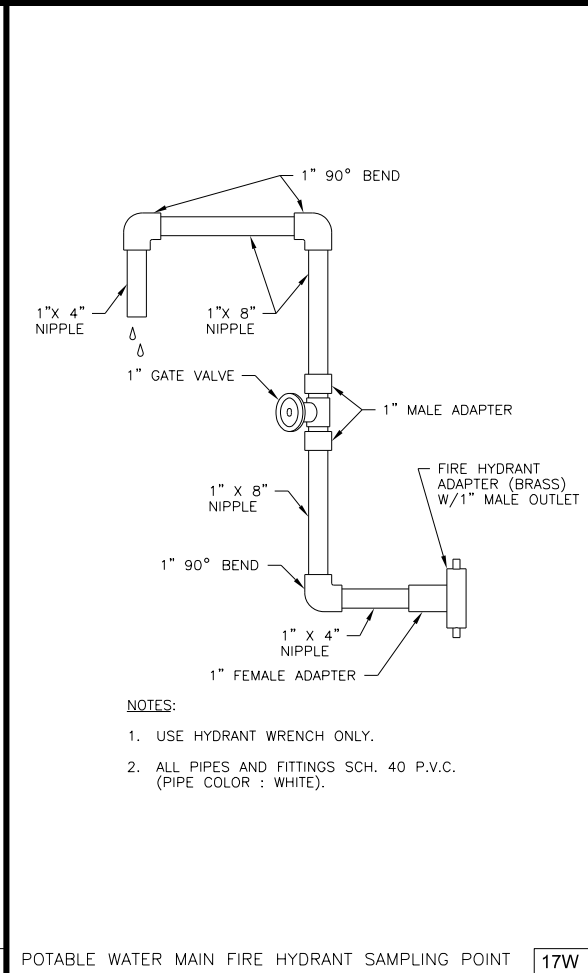
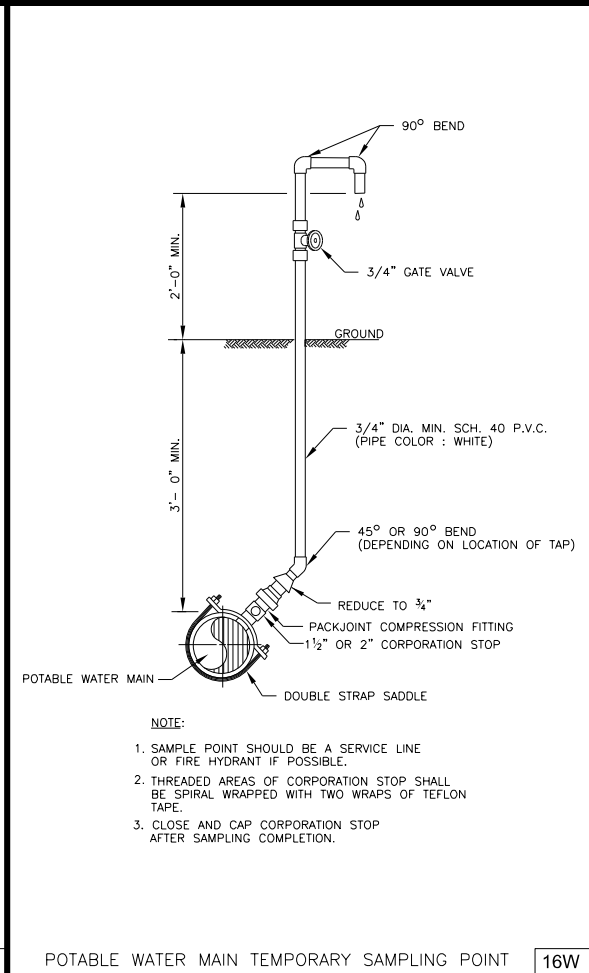
