FOR THE FIRST AND SECOND STAGES SHALL BE PLACED IN 6" LAYERS (COMPACTED THICKNESS) AND SHALL BE COMPACTED TO 100% OF MAXIMUM DENSITY AS DETERMINED BY AASHTO T-99.

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

## 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" LIMEROCK (LBR100) MINIMUM FOR THOROUGHFARE PLAN ROADS. ANY ALTERNATE BASE MATERIAL REQUESTED BY THE ENGINEER OF RECORD REQUIRES APPROVAL BY THE ROADWAY PRODUCTION DIVISION.

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. (MINIMUM 98% AASHTO-T-180).

5) 1" FRICTION COURSE FC-9.5 OVER 1-1/2" TYPE SP STRUCTURAL COURSE (TRAFFIC LEVEL C) WITH TACK COAT AT 0.05 GAL/SY AND RC-70 PRIME COAT AT 0.10 GAL/SY FOR LIMEROCK BASE. FOLLOW THE LATEST FDOT SPECIFICATIONS FOR APPLICATION RATES OF PRIME AND TACK COATS. CONTRACTOR TO SUBMIT MATERIALS AND RATES TO ENGINEER FOR APPROVAL PRIOR TO BEGINNING WORK.

6) PIPE SHALL BE PLACED IN A DRY TRENCH.

7) 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.

8) 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.

9) 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.

10) IF THE PAVEMENT IS NOT COMPLETELY RESTORED IMMEDIATELY FOLLOWING THE OPEN CUT, A SMOOTH TEMPORARY PATCH (MINIMUM 2.5" SP 12.5 STRUCTURAL COURSE 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 DAY PERIOD. ALTERNATIVE TEMPORARY TRENCH PROTECTION (STEEL PLATES OR OTHERS) MAY BE APPROVED BY THE CONSTRUCTION COORDINATION DIVISION.

11) FOR FINAL RESTORATION (INCLUDES THE PATCHED/SURFACE REPLACEMENT AREA OVER THE TRENCH). THE ROAD SHALL BE MILLED 1" MILLING DEPTH/ RESURFACED PER NOTE 5 ABOVE FOR A FULL LANE WIDTH OF THE TRAVEL LANES ENCROACHED BY THE TRENCH AREA, INCLUDING A TRANSITION AREA OF 50 FT. ON EACH SIDE MEASURED FROM TOP OF TRENCH.

12) 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.

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

**WUD ONLY UTILITY NOTE:**
**THE CONTINUOUS PAINTED STRIPE REFERENCED IN NOTE #13 ABOVE SHALL BE PURPLE - PANATONE 522C IN COLOR PER WUD STANDARDS.**

NOTE:

1. SIGNS SHALL BE 12"X 18", WITH PURPLE AND BLACK IMPRINTS IMPRINTS ON WHITE ALUMIMUM (.063 GA.), ROUNDED CORNERS (1.25" RAD.), 2 HOLES (13/32" DIAM.) 12" O.C.

2. SIGNS AND MOUNTING HARDWARE PROVIDED BY PBCWUD AND INSTALLED BY THE PROPERTY OWNER.

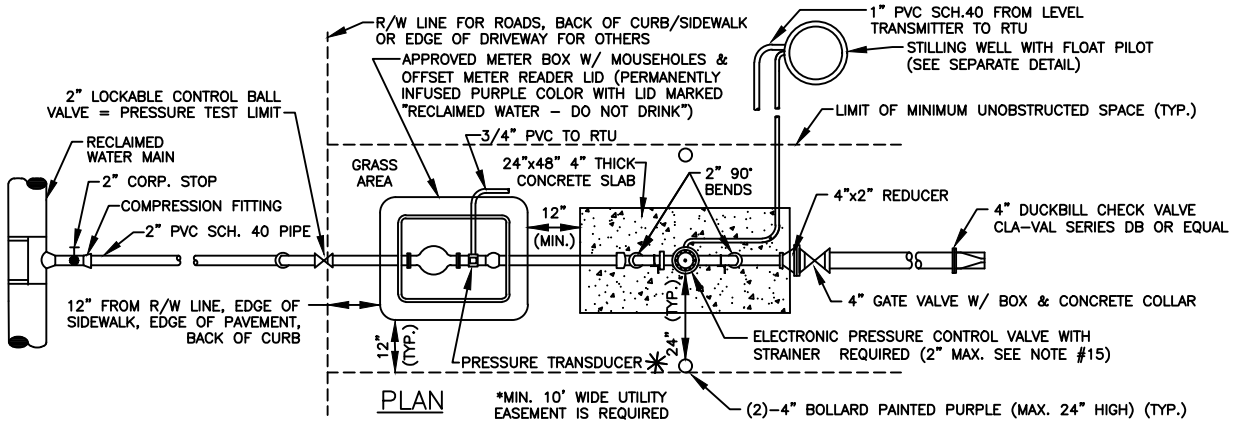
## MIN. LENGTH OF PIPE (FEET) TO BE RESTRAINED

(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 | – |

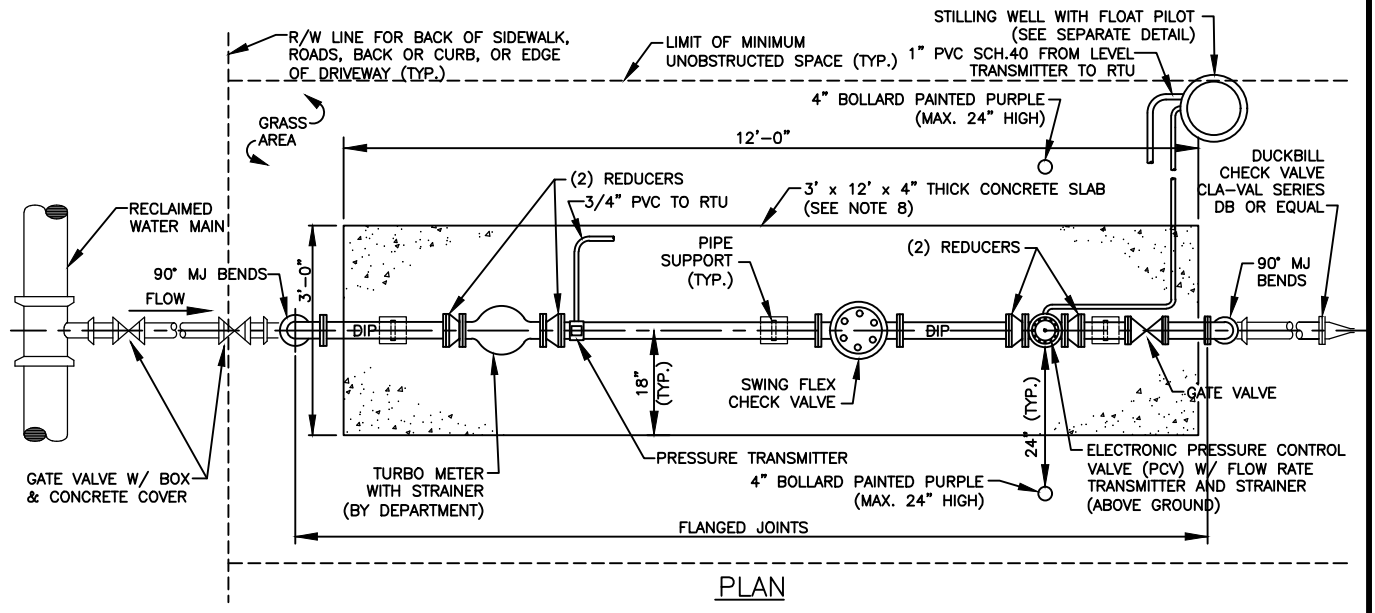
NOTES:

1. 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'
2. THE RESTRAINED PIPE LENGTHS APPLY TO DUCTILE IRON AND PVC PIPE.
3. ALL JOINTS BETWEEN UPPER AND LOWER BENDS SHALL BE RESTRAINED.
4. RESTRAINED PIPE LENGTHS APPLY TO PIPE ON BOTH SIDES OF VALVES AND FITTINGS.
5. MULTIPLY PIPE LENGTH BY 1.4 FOR POLYETHYLENE ENCASED PIPE.
6. RESTRAINED PIPE LENGTHS EQUAL TO AN "INLINE VALVE" CONDITION ARE REQUIRED AT EACH END OF A TRANSITION FROM HDPE PIPE TO OTHER PIPE MATERIALS.
7. DESIGN ENGINEER IS RESPONSIBLE FOR PROPER RESTRAINT PIPE LENGTHS FOR THE PROJECT.



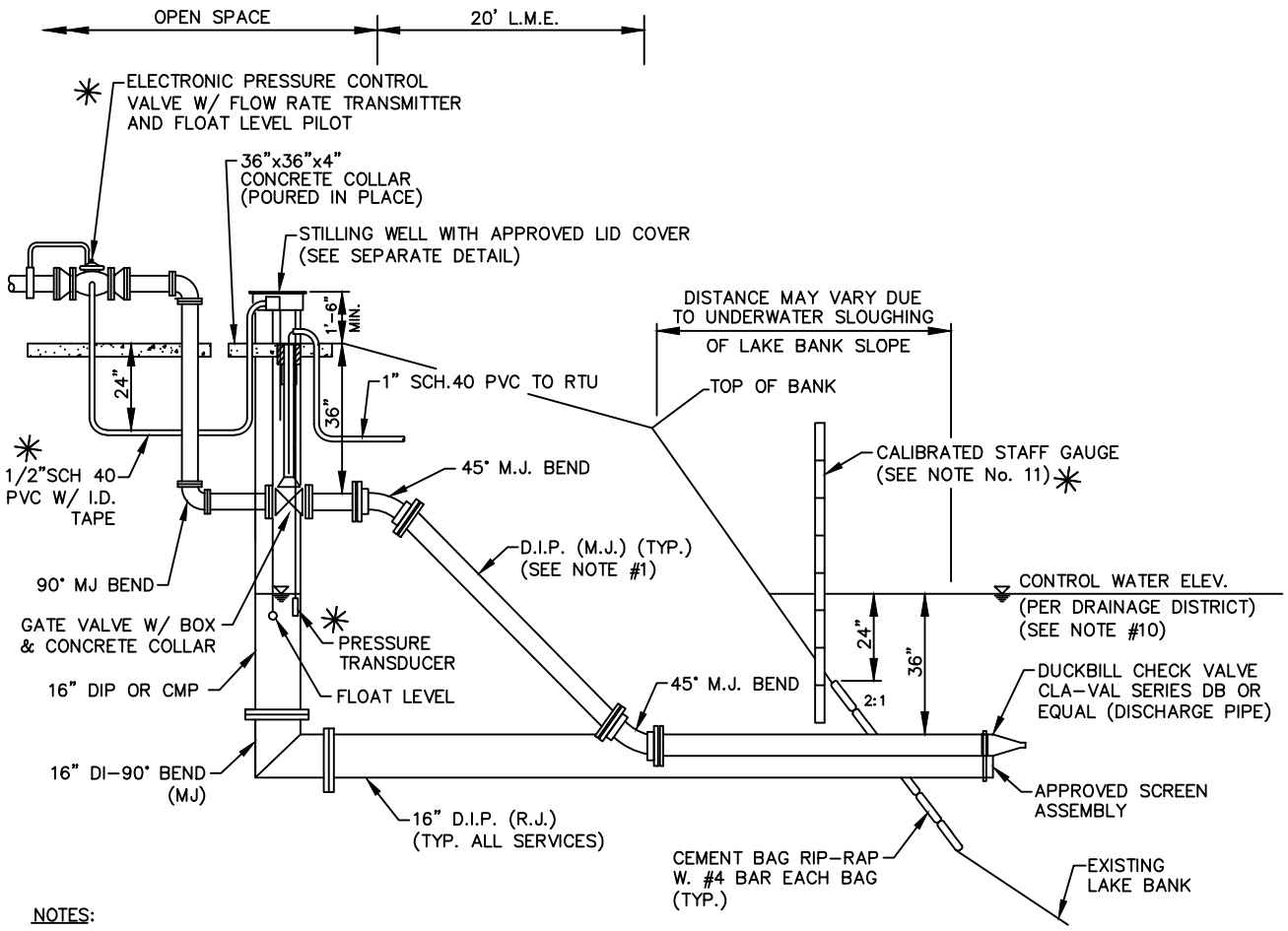

NOTES:

1. PIPING, VALVES, AND BOX LID TO BE PERMANENTLY IDENTIFIED AS "RECLAIMED WATER SYSTEM" COMPONENT. PVC FITTINGS SHALL BE SCHEDULE 80.
2. 12" MINIMUM CLEARANCE TO BE MAINTAINED BETWEEN METER BOX AND ANY OBSTRUCTION.
3. FOR INSTALLATION OF SERVICES UNDER DRIVEWAYS AND ROADWAYS, USE MINIMUM 4"ø PVC SCH. 40 OR HDPE SDR 9 PURPLE CASING. CASING TO EXTEND MINIMUM 24" BEYOND EDGE OF PAVEMENT. END OF CASING TO BE SEALED WITH CEMENT.
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 10' APART.
5. METER SHALL NOT BE PLACED IN SIDEWALK OR DRIVEWAY AREAS. SERVICE LINES AND TAPS SHALL NOT BE PLACED UNDER DRIVEWAYS WHENEVER POSSIBLE.
6. A CHECK VALVE IS REQUIRED FOR ALL RECLAIMED WATER SERVICES.
7. THE 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 UNTIL:
   A) FORM BOARDS FOR DRIVEWAY AND/OR SIDEWALK ARE IN PLACE OR DRIVEWAY OR SIDEWALK IS IN PLACE.
   B) "MINIMUM UNOBSTRUCTED SPACE" (AS SHOWN) IS PROVIDED. MINIMUM 12" VERTICAL SEPARATION IS REQUIRED TO OTHER UTILITIES.
   C) APPROPRIATE BACKFLOW PREVENTER IS INSTALLED ON THE POTABLE WATER SERVICE.
10. METER SHALL BE INSTALLED BY THE DEPARTMENT. UPON REQUEST BY PROPERTY OWNER, THE DEPARTMENT MAY INSTALL THE RECLAIMED WATER SERVICE FROM THE TAP INTO THE MAIN TO THE TEMPORARY PLUG ON THE DISCHARGE SIDE OF THE METER.
11. THE DEVELOPER/PROPERTY OWNER OR ASSIGNEE SHALL BE RESPONSIBLE FOR INSTALLATION OF SERVICE ASSEMBLY (INCLUDING STILLING WELL) BEYOND THE "END OF SERVICE INSTALLATION BY PBCWUD" POINT AS SHOWN.
12. CONTRACTOR SHALL CONSTRUCT SERVICE COMPONENTS FOR THE METER "TRUE" AND "PLUMB" AND TO ALLOW METER READING THROUGH THE METER READER LID.
13. ALL HARDWARE FOR FLANGED CONNECTIONS (BOLTS, ETC.) TO BE STAINLESS STEEL.
14. THREADED AREAS OF CORPORATION STOP AND OTHER FITTINGS SHALL BE SPIRAL WRAPPED WITH TWO (2) WRAPS OF TEFLON TAPE.
15. METER BOX OR CONTROL VALVE ASSEMBLY/STILLING WELL SHALL NOT BE LOCATED IN A LAKE MAINTENANCE EASEMENT.
16. THE ENTIRE LAKE DISCHARGE SERVICE ASSEMBLY, INCLUDING THE METER, PRESSURE CONTROL VALVE (PCV), DISCHARGE PIPE, AND STILLING WELL TO BE OWNED AND MAINTAINED BY PBCWUD. ONLY MATERIALS APPROVED BY PBCWUD MAY BE USED FOR SERVICE INSTALLATION.
17. A REMOTE TELEMETRY UNIT IS REQUIRED TO ALLOW PBCWUD TO MONITOR AND CONTROL THE REUSE WATER DISCHARGE.



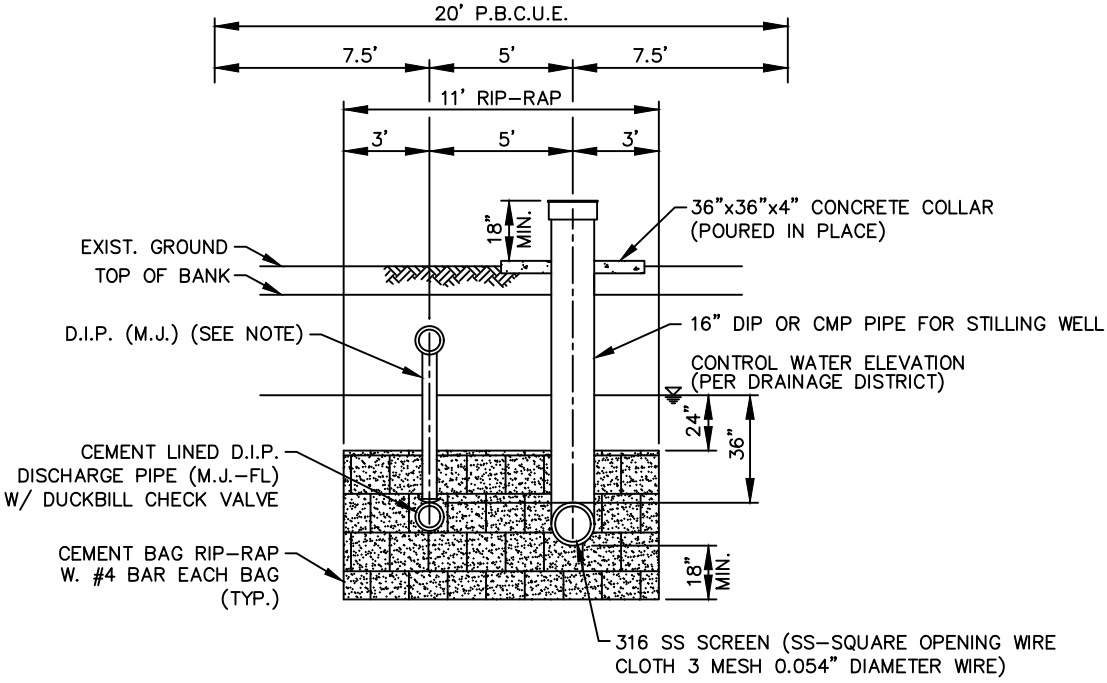

NOTES:

1. SIZING REQUIREMENTS FOR PIPE, VALVES AND APPURTENANCES:
   3" METER: "A" = 19 1/4", 4" SWING FLEX CHECK VALVE, 3" PRESSURE CONTROL VALVE, AND 4" PIPING.
   4" METER: "A" = 23 1/4", 6" SWING FLEX CHECK VALVE, 4" PRESSURE CONTROL VALVE, AND 6" PIPING.
   6" METER: "A" = 27 3/8", 8" SWING FLEX CHECK VALVE, 6" PRESSURE CONTROL VALVE, AND 8" PIPING.
   8" METER: "A" = 30 3/8", 10" SWING FLEX CHECK VALVE, 8" PRESSURE CONTROL VALVE, AND 10" PIPING.
2. ALL PIPING AND APPURTENANCES SHALL BE COLOR CODED PURPLE.
3. VALVE BOX LIDS SHALL BE SQUARE AND MARKED "REUSE WATER".
4. A TO SCALE PLAN AND PROFILE DESIGN AND LOCATION DRAWING IS REQUIRED.
5. METER SHALL NOT BE PLACED IN SIDEWALK OR DRIVEWAY AREAS. SERVICE LINES AND TAPS SHALL NOT BE PLACED UNDER DRIVEWAYS WHENEVER POSSIBLE.
6. A CHECK VALVE IS REQUIRED FOR ALL RECLAIMED WATER SERVICES.
7. UNSUITABLE IN-SITU MATERIALS SUCH AS MUCK, DEBRIS, AND LARGER ROCKS SHALL BE REMOVED WITH 2" MAXIMUM SIZE.
8. 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.
9. METER SHALL BE INSTALLED BY THE DEPARTMENT. PROPERTY OWNER SHALL BE RESPONSIBLE FOR DESIGN AND INSTALLATION OF THE SERVICE ASSEMBLY, INCLUDING THE STILLING WELL.
10. CONTRACTOR SHALL CONSTRUCT SERVICE COMPONENTS FOR THE METER "TRUE" AND "PLUMB" AND TO ALLOW METER READING THROUGH THE METER READER LID.
11. ALL HARDWARE FOR FLANGED CONNECTIONS (BOLTS, ETC.) TO BE STAINLESS STEEL.
12. METER BOX OR CONTROL VALVE ASSEMBLY/STILLING WELL SHALL NOT BE LOCATED IN A LAKE MAINTENANCE EASEMENT.
13. THE ENTIRE LAKE DISCHARGE SERVICE ASSEMBLY, INCLUDING THE METER, PRESSURE CONTROL VALVE (PCV), DISCHARGE PIPE, AND STILLING WELL TO BE OWNED AND MAINTAINED BY PBCWUD. ONLY MATERIALS APPROVED BY PBCWUD MAY BE USED FOR SERVICE INSTALLATION.
14. A REMOTE TELEMETRY UNIT IS REQUIRED TO ALLOW PBCWUD TO MONITOR AND CONTROL THE REUSE WATER DISCHARGE.



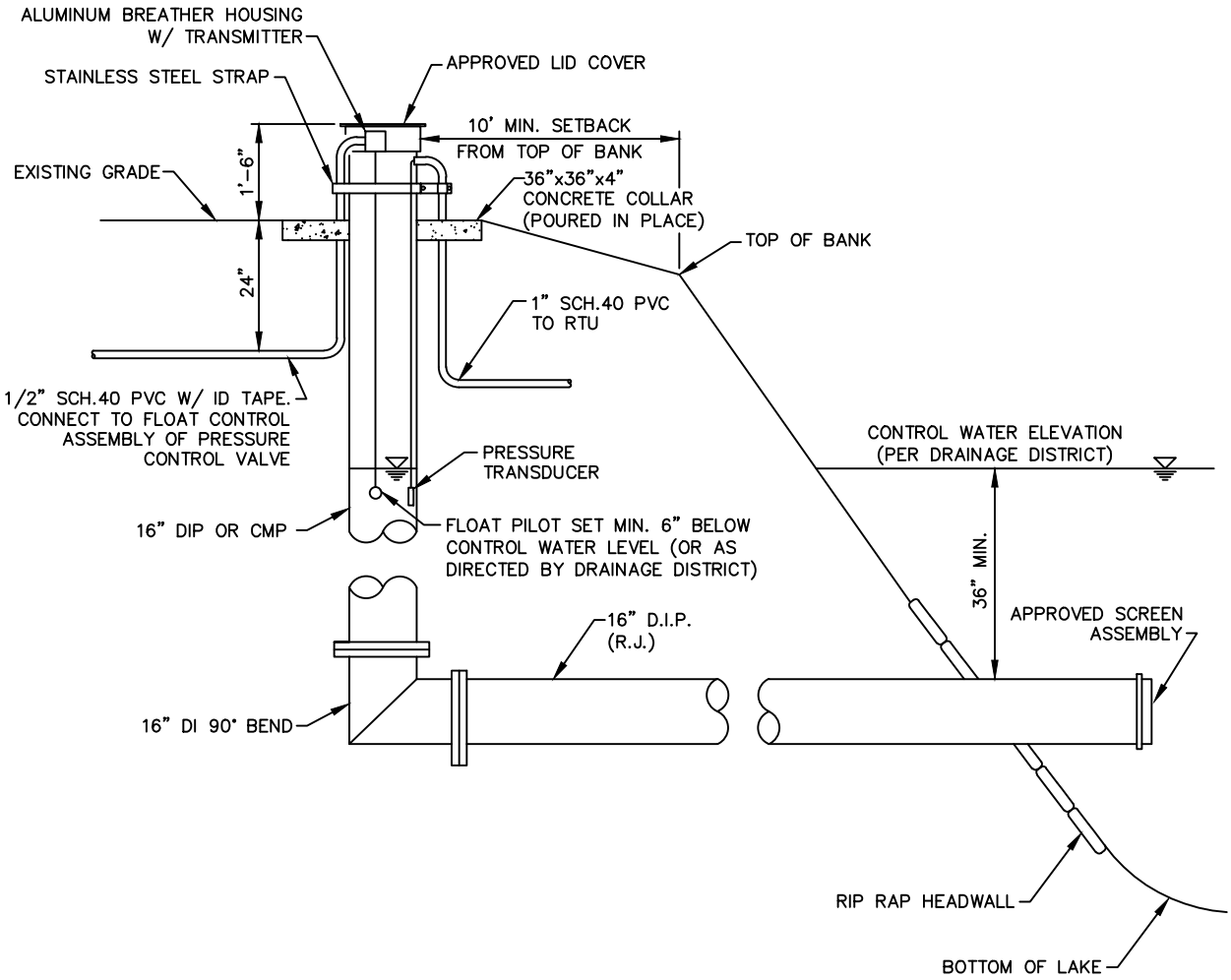

NOTES:

1. SIZING REQUIREMENTS FOR PIPING, VALVES, AND APPURTENANCES (DIP REQUIRED):
   UP TO 2" METER: 2" CHECK VALVE, 2" PRESSURE CONTROL VALVE, 4" GATE VALVE, AND 4" DISCHARGE.
   3" METER: 4" CHECK VALVE, 3" PRESSURE CONTROL VALVE, 4" GATE VALVE, AND 4" DISCHARGE.
   4" METER: 6" CHECK VALVE, 4" PRESSURE CONTROL VALVE, 6" GATE VALVE, AND 6" DISCHARGE.
   6" METER: 8" CHECK VALVE, 6" PRESSURE CONTROL VALVE, 8" GATE VALVE, AND 8" DISCHARGE.
   8" METER: 10" CHECK VALVE, 8" PRESSURE CONTROL VALVE, 10" GATE VALVE, AND 10" DISCHARGE.
2. ALL PIPING AND APPURTENANCES SHALL BE COLOR CODED AS REQUIRED.
3. METER BOX OR CONTROL VALVE ASSEMBLY/STILLING WELL SHALL NOT BE LOCATED IN A LAKE MAINTENANCE EASEMENT.
4. PROPERTY OWNER SHALL BE RESPONSIBLE FOR DESIGN AND INSTALLATION OF THE SERVICE ASSEMBLY, INCLUDING THE STILLING WELL.
5. THE ENTIRE LAKE DISCHARGE SERVICE ASSEMBLY, INCLUDING THE METER, PRESSURE CONTROL VALVE (PCV), DISCHARGE PIPE, AND STILLING WELL TO BE OWNED AND MAINTAINED BY PBCWUD. ONLY MATERIALS APPROVED BY PBCWUD MAY BE USED FOR SERVICE INSTALLATION.
6. STILLING WELL SHALL BE LOCATED AS CLOSE AS POSSIBLE TO THE PRESSURE CONTROL VALVE ASSEMBLY.
7. MINIMUM 20' WIDE PBCUE IS REQUIRED.
8. A TO SCALE PLAN AND PROFILE DESIGN AND LOCATION DRAWING IS REQUIRED.
9. FLOAT LEVEL TO BE SET AS REQUIRED BY THE DRAINAGE DISTRICT.
10. PROPERTY OWNER SHALL INSTALL A CALIBRATED LAKE WATER LEVEL STAFF GAUGE TO RECORD AND REPORT WATER LEVELS AS REQUIRED BY REGULATORY AGENCIES.
11. STAFF GAUGE TO BE UNOBSTRUCTED, WATER LEVEL SHALL BE EASY TO READ. MUST BE LOCATED OUTSIDE OF LITTORAL ZONE, MUST BE CALIBRATED BY A SURVEYOR.