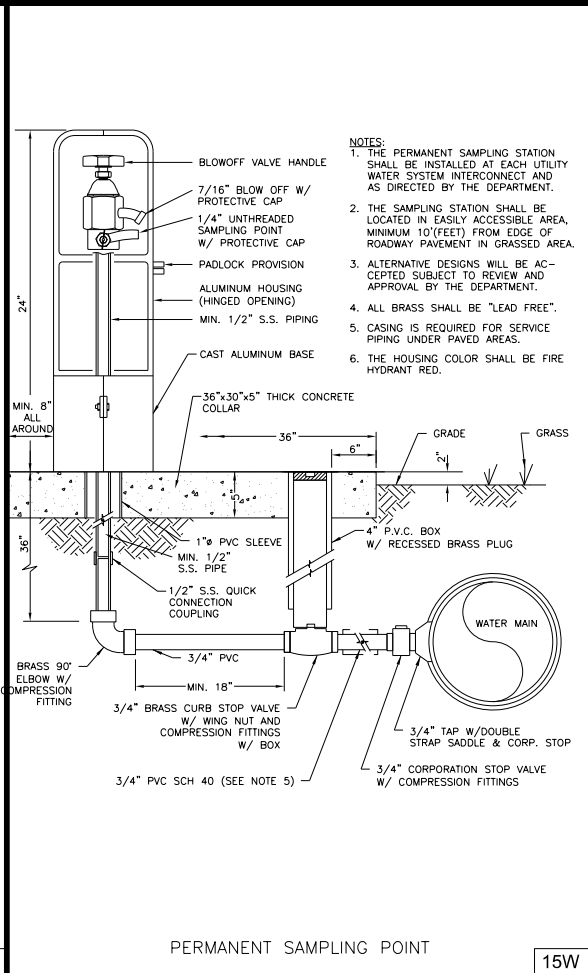
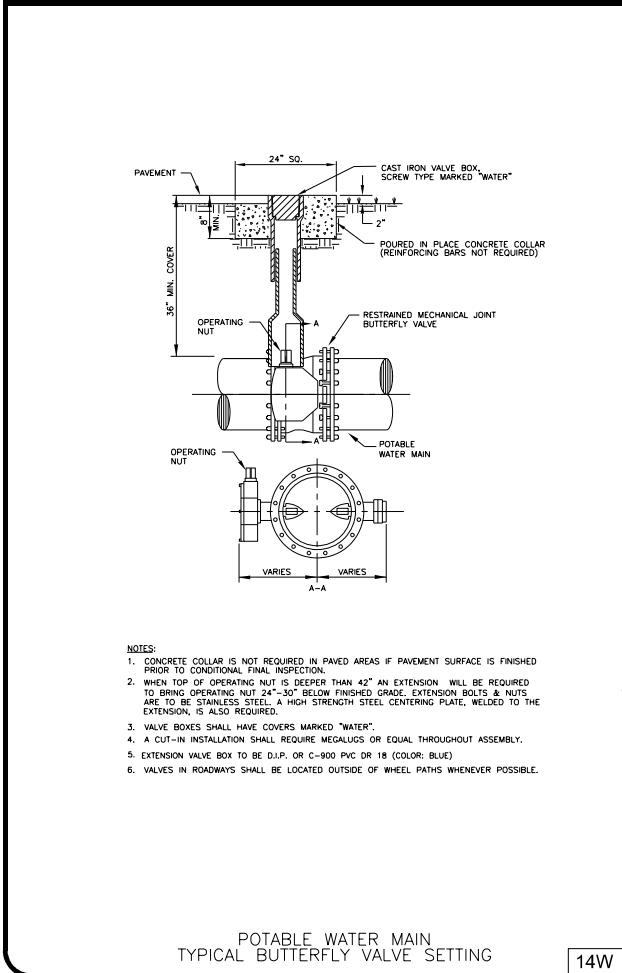
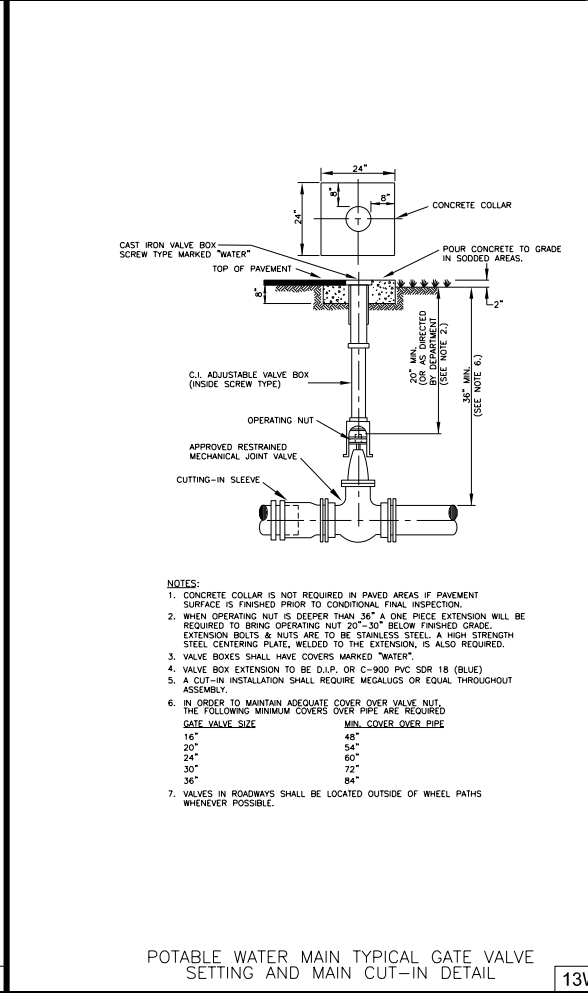