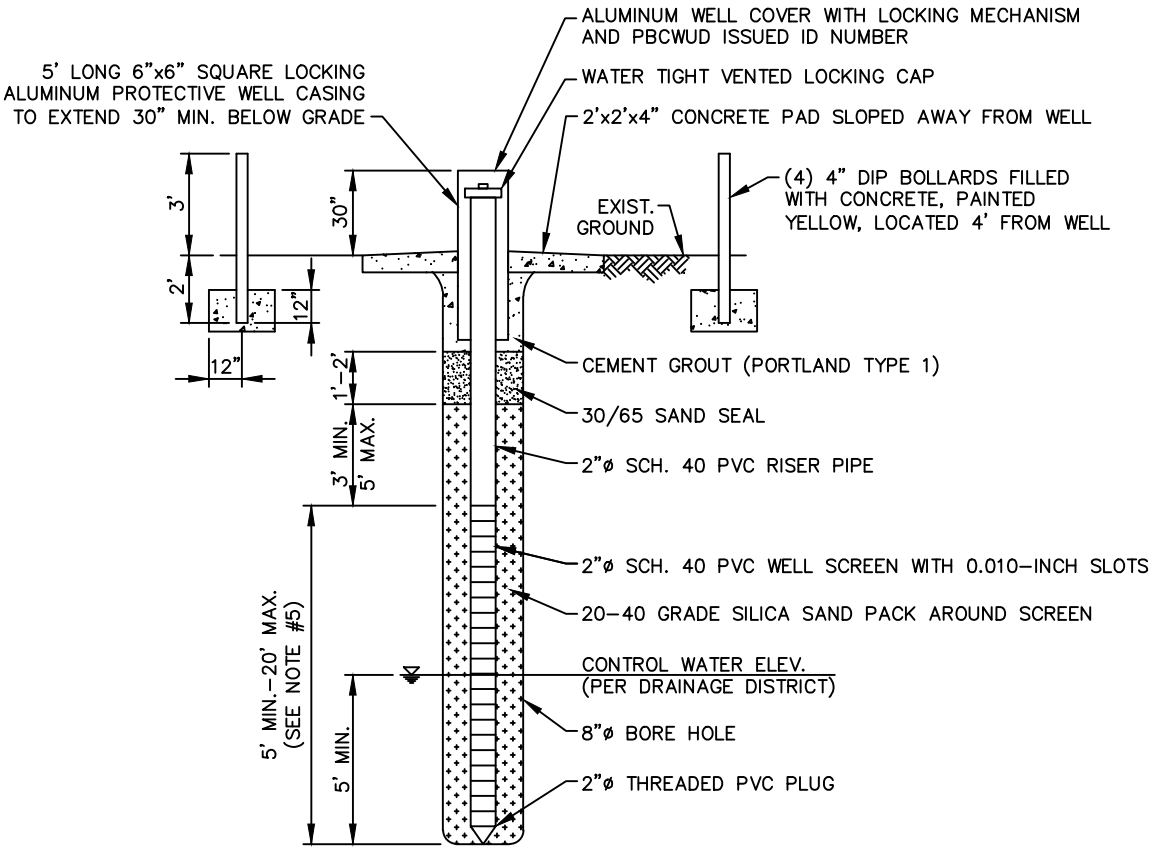

NOTES:

1. DISCHARGE PIPE SIZING REQUIREMENTS:
   UP TO 2" METER: 4" DISCHARGE DIP.
   3" METER: 4" DISCHARGE DIP.
   4" METER: 6" DISCHARGE DIP.
   6" METER: 8" DISCHARGE DIP.
   8" METER: 10" DISCHARGE DIP.
2. ALL PIPING AND APPURTENANCES SHALL BE COLOR CODED AS REQUIRED.
3. MINIMUM 36" COVER OVER BURIED PIPE IS REQUIRED.



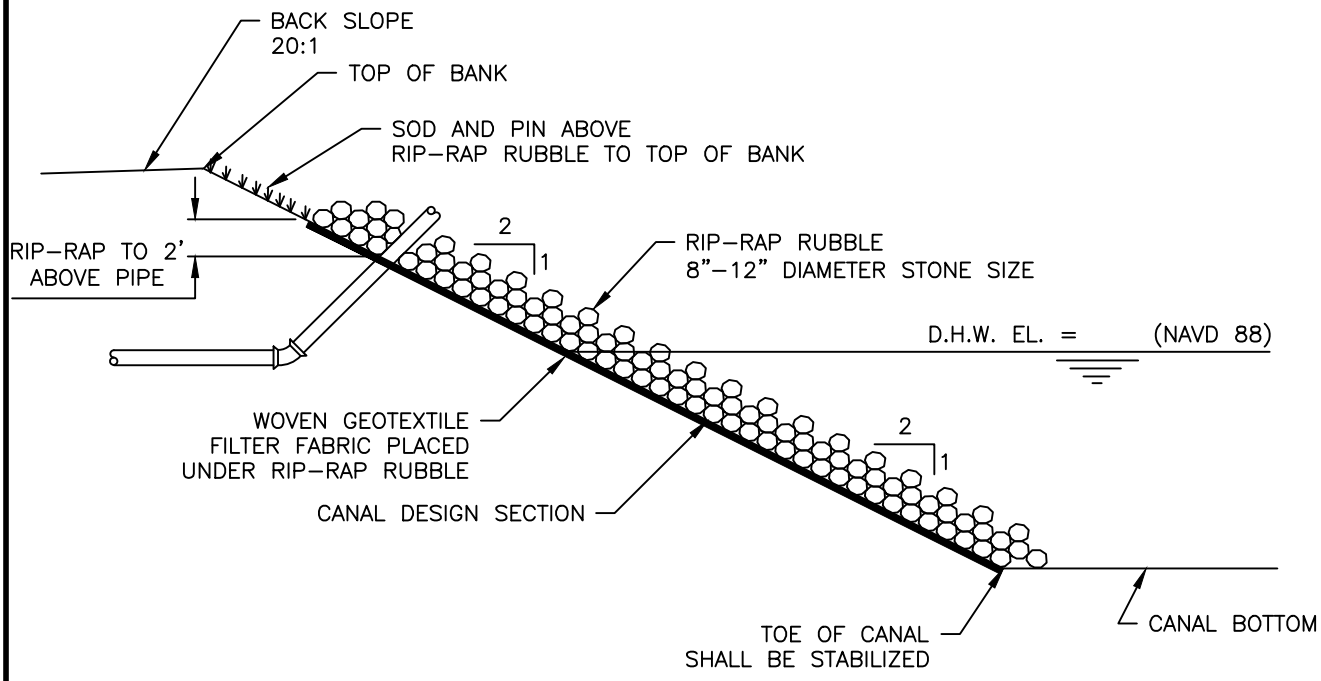

NOTES:

1. STILLING WELL SHALL NOT BE INSTALLED IN A LAKE MAINTENANCE EASEMENT OR LAKE TRACT.
2. APPROPRIATELY SIZED PALM BEACH COUNTY UTILITY EASEMENTS ARE REQUIRED.
3. ALL PIPING AND APPURTENANCES SHALL BE COLOR CODED AS REQUIRED.
4. A "NO SWIMMING" AND "CATCH AND RELEASE" SIGN SHALL BE INSTALLED AT POTENTIAL PUBLIC ACCESS POINTS TO EACH LAKE BY LAKE OWNER PRIOR TO SERVICE ACTIVATION.
5. TOP RIM ELEVATION OF THE STILLING WELL SHALL BE NOTED (WITH ELEVATION DATUM) ON THE RECORD DRAWINGS.




NOTES:

1. APPROPRIATE PALM BEACH COUNTY UTILITY EASEMENT AND ACCESS EASEMENT ARE REQUIRED.
2. A GROUNDWATER MONITORING PLAN IS TO BE SUBMITTED TO PBCWUD AND APPROVED BY FDEP PRIOR TO INSTALLATION OF THE MONITORING WELL.
3. MONITORING WELL SHALL BE INSTALLED BY A STATE OF FLORIDA LICENSED WATER WELL CONTRACTOR.
4. RECORD DRAWINGS SHALL INCLUDE THE MONITORING WELL IDENTIFICATION NUMBER ASSIGNED BY PBCWUD LABORATORY.
5. A SOIL BORING IS REQUIRED PRIOR TO INSTALLATION OF THE MONITORING WELL TO ESTABLISH THE WELL DEPTH AND SCREEN INTERVAL.



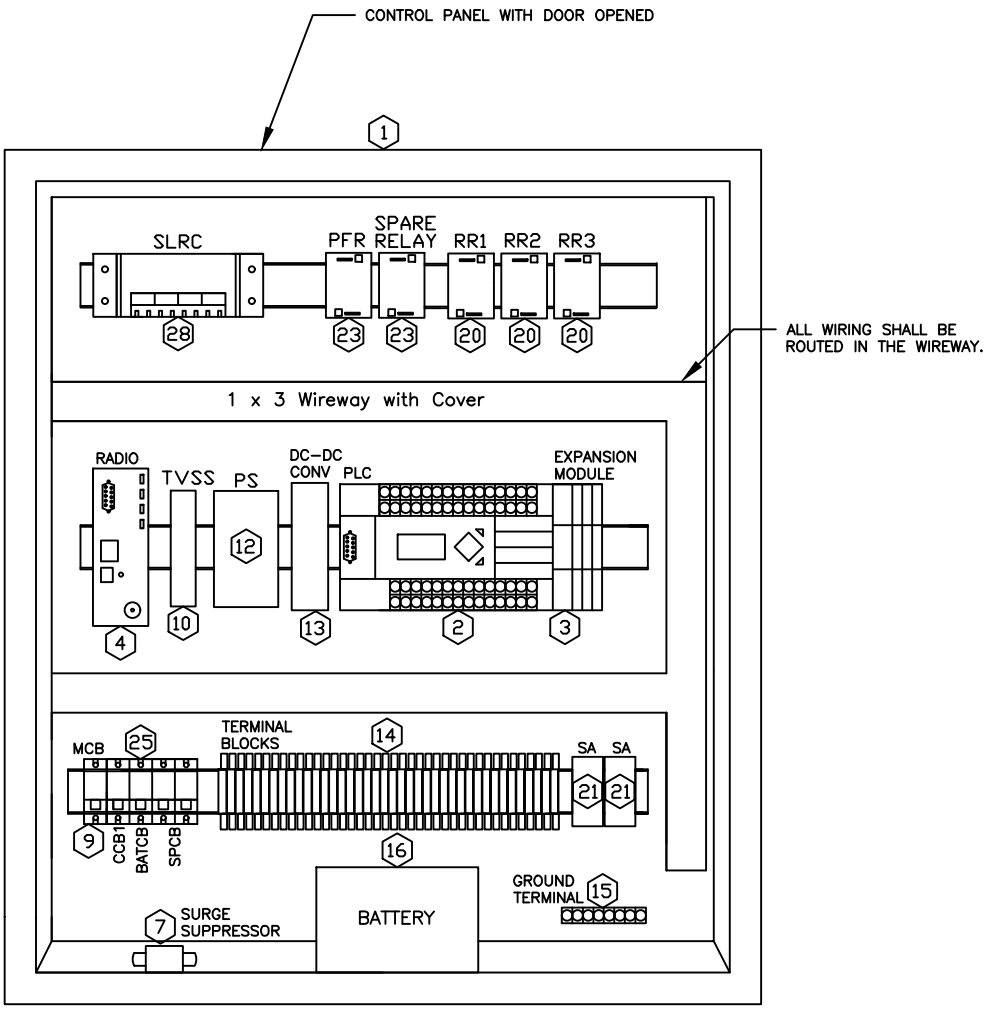

NOTES:

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.

## BILL OF MATERIALS (RECLAIMED CONTROL PANEL)

(ALL ELECTRICAL COMPONENTS AND ASSEMBLIES MUST BE UL LISTED/APPROVED)

| ITEM | NAME | DESCRIPTION | MANUFACTURER | TYPE |
|---|---|---|---|---|
| 1 | Control Panel | 24"x24"x12" NEMA 4X 304 SS panel painted white with 3-point latch and SS lockable handle | Hoffman or appr. equal | A24H2412SSLP3PTW see specification. |
| 2 | PLC | MICROLOGIX 1400 (24VDC) w/ memory module | Allen-Bradley | 1766-L32BXB w/ memory module |
| 3 | Expansion Module | Analog expansion module | Allen-Bradley | 1769-IF4 |
| 4 | Radio | 5 Watt Ethernet/Serial Radio | MDS | SD4CES-NNSNN |
| 5 | Antenna Cable | Low loss coaxial cable | Andrews Heliax | LDF4-50A |
| 6 | RF Coaxial Connector | Antenna cable connector | Andrews | L4TNM-PSA or L4TNF-PSA |
| 7 | RF Surge Suppressor | RF Lighting Surge Arrester | Polyphaser | IS-50NX-C2 |
| 8 | Yagi Antenna | UHF 450MHz - 470MHz | Sinclair | SY-307 |
| 9 | 120V Main Circuit Breaker | Thermal Magnetic | Square D | Type QOU, 15A |
| 10 | 120V TVSS | Din-rail mount TVSS | Atlantic Scientific | MA15 |
| 11 | 240V TVSS | Surge Current 80KA per phase | Square D | HEPD |
| 12 | Power Supply | 120VAC to 12VDC power supply unit | Allen-Bradley | 1606-XLP50B |
| 13 | Power Converter | 12VDC TO 24VDC Converter | Rhino<br>Converter Concepts<br>Majorpower.com | PSP24-DC12-1<br>VT25-182-10/XX 12-24VDC<br>majorVTC120i 12-24VDC |
| 14 | Terminal block | Copper Tin Plated<br>Double Deck 600V Box Lug | Square D<br>Phoenix | Class 9080<br>UTTB4- 3044814 |
| 15 | Ground Terminal | Copper Tin Plated, Ground Bar<br>End Clamp, 20 Pole Bridge<br>2 Pole Bridge | Square D<br>Phoenix | Class 9080, 1130-PK9GTA<br>CLIPFIX, FBS 20-6 30300365,<br>FBS 2-6 30300365 |
| 16 | Battery | 12V, 18AH battery (for 120VAC)<br>12V, 55AH battery (for solar powered panel), sealed type | Power sonic<br>TOYO-USP | P12180<br>6GFM55 |
| 17 | Level Transmitter | Submersible<br>Range: 0 - 5 feet<br>w/ desiccant | Ametek Drexelbrook<br>Blue Ribbon Birdcage<br>MEAS | SDT-M-B-0006<br>BC001-10-X<br>KPSI 720-S14B0A<br>(cable length as necessary) |
| 18 | Pressure Transmitter | System Pressure (NEMA 4X)<br>0-150 psig | Endress+Hauser | Cerabar T<br>(PMC131-A22F1Q4R) |
| 19 | Flow Transmitter | Insertion Type, 4-20mA output<br>Vary with pipe size | CLA-VAL | X144-e<br>(cable length as necessary) |
| 20 | Control Relay | DPDP, 3PDT 8 Pin Base 24 volt | Potter Brumfield<br>Allen Bradley | KRPA-11DG-24<br>700-HA33Z24-3-4 |
| 21 | Low voltage Surge | Dual Signal Surge Arrester | EDCO | PC642C-036-X |
| 22 | Cat. 5e Cable | Ethernet Cable with connectors (8 Pin Mini Din to 9 Pin) | Allen-Bradley | 4PRS, STP 26AWG |
| 23 | 120VAC Relay | 3PDT 11 Pin, Round Base 120VAC | Allen Bradley | 700-HA33A1-3-4 |
| 24 | Antenna Tower | Tower Top Section w/ short base | Rohn | 45AG2 w/ SB45G |
| 25 | Circuit Breaker | Amp and number of poles vary | Square D | Class 860 Multi 9 C60 |
| 26 | Load Center | 120/240V, 1-Phase, 125A rated, Service Entrance rated load center w/ 50A Main Breaker, 12 spaces NEMA 3R (min. 22 kAIC) | Square D | QO112L125GRB w/ QOM50VH |
| 27 | Solar Panel | Solar Photovoltaic Module 110W | Sunwize<br>Solartech | SW-S110P-D4<br>SPM110P-FSW |
| 28 | Solar Controller | Solar Controller (12V) | Morningstar | Sunsaver SS-20L-12V |
| 29 | Power Supply for Solenoid | 120VAC to 24VDC (only required at lift sta. & reclaim combined panel) | Allen-Bradley | 1606-XLP30E |
| 30 | Terminal J-Box | NEMA 4X, 316 S.S. w/ control terminals | Hoffman | A1212CHNFSS6 |




FRONT VIEW
NOT TO SCALE

NOTES:

1. SEE BILL OF MATERIALS PAGE NO. 31R.
2. ALL FIELD WIRING SHALL BE CONNECTED TO THE TERMINALS.
3. BATTERY SHALL BE LOCATED ON THE BOTTOM OF THE CONTROL PANEL, AWAY FROM ANY HEAT SOURCE.
4. PANEL BUILDER SHALL ADJUST THE PANEL LAYOUT AS NEEDED.

A. Panel Builder

1. The panel builder shall be experienced in the construction of control panels/RTU's, shall have a UL approved shop. Panel shall be UL listed and UL labeled.

2. The panel builder shall warrant the panel for one (1) full year minimum from the date of final project certification.

3. The panel builder or qualified technical representative shall check–out and test the panel as part of the reclaimed RTU system start–up.

B. Panel Components

1. The panel components are specified on the drawings with the exception of items described in these specifications. Items are listed by manufacturer and catalog number, other equal quality components may be substituted but they must be preapproved by Utility Department, be UL listed, and be fully interchangeable with those specified in size, function, mounting dimensions, plug in connections, and ampacity. Any substitutions or changes must be approved in advance and in writing by the Utility Department. All components shall be new, with no signs or evidence of corrosion.

C. RTU Enclosure

1. The RTU panel itself shall be 24 inch wide x 24 inch high x 12 inch deep (24"W x 24"H x 12"D). A shop drawing must be submitted prior to preconstruction meeting. The panel shall be of a NEMA 4X construction with the following features:

   a. Constructed of 304 stainless steel 14 gauge with white powder coated. All seams to be continuously welded, spot welded panels will not be accepted.

   b. All external hardware shall be stainless steel with piano hinge, 3–point latch with roller fitting top and bottom and single handle with padlock fitting and stainless steel external parts.

   c. Full length welded drip shield to deflect water from the door, a continuous closed cell neoprene gasket on the door.

   d. Aluminum back mounting plate for heavy components (min. .090 thickness).

   e. The outer door is to have nine inch by eleven inch (9" x 11") stainless steel or aluminum pocket for log book, tack weld to door.

   f. No penetration through the panel will be allowed except for conduits. i.e. no screws through panel, frame, no top penetration.

2. The enclosure shall be the product of a UL approved manufacturer and shall be a NEMA–4X enclosure. Manufacturer shall be Hoffman or approved equal. Enclosure shall have lugs for mounting.

D. Wiring

1. All wiring shall be copper THWN or approved equal, AWG 14 minimum. Color code wires as follows:

| | | |
|---|---|---|
| Ground | – | Green |
| Neutral | – | White |
| 120 Volt Power | – | Black |
| 24 Volt Control | – | Violet |
| Analog Signal | – | Black and White |
| Special | – | Blue |

   Different control wiring colors are acceptable if clearly identified. Power wiring shall be kept separate from control wiring, and shall be identified by phase.

2. All wires shall be numbered with machine made plastic wrap around labels at both ends.

3. All external connection and internal connections, where shown on the drawings, shall be brought to the numbered terminals.

4. Wiring shall be enclosed in panduct or equivalent wireways and wiring between the doors and the panel shall be enclosed in a spiral wrap or approved equal with sufficient slack to allow full opening of the door.

5. Wiring shall be secured with screw–on tabs, tabs with adhesives shall not be used.

6. All wiring shall be front accessible.

7. All electrical wiring must meet or exceed National Electric Code and Local Code Standards.

8. Any place that electrical wire passes through a metal cover or shield, insulating grommet is required to protect the wire.

E. Component Mounting

1. All components shall be securely mounted with stainless steel hardware. Self tapping screws are not acceptable.

2. All relay bases shall be front mounted with screw terminals, no soldered connections shall be used. All base terminals shall be numbered to correspond to relay numbers. Where plug–in components are not firmly secured in bases, hold down clamps shall be provided.

F. Identification

1. All components shall be identified in accordance with the schematic diagram, using permanent name tags on the panel of laminated micarta or approved equal. The permanent name tags shall be securely attached and in a position where they are clearly visible.

2. All operator's controls shall be provided with laminated micarta name tags attached with stainless steel screws, with minimum lettering height of 1/8 inch.

3. Provide a laminated schematic drawing attached to the inside of the outer door – minimum size 11 inches by 17 inches (11" x 17").

G. Drawings

1. Panel builder shall provide the following drawings:

a. Schematic drawing showing all components. Components shall be properly identified by number and function. All connections shall be numbered to correspond to the component numbers. All wires and terminals shall be clearly numbered and identified.

b. Bill of material listing all parts as follows, in tabular form:

1) Drawing Reference
2) Description
3) Manufacturer
4) Catalog Number
5) Type
6) Notes

c. Layout drawing showing the front with the operators panel and with the panel open. Layout drawings shall also show the outside dimensions of the panels and dimensioned mounting supports.

d. Plastic encased drawing inside the panel as previously noted herein.

2. Drawings shall be clear and readable and a minimum of 11 inches by 17 inches (11" x 17"). "Fuzzy" reductions will be rejected.

H. See Remote Telemetry Units (RTU specifications) for programmable logic controller (PLC), I/O expansion module, Radio, solar power system, etc. requirements.

1. REMOTE TELEMETRY UNITS AND APPURTENANCES (R.T.U.)

A. The Remote Telemetry Units shall be microprocessor based, user programmable, Programmable Logic Controllers (PLC's) which shall serve as an interface to accumulate, process, transmit and receive discrete and analog status and control messages between the RTU base stations and the remote RTU sites located within a ten mile radius of the base station.

B. Each RTU shall be PLC based, with sufficient battery backed RAM, or EEPROM non–volatile backup memories to provide all discrete and analog status, monitoring and control functions and shall be designed to operate in an outdoor industrial environment.

C. The programmable controller shall be designed to operate in an industrial environment. The PLC shall be capable of operation in an ambient temperature range of 0°–60°C and a relative humidity of 5–95 percent, non–condensing. The PLC shall be capable of operation on supply voltages of 24VDC.

D. All components of the PLC system shall be of the same manufacturer who is regularly engaged in the manufacture of programmable controllers. The manufacturer shall have fully tested units similar to that being furnished in an industrial environment with associated electrical noise. The processing unit shall perform the operations functionally described herein based on the program stored in memory and the status of the inputs and outputs.

E. The processor and its associated memory shall be enclosed in a modular sheet metal enclosure. Memory shall consist of battery–backed RAM, which shall retain the control program in the event of AC power loss. Memory shall be not less than 8K user logic for any PLC and shall be adequate for all control functions specified. A minimum of 1920 on–board registers shall be addressable.

F. The relay logic instructions of the programmable controller shall include normally open; normally closed; transitional positive and negative contacts; timers in .01, .1, and 1.0– second resolution; and up/down counters. Register and table instructions shall include block moves, table to register, register to table, FIFO, table search, and table to table. Register matrix operations shall include bit sense, bit set/clear, and, or, exclusive or, bit rotate, and complement.

G. LED–type indicating lights shall be provided as follows: READY, RUN.

H. Programmable controllers and accessory equipment shall be Allen Bradley MicroLogix 1400/1766–L32BXB, with memory module and analog extension module.

I. All RTUs shall be powered with either 120VAC through a power supply or 12VDC from solar controller capable of float charging sealed Gel–cell batteries. In a 120VAC powered panel, solar panel and solar controller are not required. For 120V, it shall include an AC power loss alarm output to the RTU on loss of AC power. Power supply shall be of sufficient capacity to provide all required DC power to all RTU equipment, discrete and analog input/output circuitry, under full load, communications interface equipment, PC modems, radios and other radio interface/conditioning equipment and appurtenances as required. The primary power supply for radio and battery backup shall be 12VDC. A 12V to 24V Converter is required for the PLC and I/O use. The batteries shall not be older than (3) months at the time of RTU acceptance and shall be lead acid sealed, 12 volt, 18 ampere–hour, model Power Sonic PS–12180. The battery charger/power supply shall be compatible with the battery, type 1606–XLP50B by Allen Bradley and set the output voltage at 13.6V. The 12V to 24V converter shall be model: PSP24–DC12–1 by Automation Direct or approved equal. In a Solar powered panel, provide a Solar Panel with all necessary components including a solar controller. Solar panel shall be mounted on the antenna pole with stainless steel U–bolts. The solar panel Installation shall meet 150MPH wind loading requirements. Solar panel shall be 110 watts, 12V Sunwize SW–S110P–D4 or Solartech SPM110P–FSW with pole mount kit Sunwize 007954 or by DPW Solar. The solar controller shall be Morningstar Sunsaver SS–20L–12V. See wiring schematics.

J. Spare parts are not required.

K. All analog inputs shall be furnished with lightning surge protection devices. Sufficient I/O shall be provided for each RTU to accommodate the scheduled I/O .

1. Digital inputs shall be 24VDC from dry contacts.

2. All outputs shall be wired through interposing relays.

3. Analog input circuits shall be isolated, 15–bit resolution type. Analog inputs shall be coordinated with the receivers but shall generally be isolated 24V 4–20 mA inputs powered from the PLC. Analog input hardware shall be provided as required for all types of analog inputs being transmitted to the PLC.

L. The RTU hardware shall be assembled to a back plate mounted inside the RTU control panel. All components shall be mechanically secured and fully wired. A bonding wire #12 AWG with crimped end terminals is required between the back plate and control panel.

M. The summary of approved remote telemetry equipment/materials and manufacturers are listed in the Bill of Materials.

I/O List:

| | |
|---|---|
| Power Loss Alarm (Spare in Solar) | digital input I/0 (only for 120VAC panel) |
| Valve Open Command | digital output O/0 |
| Valve Close Command | digital output O/1 |
| Reclaimed Water Pressure | analog Input IV1 (extension module) |
| Lake Level | analog Input IV2 (extension module) |
| Reclaimed Water Flow | analog input IV3 (extension module) |

2. RTU COMMUNICATIONS INTERFACE

A. Bi–directional communications of status, commands and radio diagnostics between the RTUs and the RTU base station shall be provided by the RTU communications interface subsystem. The PLC MODBUS serial interface port shall serve as the RTU communications interface. The data transmission rate shall be set to operate at 9600 Baud (synchronous) in ASCII mode.

B. The RTU communications interface shall control the modem during the polling sequence. It shall be possible to assign a base address to each RTU through the data interface. The addressing scheme shall allow a minimum of 247 RTUs for each data link. The communications protocol shall be master–slave MODBUS ASCII for Central and South Towers, and be master–slave MODBUS RTU for North Tower.

3. RTU RADIO SECTION AND APPURTENANCES

A. The radio section shall consist of a Microwave Data Systems model MDS SD4CES–NNSNN 5–watt (continuous) Ethernet/Serial radio transceiver with integral RF modem, RS–232 synchronous serial interface and cable, private line coded squelch and carrier defeat timer to inhibit communications lockup. Radio transceiver shall include automatic frequency, control, loop–back and SMART diagnostics remote maintenance module to monitor; power out, RSSI, voltage level, internal temperature and forward/reflected power. Radio enclosure shall include RF shield. The interface cable from radio to RF surge suppressor shall be 24" long, RG142 cable with TNC (Threaded Neill–Concelman) and N. Male RF connectors.