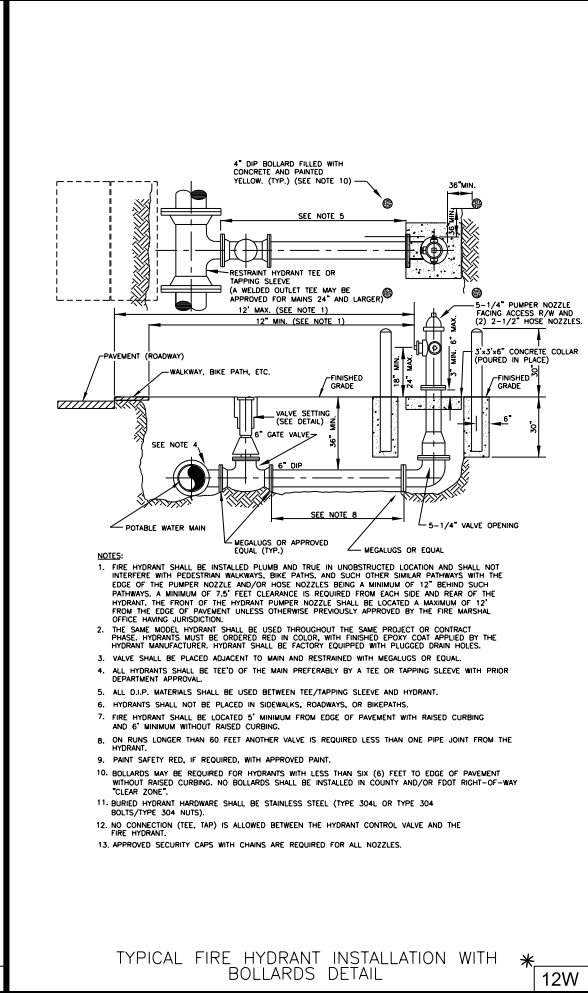
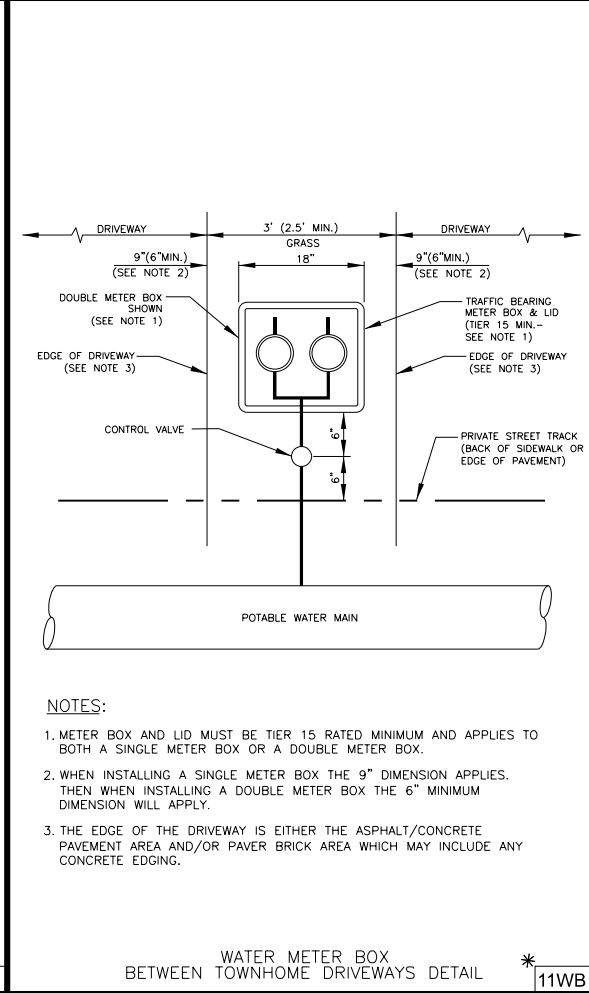