B. Remote terminal unit antenna shall be a heavy–duty, pole–mounted, grounded, 450 MHz – 470MHz Yagi, directional type furnished with a minimum of 20 feet of Andrews Heliax (LDF4–50A) low loss coaxial antenna cable or approved equal, line adapter, lightning protector and appurtenances. Antenna and accessories shall be an SY–307 as manufactured by Sinclair or approved equal. Dual phase array Yagi antennae shall be required if the Remote Receive Signal Strength (RSSI) is less than 95 dbm. Minimum antenna height shall be 12 feet above grade, unless otherwise instructed by the Utility Department. Antenna tower shall be made of galvanized steel. RF lightning surge suppressor shall be IS–50NX–C2 by Polyphaser Corporation or approved equal. RF coaxial connectors shall be of the compression type and be a L4TNM–PSA or L4TNF–PSA by Andrews or approved equal. The antennae orientation toward the receiving communication tower shall be set using appropriate instruments.

C. The complete communications subsystem including all interconnecting cables shall contain lightning, surge and transient protection. All antennae masts shall be grounded.

D. Radios shall be pre–programmed by the factory for the frequency of the tower that the radio will be communicating with. See attached RTU Schedule for location of stations. Frequencies are as follows:

1. North Tower – Remote transmit–465.1500 MHz – Receive–460.1500 MHz
For stations located north of Lantana Rd., south of Roebuck Rd., and east of S.R. 7
2956 Pinehurst Dr., Greenacres, FL (Coordinates: 26°38.017'N, 80°09.352'W)

2. Central Tower – Remote transmit–465.750 MHz – Receive–460.750 MHz
For stations located south of Lantana Rd. and North of Clint Moore Rd.
12751 Hagen Ranch Rd., Delray Beach, FL (Coordinates: 26°29.260'N, 80°10.018'W)

3. South Tower – Remote transmit–465.025 MHz – Receive–460.025 MHz
For stations located south of Clint Moore Rd.
22438 S.W. 7th Street, Boca Raton, FL (Coordinates: 26°20.586'N, 80°11.840'W)

4. West Tower – Remote transmit–465.525 MHz – Receive–460.525 MHz
For stations located north of S.R. 80 and west of S.R. 7; plus all stations located north of Roebuck Rd.
20 S.R. 880, Loxahatchee, FL (Coordinates: 26°41.05'N, 80°23.37'W)

4. RTU ELECTRICAL TRANSIENT PROTECTION

A. All electrical and electronic elements shall be protected against damage due to electrical transient induced in interconnecting lines from lightning discharges and nearby electrical systems.

B. Manufacturer's Requirements: All surge suppressor devices shall be manufactured by a company that has been engaged in the design, development, and manufacture of such devices for at least 5 years.

C. Suppressor Locations: As a minimum, provide surge suppressors at the following locations:

1. At main breaker of the RTU control panel for 120VAC power panel.

2. At the field, panel, or assembly connections of all analog signal circuits that have any portion of the circuit extending outside of a protecting building.

3. Between the radio and external mounted antenna.

D. Surge Suppressor Assemblies for 120–Volt AC Power Supply Connectors: Surge suppressors for connections to ac power supply circuits shall be assemblies that:

1. Pluggable, Din–rail mounting AC power protection.

2. Power on and protection status indicator.

3. Hybrid MOV and RFI filtering components.

4. UL 1449, 3rd edition and 10 year product warranty.

5. The suppressor shall be of the type MA15 by Atlantic Scientific.

E. Surge Suppressors for Analog Signal Connections: Surge suppressors for analog signal circuits shall:

1. Have four lead devices with a threaded mounting/grounding stud.

2. Have a circuit consisting of a 3–electrode gas tube and silicone avalanche devices to clamp each line to ground. High–energy gas tube and silicone avalanche devices shall be separated by series impedance.

3. Be epoxy encapsulated with a nonflammable phenolic enclosure. Epoxy encapsulation shall be flame retardant.

4. Limit line–to–ground and line–to–line voltage to 36 volts on 24V dc circuits.

5. Meet or exceed the following performance criteria based on a test surge wave with 8–microsecond rise time and 20–microsecond exponential decay time:

a. Recovery: Automatic
b. Peak Source Current: 10,000 amps
c. Pulse Lift Before Failure: 100 occurrences
d. Minimum Voltage Clamp Rating: 36 volts
e. Series Impedance: 24 ohms total
f. Temperature Range: –20 degrees C to +85 degrees C
g. Operating Voltage: Less than 36V dc
h. Operating Current: 4 to 20 mA dc
i. Resistance Line–to–Ground: Greater than 1 mega–ohm

6. The suppressor shall be of the type PC 642C–036 by EDCO Inc. or approved equal.

F. RF Surge Suppressors: RF surge suppressors shall:

1. Meet or exceed the following technical specifications:

a. Surge: 50kA IEC 1000–4–5 8/20ms Waveform 500 Joules
b. Turn on: 600 VDC +/–20%
c. Turn on time: 2.5ns for 2kV/ns
d. Frequency Range: 125MHz to 1GHz
e. VSWR: $\leq$1.1 to 1 over frequency range
f. Insertion Loss: $\leq$0.1 dB over frequency range
g. Temperature: –45°C to +85°C Storage/Operating +50°C
h. Unit Impedance: 50 Ohm
i. Mounting: Flange

2. The suppressor shall be of the type IS–50NX–C2 by PolyPhaser Inc. or approved equal.

5. RTU CORROSION PROTECTION

A. All indoor and outdoor cabinets, panels and consoles shall be fitted with vapor phase corrosion inhibitor capsules capable of protecting 5–cubic feet of space for one year; Hoffman Model A–HC15E, ZERUST Model VC–6–2 or approved equal. Capsules shall be labeled with the date of activation.

6. RTU FABRICATION

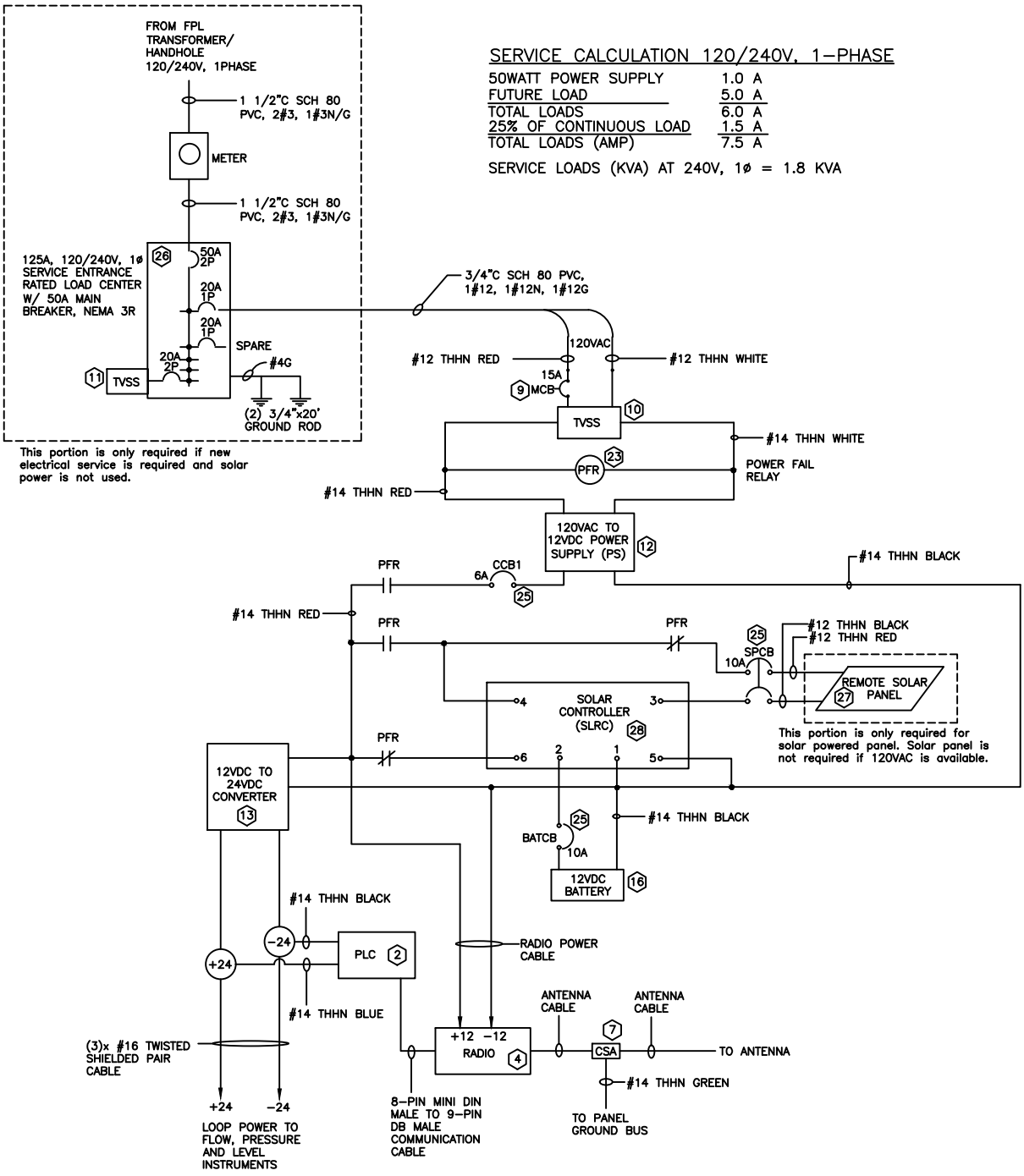
A. Cabinets and panels shall provide mounting for power supplies, control equipment, input/output subsystems, panel mounted equipment and appurtenances. Ample space shall be provided between equipment to facilitate servicing and cooling.

B. Terminal blocks shall be factory assembled on a miniature mounting channel and the channel bolted to the steel strap. Terminals shall be miniature screw type with integral fuse holder unless otherwise required. Terminal blocks shall provide access to screw terminals without disabling the fuses.

C. The terminals shall be marked vertically with a permanent, continuous marking strip from top to bottom. One side of each terminal strip shall be reserved exclusively for field incoming conductors. Common connections and jumpers required for internal wiring shall not be made on the field side of the terminal. Subject to the approval of the Owner, a vendor's pre–engineered and prefabricated wiring termination system will be acceptable.

D. Wiring shall comply with accepted standard instrumentation and electrical practices and codes. For each pair of parallel terminal blocks, the field wiring shall be between the blocks. Solder–less horseshoe (spade) connectors, with insulating sleeves, shall be used for connecting wires to terminal blocks.

E. All wiring shall be bundled and run open or enclosed in vented plastic wire way, as required. All conductors run open shall be bundled and bound at regular intervals, not exceeding 12 inches, with nylon cable ties. Care shall be taken to separate electronic signal, discrete signal, and power wiring. A copper ground bus shall be installed the full length of each panel. Interior panel wiring and field wiring shall be tagged at all terminations with machine–printed plastic sleeves. The wire number shall be the ID number listed in the input/output schedules.



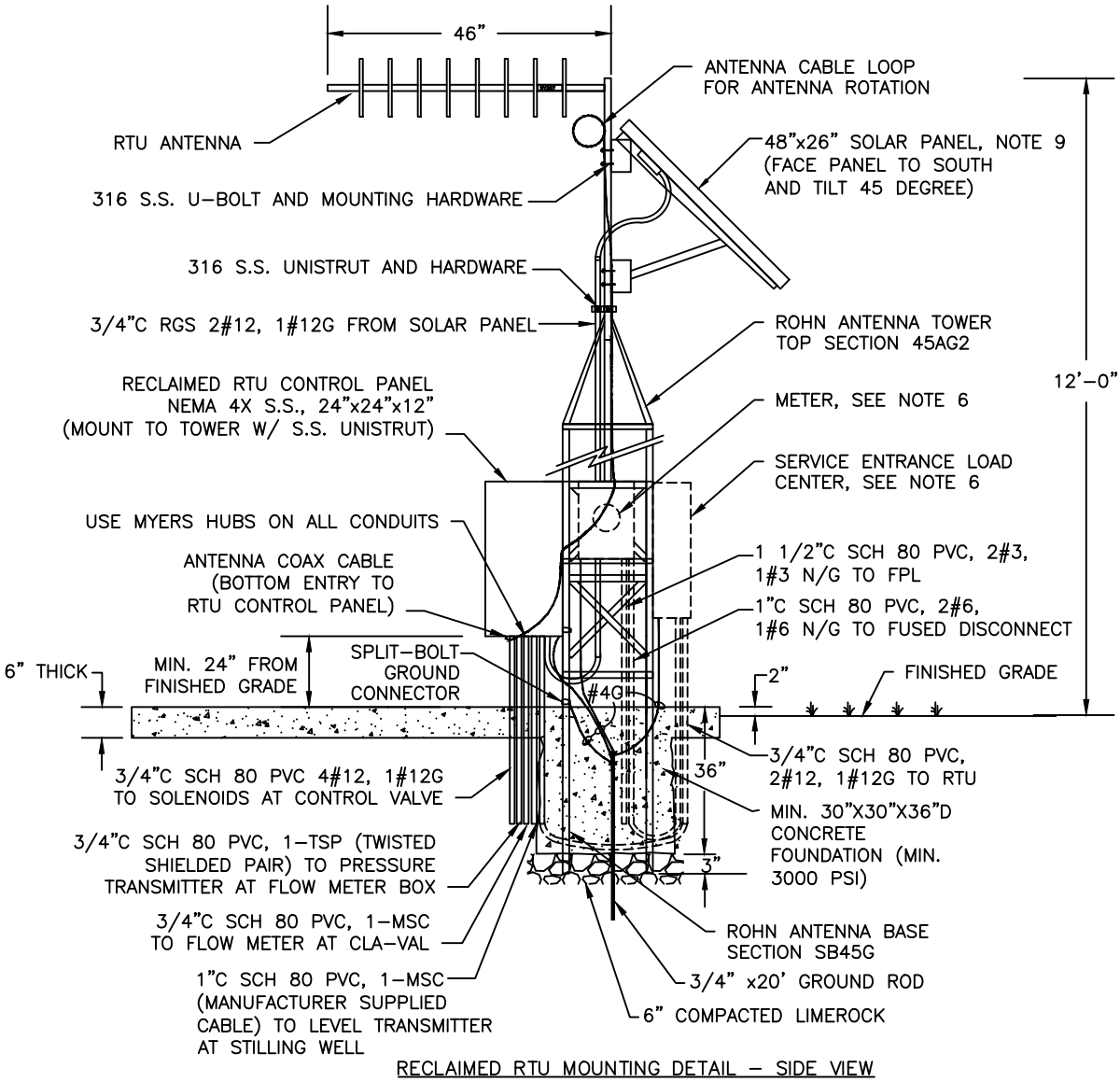

SERVICE CALCULATION 120/240V, 1-PHASE

| | |
|---|---|
| 50WATT POWER SUPPLY | 1.0 A |
| FUTURE LOAD | 5.0 A |
| TOTAL LOADS | 6.0 A |
| 25% OF CONTINUOUS LOAD | 1.5 A |
| TOTAL LOADS (AMP) | 7.5 A |

SERVICE LOADS (KVA) AT 240V, 1ø = 1.8 KVA

NOTES:

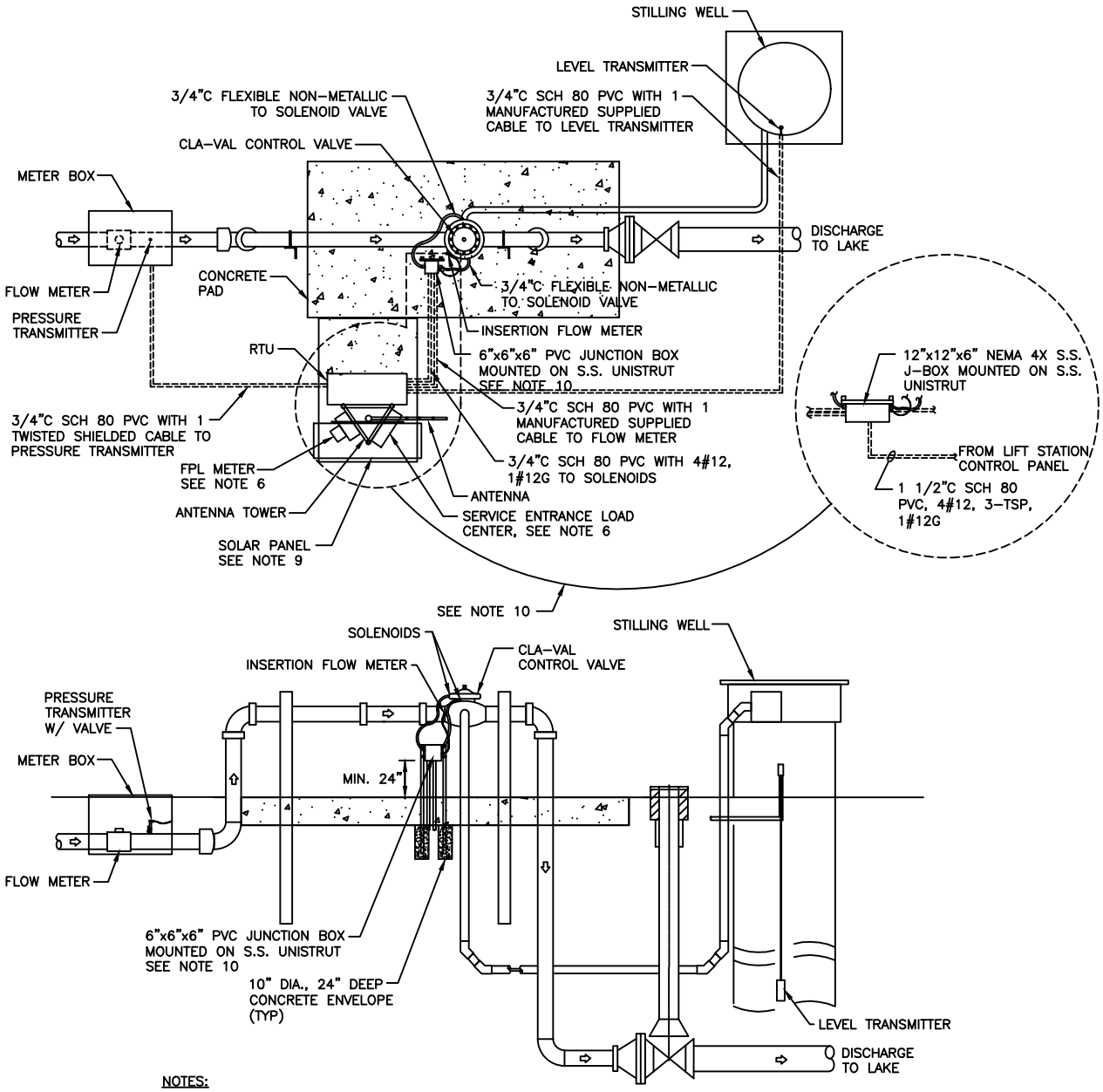
1. SEE BILL OF MATERIALS ON PAGE NO. 31R.
2. ALL FIELD WIRING SHALL BE CONNECTED TO THE TERMINALS.




RECLAIMED RTU MOUNTING DETAIL – SIDE VIEW
NOT TO SCALE

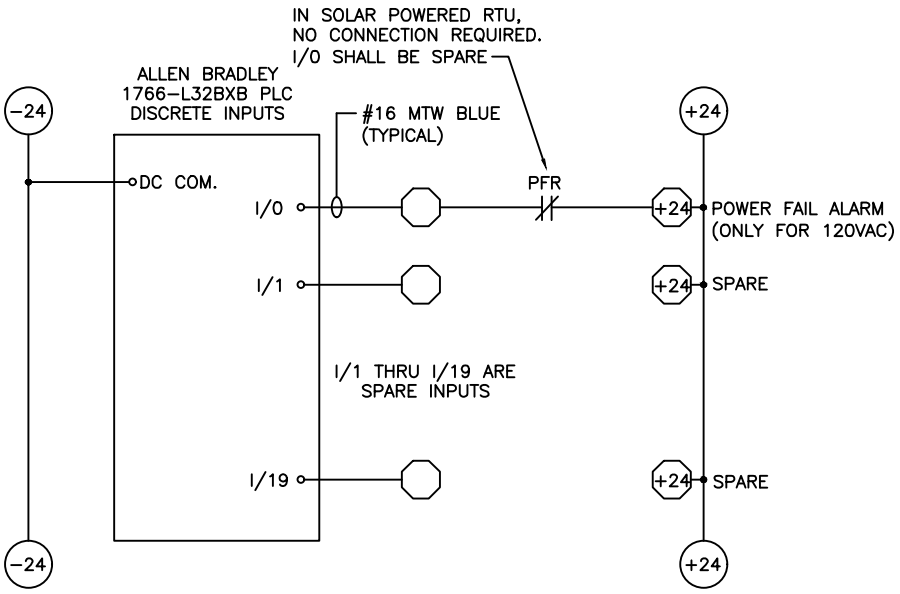
NOTES:

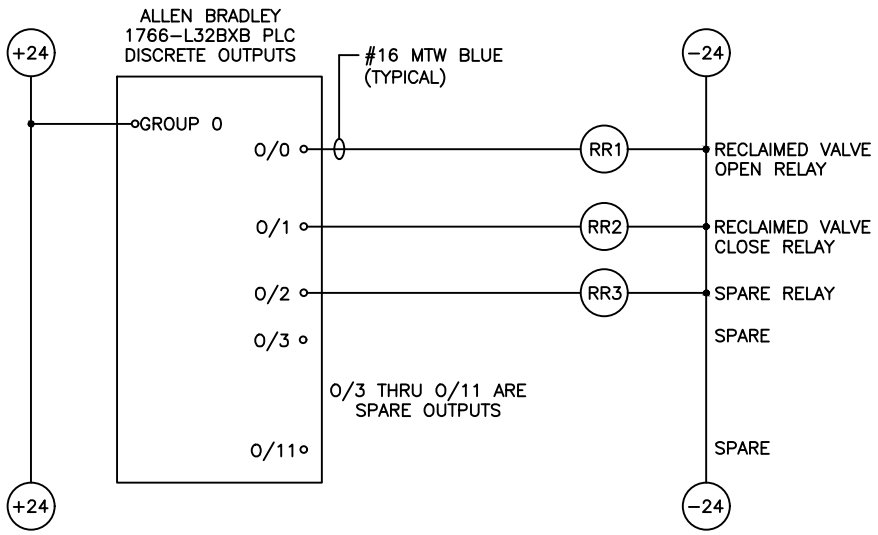
1. MAST AND METAL STRUCTURE SHALL BE GROUNDED IN ACCORDANCE WITH NEC SECTION 810-21.
2. ANTENNA INSTALLATION SHALL MEET THE WIND LOADING REQUIREMENT PER FLORIDA BUILDING CODE.
3. MINIMUM ANTENNA HEIGHT SHALL BE 12 FEET. IF ANY OBSTRUCTION IS LOCATED BETWEEN THE RADIO COMMUNICATION PATH, ANTENNA HEIGHT SHALL BE HIGHER THAN THOSE OBSTRUCTIONS.
4. CONDUITS SHALL NOT ENTER THE TOP OF CONTROL PANEL.
5. ALL ELECTRICAL PANELS SHALL BE GROUNDED.
6. METER AND SERVICE ENTRANCE RATED LOAD CENTER ARE NOT REQUIRED IF THE RTU IS SUPPLIED BY SOLAR POWER OR NEARBY LIFT STATION POWER.
7. ALL MOUNTING HARDWARE SHALL BE 316 STAINLESS STEEL.
8. MAINTAIN 36" CLEARANCE IN FRONT OF ALL ELECTRICAL PANELS.
9. SOLAR PANEL IS NOT REQUIRED IF 120 VAC POWER IS AVAILABLE.
10. ELECTRICAL PANEL SUPPORT STRUCTURE / ANTENNA TOWER HAS BEEN DESIGNED IN ACCORDANCE WITH THE FLORIDA BUILDING CODE 2010 FOR THE FOLLOWING CRITERIA:
    - RISK CATEGORY IV
    - EXPOSURE CATEGORY "C"
    - WIND VELOCITY, Vult = 181 MPH

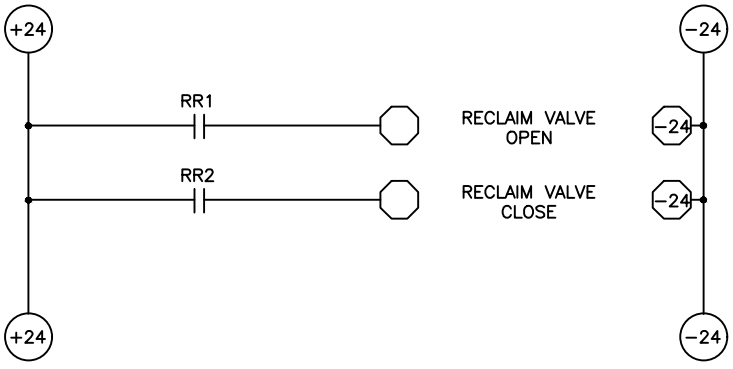



NOTES:

1. MAST AND METAL STRUCTURE SHALL BE GROUNDED IN ACCORDANCE WITH NEC SECTION 810-21.
2. ANTENNA INSTALLATION SHALL MEET THE WIND LOADING REQUIREMENT PER FLORIDA BUILDING CODE.
3. MINIMUM ANTENNA HEIGHT SHALL BE 12 FEET. IF ANY OBSTRUCTION IS LOCATED BETWEEN THE RADIO COMMUNICATION PATH, ANTENNA HEIGHT SHALL BE HIGHER THAN THOSE OBSTRUCTIONS.
4. CONDUITS SHALL NOT ENTER THE TOP OF CONTROL PANEL.
5. ALL ELECTRICAL PANELS SHALL BE GROUNDED.
6. METER AND SERVICE ENTRANCE RATED LOAD CENTER ARE NOT REQUIRED IF THE RTU IS SUPPLIED BY SOLAR POWER OR NEARBY LIFT STATION POWER.
7. ALL MOUNTING HARDWARE SHALL BE 316 STAINLESS STEEL.
8. MAINTAIN 36" CLEARANCE IN FRONT OF ALL ELECTRICAL PANELS.
9. SOLAR PANEL IS NOT REQUIRED IF 120 VAC POWER IS AVAILABLE.
10. FOR SHARE RTU/POWER CONFIGURATION, TOWER, METER AND LOAD CENTER ARE NOT REQUIRED. A LARGER 12"x12"x6" NEMA 4X S.S. J-BOX IS REQUIRED IN LIEU OF 6"x6"x6" J-BOX. SEE PAGE 44R FOR RTU SHARING BETWEEN LIFT STATION AND RECLAIMED WATER.