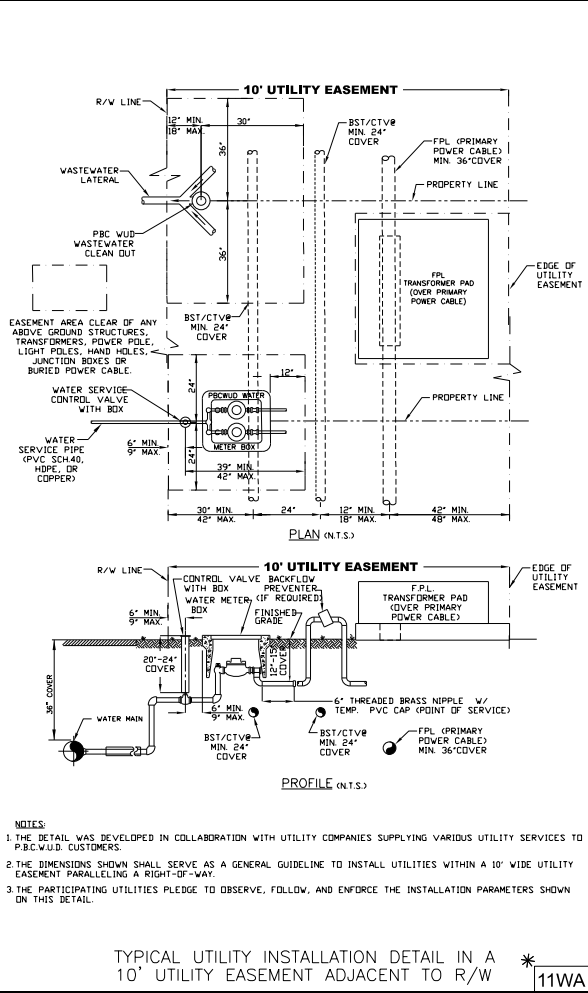
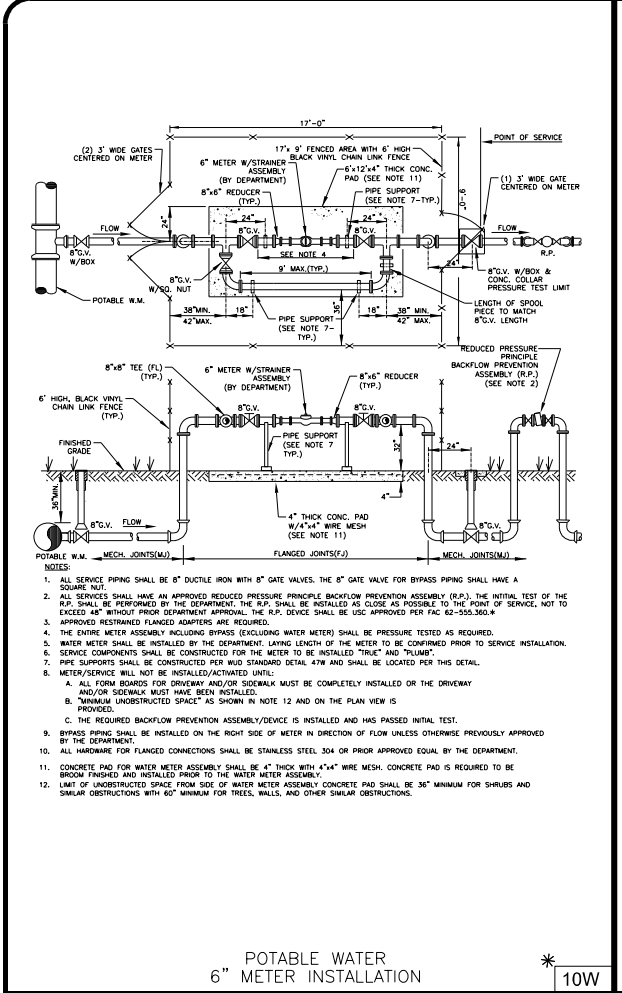




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**POTABLE WATER #2
STANDARD DETAILS**

CONSULTANT:
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UTILITIES NOTIFICATION CENTER

DESIGNED BY: WUD

DRAWN BY: M. BUCKNER

CHECKED BY: J. LAMMERT

APPROVED BY: WUD

Palm Beach County
Water Utilities Department
P.O. Box 16097
West Palm Beach, FL 33416-6097

WUD PROJECT NO.
24-019

LYONS ROAD FROM LWDD L-30 CANAL TO BOYNTON BEACH BLVD &
LYONS ROAD AND BOYNTON BEACH BLVD INTERSECTION IMPROVEMENTS
(PBCWUD WM, FM, & RCWM UTILITY RELOCATION)

PALM BEACH COUNTY
WATER UTILITIES DEPARTMENT
P.O. Box 16097
WEST PALM BEACH, FL 33416
(561)493-6000

NO.	DATE	BY	REVISION / REMARKS	
			REVISION	REMARKS
1	JUNE 2019	J.L.	GENERAL REVISION	
2	JAN 2023	J.L.	GENERAL REVISION	

**STD
DETAILS**

SHEET
NUMBER

UT-53
OF
UT-69

SEAL

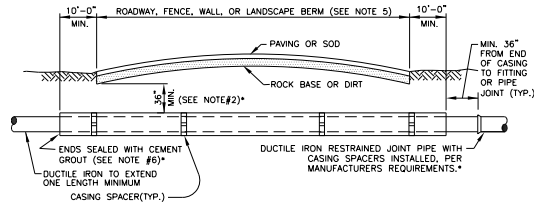
NO.	DATE	REVISION / REMARKS
1	JUN 2019	GENERAL REVISION
2	JUN 2023	GENERAL REVISION
3	JUN 2023	GENERAL REVISION

STD
DETAILS

SHEET
NUMBER

UT-54
OF
UT-69

SEAL

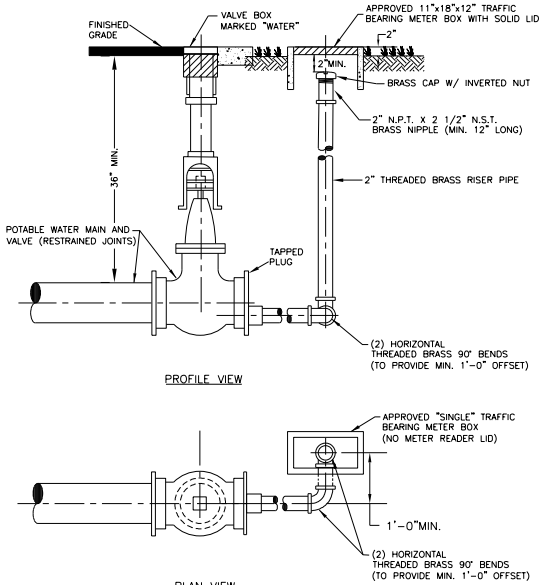


CARRIER PIPE SIZE	STEEL CASING INSIDE DIAMETER (MIN)	MINIMUM WALL THICKNESS (SEE NOTE 2)
4"	12"	.188
6"	14"	.250
8"	20"	.250
10"	24"	.250
12"	24"	.250
14"	24"	.250
16"	30"	.312
18"	30"	.312
20"	36"	.372
24"	42"	.500
30"	48"	.500
36"	54"	.625
42"	60"	.625
48"	72"	.625

- NOTES:
- 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 22WB.*
 - THE RIGHT-OF-WAY OWNER MAY REQUIRE THICKER WALL CASING AND LARGER COVER OVER CASING.*
 - STEEL CASING SHALL BE COATED OUTSIDE WITH COAL TAR EPOXY (MIN. 16 MILS DFT) AND BE PAINTED WITH A 4" MINIMUM CONTINUOUS STRIPE, ALASKA BLUE IN COLOR, ALONG THE TOP SIDE OF THE CASING.*
 - PIPE IN CASING SHALL BE PULLED TO FULLY ENGAGE RESTRAINT.
 - STEEL CASING IS REQUIRED FOR ALL POTABLE WATER MAIN INSTALLATIONS UTILIZING JACK AND BORE OR WHEN MAINS ARE INSTALLED UNDER CROSS FENCES, WALLS, OR LANDSCAPE BERMS. WHEN A CASING IS INSTALLED UNDER A FENCE, WALL, OR BERM SEE WUD STANDARD DETAIL 48W FOR INSTALLATION REQUIREMENTS.*
 - NON-SHRINKABLE CEMENT GROUT TO BE INSTALLED TO OBTAIN WATERTIGHT SEAL AT EACH END OF CASING.*