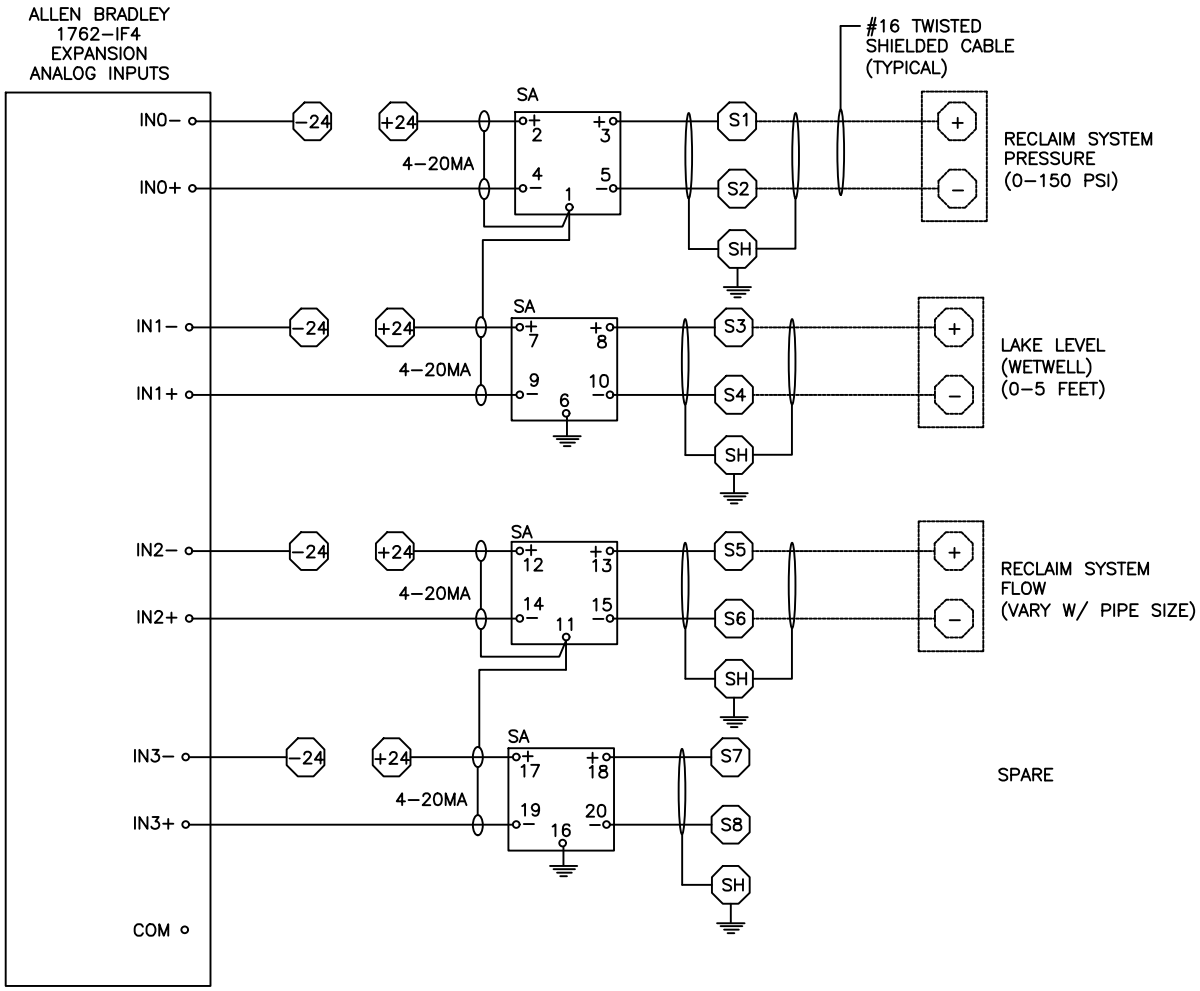


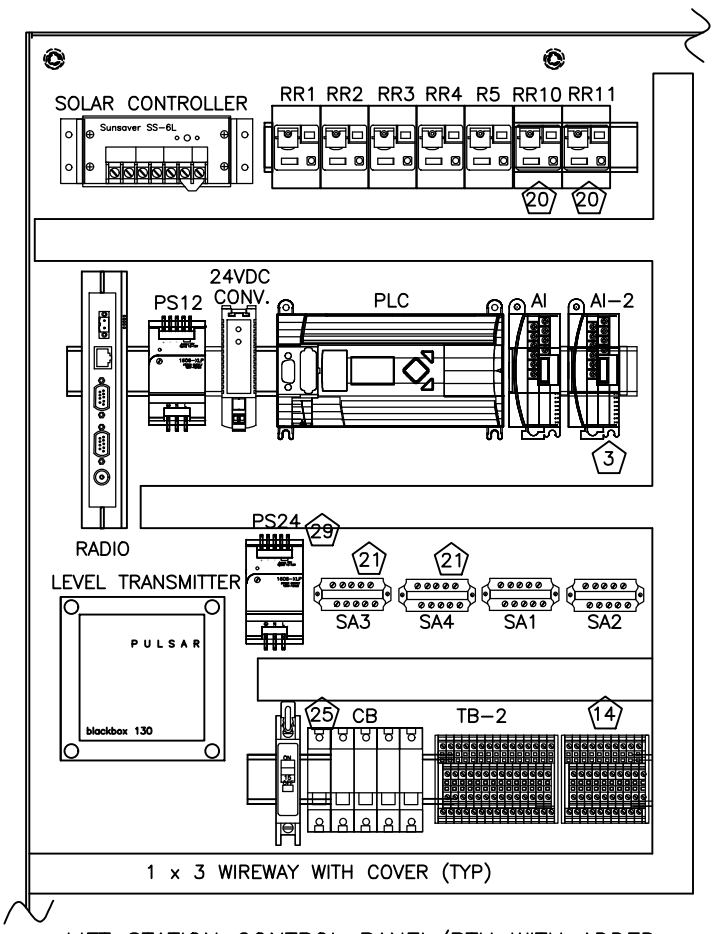




PALM BEACH COUNTY CONSTRUCTION STANDARDS & DETAILS

| REVISION/ISSUE DATE | RECLAIMED WATER SYSTEM<br>PLC INPUT/OUTPUT WIRING (SHEET 1 OF 2) | PAGE NO. |
|---|---|---|
| 6/2019 | | 43R |


ALLEN BRADLEY
1762-IF4
EXPANSION
ANALOG INPUTS
#16 TWISTED
SHIELDED CABLE
(TYPICAL)
IN0-
IN0+
IN1-
IN1+
IN2-
IN2+
IN3-
IN3+
COM
-24
+24
SA
4-20MA
S1
S2
SH
S3
S4
S5
S6
S7
S8
RECLAIM SYSTEM
PRESSURE
(0-150 PSI)
LAKE LEVEL
(WETWELL)
(0-5 FEET)
RECLAIM SYSTEM
FLOW
(VARY W/ PIPE SIZE)
SPARE




LINE WEIGHT

——— COMPONENTS FOR LIFT STATION INSIDE LIFT STATION CONTROL PANEL/RTU (SEE LIFT STATION STANDARDS)

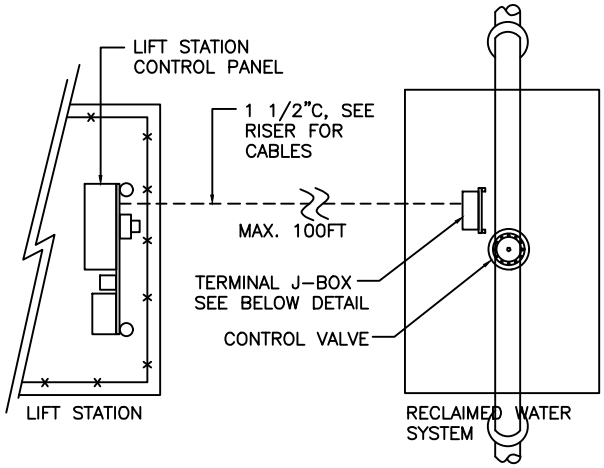
——— NEW ADDED COMPONENTS FOR RECLAIMED WATER SYSTEM INSIDE LIFT STATION CONTROL PANEL/RTU

LEGEND

| | |
|---|---|
| TSP | TWISTED SHIELDED PAIR CABLE (16 AWG, 600V WITH DRAIN WIRE) |
| MSC | MANUFACTURER SUPPLIED CABLE |

LIFT STATION CONTROL PANEL/RTU WITH ADDED COMPONENTS FOR RECLAIMED WATER SYSTEM

NOT TO SCALE

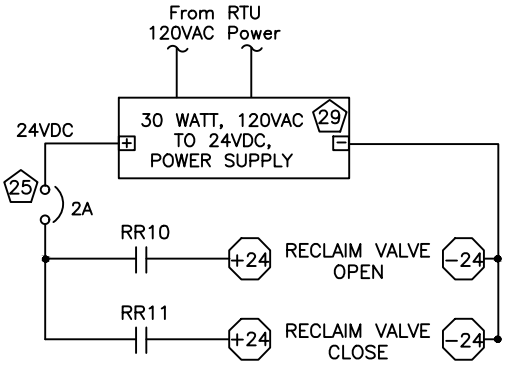



LIFT STATION AND RECLAIMED WATER SYSTEM LOCATED NEXT TO EACH OTHER

NOT TO SCALE

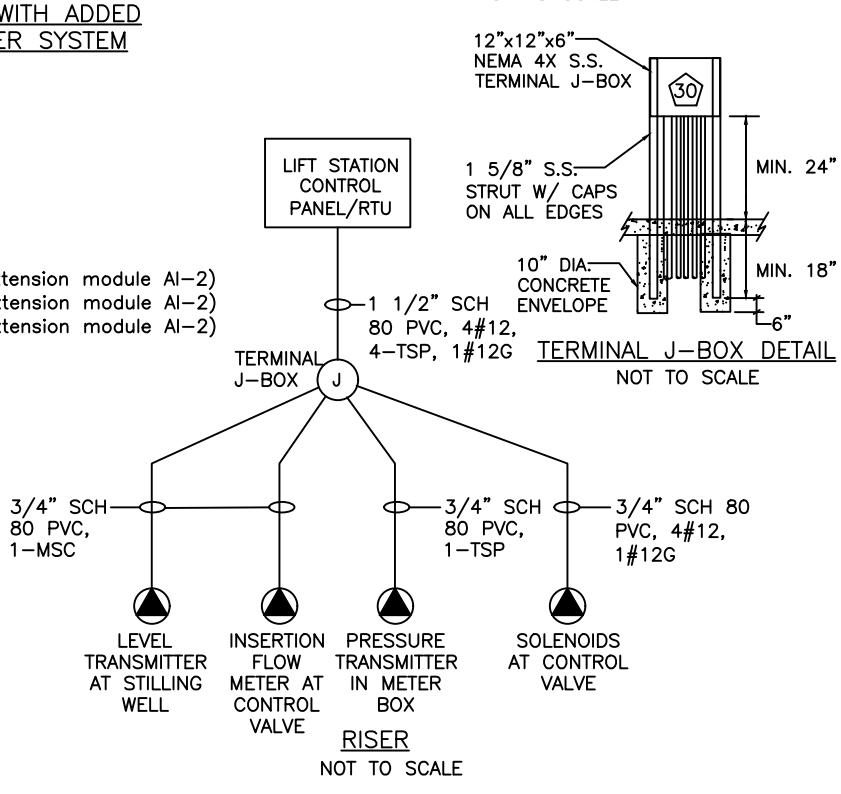
PLC I/O List:
(See additional I/O on Lift Station Standards)

| | |
|---|---|
| Valve Open Command | digital output O/10 |
| Valve Close Command | digital output O/11 |
| Reclaimed Water Pressure | analog Input IV1 (extension module AI-2) |
| Lake Level | analog Input IV2 (extension module AI-2) |
| Reclaimed Water Flow | analog input IV3 (extension module AI-2) |