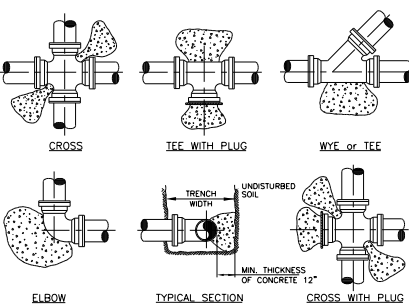
POTABLE WATER MAIN SOLID CASING
INSTALLATION DETAIL

22WA



TYPICAL 2" TERMINAL BLOWOFF
POTABLE WATER DISTRIBUTION MAINS

21W

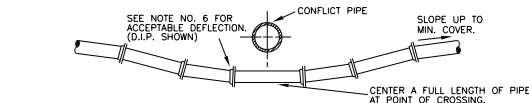
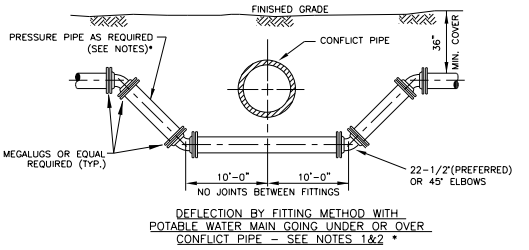


PIPE	THRUST BLOCK AREA REQ'D	REMARKS	NOTE:
4"	2.0 SQ. FT.	VALUES ARE FOR 90° BEND, BASED ON 2000 P.S.F. SAFE BEARING LOAD AND PIPE PRESSURE OF 150 P.S.I. FOR OTHER SIZES & PRESSURES THE AREA REQUIRED IS IN DIRECT PROPORTION	FOR OTHER FITTINGS USE THE FOLLOWING FACTORS:
6"	4.0 SQ. FT.		TEE 100%
8"	6.8 SQ. FT.		45 BEND 71%
10"	10.0 SQ. FT.		22 1/2° BEND 30%
12"	14.0 SQ. FT.		11 1/4° BEND 20%
14"	18.6 SQ. FT.		90° END 100%

- NOTES:
- 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 1" BOLTS CLEAR OF CONCRETE, WRAPPED IN VISQUEEN FOR FUTURE ACCESS, WITH A MINIMUM OF 1" THICKNESS BETWEEN THE FITTING AND SOIL.
 - BEFORE POURING CONCRETE, PLUGS SHALL BE WRAPPED WITH VISQUEEN AND A BOARD PLACED IN FRONT.
 - CONCRETE SHALL BE 2500 P.S.I. MINIMUM.
 - THE ENGINEER OF RECORD SHALL SUBMIT A THRUST BLOCK SIZE CALCULATION FOR TEE CONNECTIONS INTO UNRESTRAINED EXISTING MAINS LARGER THAN 14".
 - THE ENGINEER OF RECORD SHALL SUBMIT A PIPE RESTRAINT DESIGN FOR IN-LINE EXTENSIONS OF AN EXISTING UNRESTRAINED MAIN IF MECHANICAL JOINT RESTRAINT CAN NOT BE INSTALLED ON THE EXISTING MAIN.