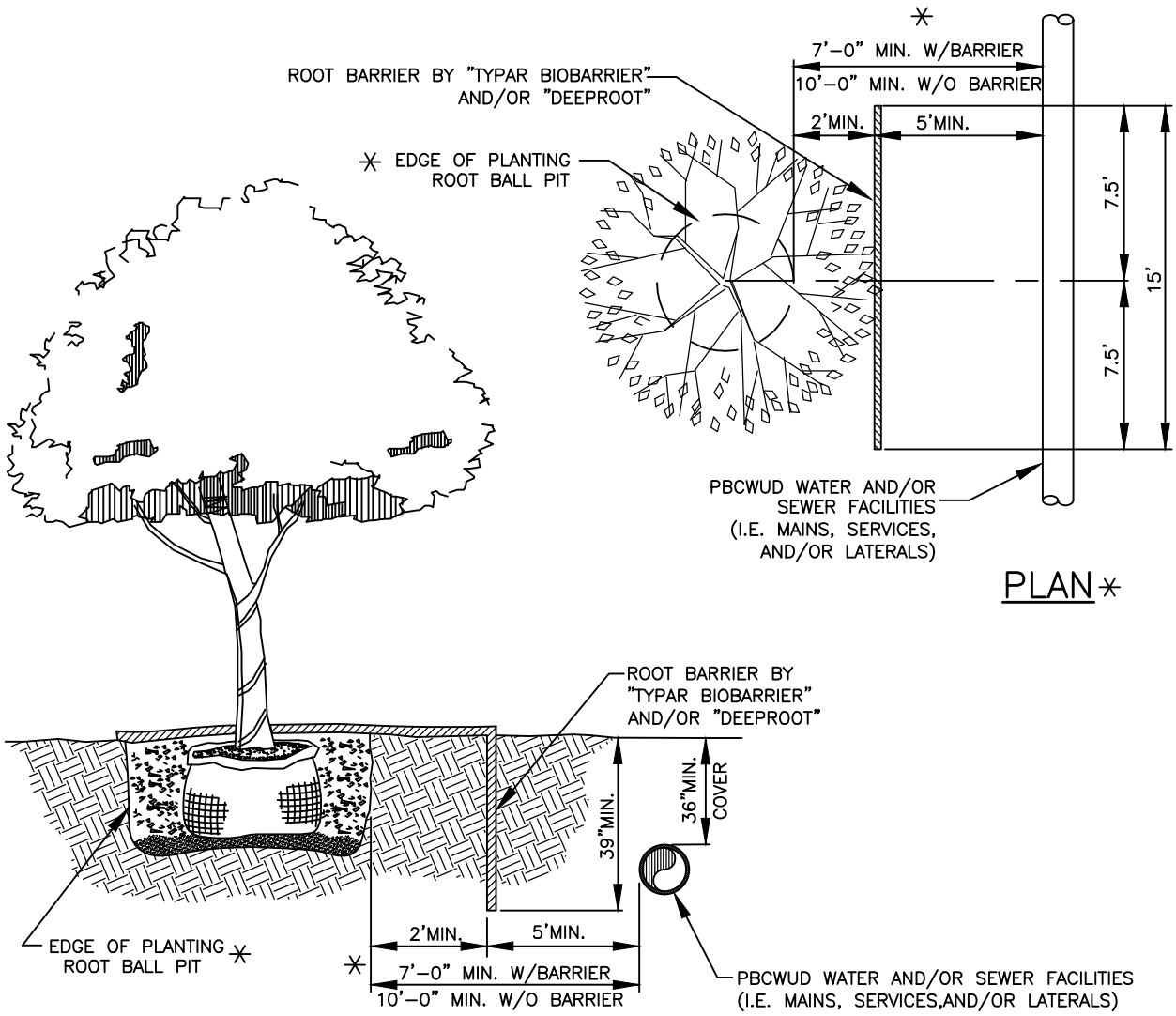

RECLAIMED CONTROL VALVE WIRING

NOT TO SCALE



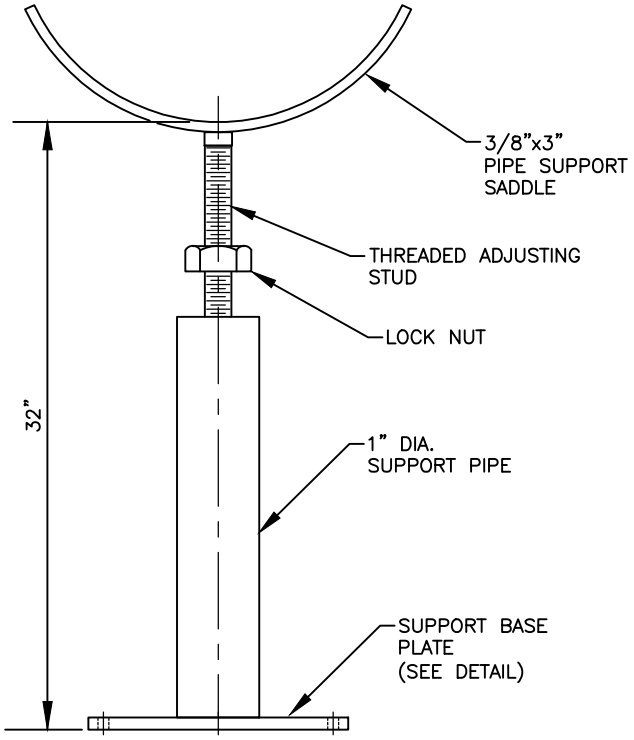

PALM BEACH COUNTY CONSTRUCTION STANDARDS & DETAILS

| REVISION/ISSUE DATE | | PAGE NO. |
|---|---|---|
| 6/2019 | RTU SHARING BETWEEN LIFT STATION AND RECLAIMED WATER SYSTEM | 45R |

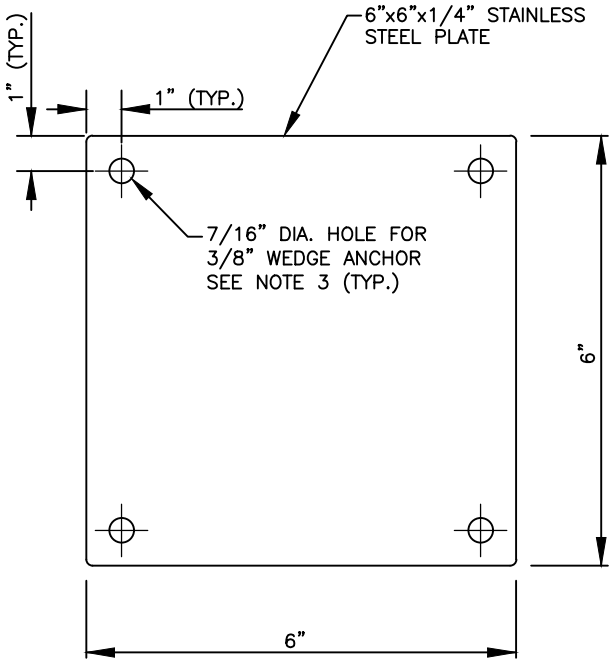



NOTES:

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 FLUSHING HYDRANT UNLESS OTHERWISE APPROVED BY THE FIRE MARSHAL AND THE DEPARTMENT.
4. SOD ONLY SHALL BE INSTALLED WITHIN 5.0' MINIMUM OF ANY DEPARTMENT RECLAIMED WATER METER.
5. WHEN INSTALLING A SOLID ROOT BARRIER PANEL SYSTEM THE PANEL RIBS MUST FACE THE TREE ROOT BALL.



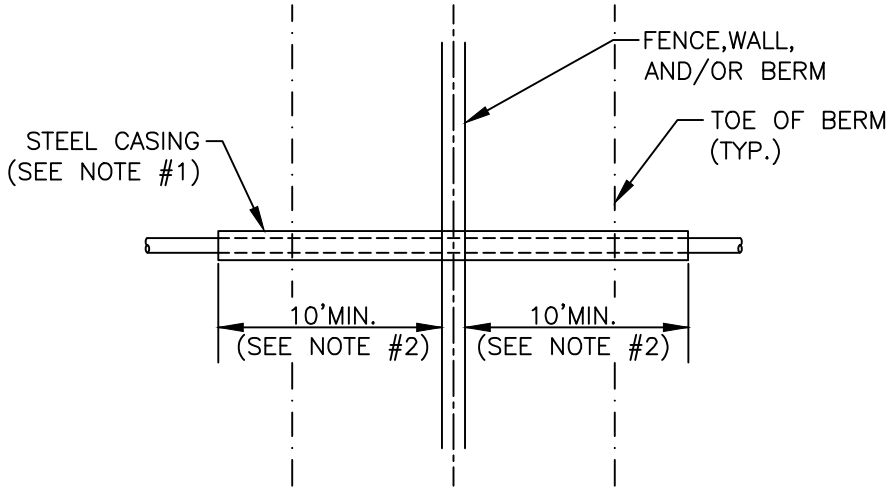

PIPE SUPPORT



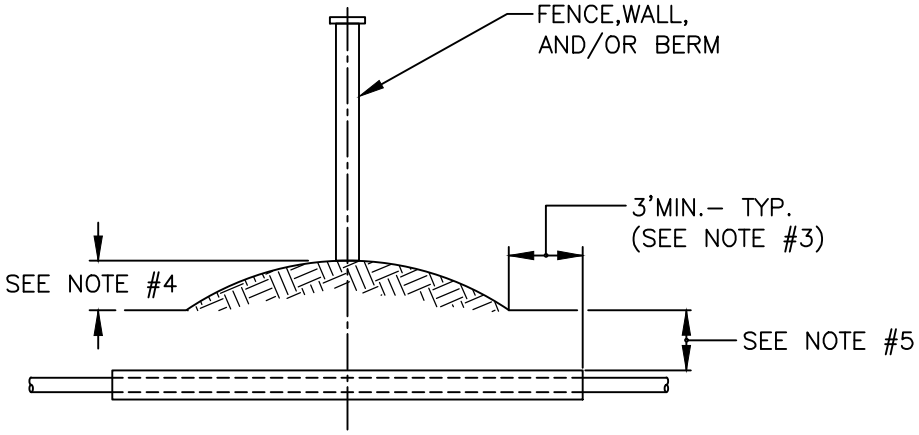

SUPPORT BASE PLATE DETAIL

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.



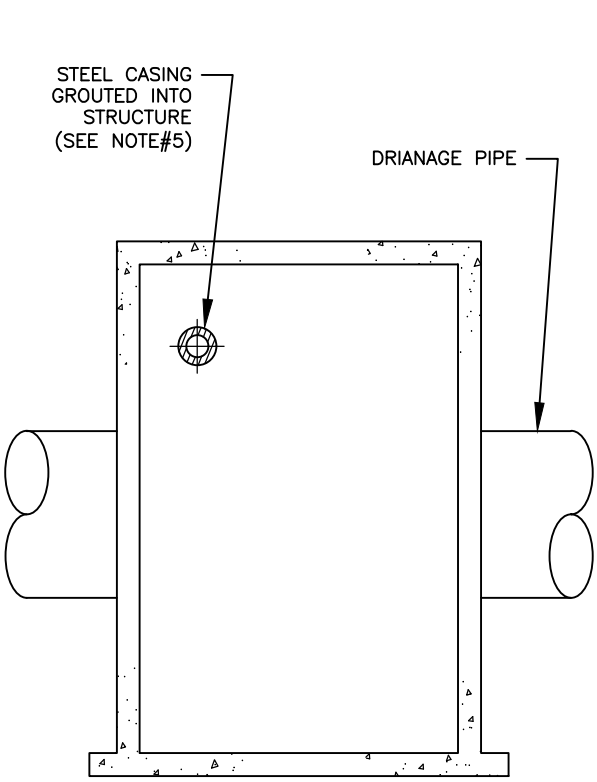

PLAN



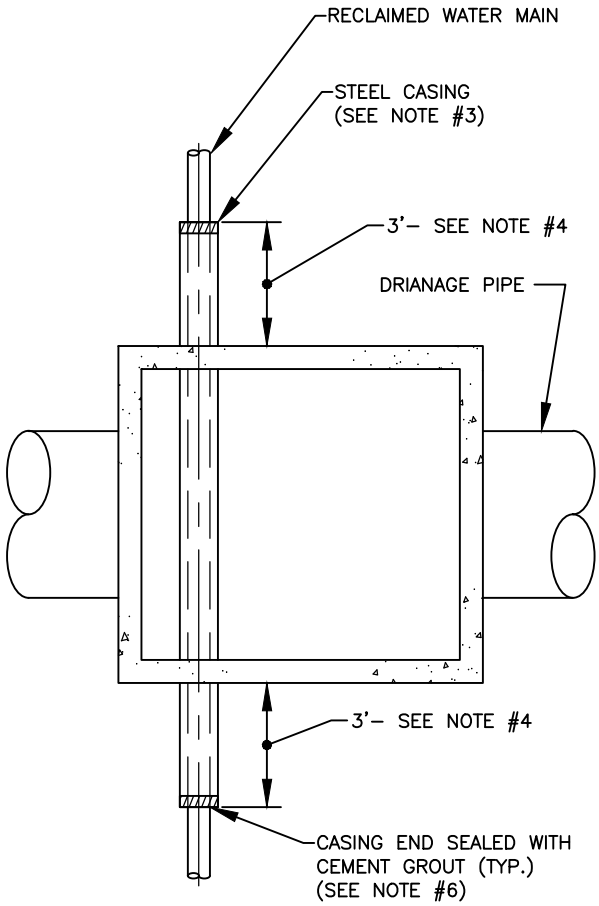

SECTION

NOTES:

1. STEEL CASING PER WUD STANDARD DETAIL 13R (SOLID CASING) OR WUD STANDARD DETAIL 13AR (SPLIT CASING) AS APPLICABLE.
2. STEEL CASING SHALL EXTEND TEN (10) FEET MINIMUM PAST FENCE OR WALL. FIVE (5) FEET MINIMUM MAY BE ACCEPTABLE ON A CASE–BY–CASE BASIS DUE TO SITE CONDITIONS AND ONLY WITH PRIOR DEPARTMENT APPROVAL.
3. STEEL CASING SHALL EXTEND THREE (3) FEET MINIMUM PAST THE TOE OF THE BERM. IF BERM CASING IS ASSOCIATED WITH A WALL OR FENCE INSTALLATION OF THE CASING SHALL EXTEND THREE (3) FEET MINIMUM PAST THE TOE OF THE BERM OR TEN (10) FEET MINIMUM PAST THE WALL OR FENCE WHICH EVER IS GREATER.
4. STEEL CASING INSTALLATION REQUIRED WHEN A BERM IS TWO (2) FEET OR HIGHER ABOVE SURROUNDING GRADE.
5. TOP OF STEEL CASING SHALL BE THREE (3) FEET MINIMUM BELOW THE TOE OF THE BERM OR BASE OF WALL OR FENCE ELEVATION WHICHEVER IS LOWER.




PROFILE




PLAN

| WUD MAIN SIZE | DIAMETER OF STEEL CASING SIZE | OPENING SIZE FOR SOLID CASING | OPENING SIZE FOR SPLIT CASING |
|---|---|---|---|
| 6" | 14" | 18" | 20" |
| 8" | 20" | 24" | 26" |
| 10" | 20" | 24" | 26" |
| 12" | 24" | 28" | 30" |

NOTES:

1. THE CONFLICT STRUCTURE IS TO BE DESIGNED PER CURRENT FDOT UTILITY CONFLICT THRU DRAINAGE STRUCTURE STANDARDS.
2. A SHOP DRAWING TO SCALE FOR EACH CONFLICT STRUCTURE INSTALLATION IS REQUIRED TO BE APPROVED BY THE DEPARTMENT PRIOR TO INSTALLATION.
3. STEEL CASING PER WUD STANDARD DETAIL 13R (SOLID CASING) OR WUD STANDARD DETAIL 13AR (SPLIT CASING) FOR EXISTING RECLAIMED WATER MAIN ONLY.
4. STEEL CASING SHALL EXTEND THREE (3) FEET PAST EACH SIDE OF STRUCTURE. CASING CAN EXTEND FURTHER PAST THE STRUCTURE WHEN EXISTING CONDITIONS WARRANT AND ONLY WITH PRIOR DEPARTMENT APPROVAL.
5. STEEL CASING SHALL BE GROUTED IN PLACE WITH NON–SHRINKABLE CEMENT GROUT TO PROVIDE A WATERTIGHT SEAL TO PREVENT ANY LEAKAGE INTO THE STRUCTURE.
6. NON–SHRINKABLE CEMENT GROUT TO BE INSTALLED AT EACH END OF CASING TO OBTAIN WATERTIGHT SEAL.
7. 16" AND LARGER RECLAIMED WATER MAINS REQUIRING A CONFLICT STRUCTURE WILL BE CONSIDERED BY THE DEPARTMENT ONLY WHEN EXTREME CIRCUMSTANCES EXIST WHEN THE MAIN CANNOT BE DEFLECTED AROUND THE DRAINAGE PIPE.