TYPICAL THRUST BLOCKS
FOR PRESSURE PIPE

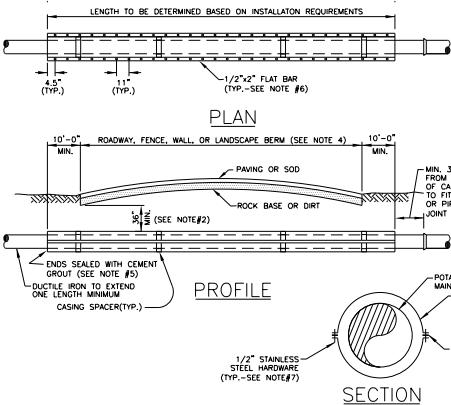
20W



- NOTES:
- DEFLECTIONS BY FITTINGS AND/OR PIPE JOINT METHODS APPLIES TO POTABLE WATER MAIN CROSSING OVER OR UNDER CONFLICT PIPE WITH CROSSING OVER CONFLICT PIPE. PREFERRED, WHEN A POTABLE WATER MAIN CROSSES OVER A STORM SEWER, GRAVITY WASTEWATER, VACUUM GRAVITY WASTEWATER, WASTEWATER FORCE MAIN, AND/OR RECLAIMED WATER MAIN THE POTABLE WATER MAIN SHALL BE LEAD TO PROVIDE A MINIMUM OF 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 POTABLE WATER DUCTILE IRON PIPE MAIN IS CENTERED ON CROSSING WITH THE LOWER PIPE BEING A PRESSURE CLASS PIPE HAVING A TWENTY (20) FOOT SECTION CENTERED ON THE CROSSING PER DEP REGULATIONS. WHEN THE POTABLE WATER MAIN CROSSES UNDER ANY STORM SEWER, GRAVITY WASTEWATER, VACUUM GRAVITY WASTEWATER, WASTEWATER FORCE MAIN, AND/OR A RECLAIMED WATER MAIN A MINIMUM TWELVE (12) INCH VERTICAL SEPARATION IS REQUIRED WITH NO EXCEPTIONS AND ONLY WITH PRIOR DEPARTMENT APPROVAL.*
 - THE PREFERRED PIPE DEFLECTION METHOD IS BY USING MECHANICAL RESTRAINT FITTINGS.*
 - POTABLE WATER MAIN DEFLECTION BY PIPE JOINT METHOD REQUIRES DEPARTMENT APPROVAL PRIOR TO THE INSTALLATION OF THE POTABLE WATER MAIN.*
 - 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.

POTABLE WATER MAIN / FORCE MAIN
PRESSURE PIPE CONFLICT DETAIL

19W

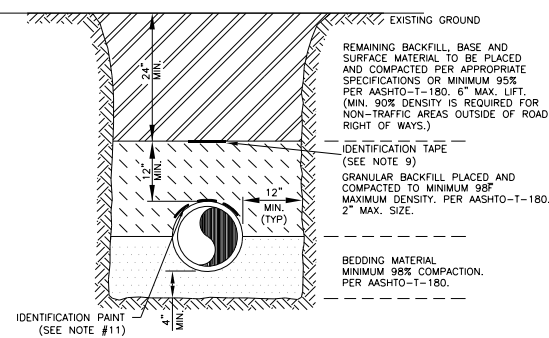


CARRIER PIPE SIZE	STEEL CASING INSIDE DIAMETER (MIN)	MINIMUM WALL THICKNESS (SEE NOTE 2)
4"	12"	.188
6"	14"	.250
8"	20"	.250
10"	24"	.250
12"	24"	.250

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

POTABLE WATER MAIN SPLIT CASING
INSTALLATION DETAIL

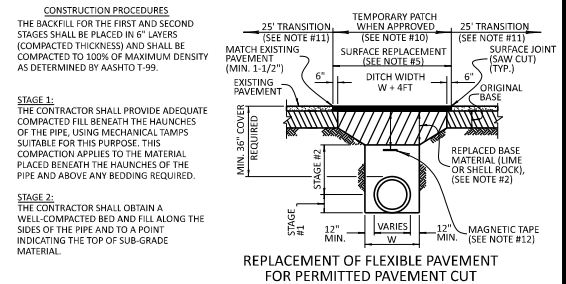
22WB



- NOTES:
- 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.
 - THE PIPE SHALL BE FULLY SUPPORTED FOR ITS ENTIRE LENGTH WITH APPROPRIATE COMPACTION UNDER THE PIPE HAUNCHES.
 - THE PIPE SHALL BE PLACED IN A DRY TRENCH.
 - BACKFILL SHALL BE FREE OF UNSUITABLE MATERIAL SUCH AS LARGE ROCK, MUCK AND DEBRIS.
 - 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.
 - THE DEVELOPER/CONTRACTOR SHALL BE RESPONSIBLE TO COMPLY WITH ALL TRENCH SAFETY LAWS AND REGULATIONS.
 - SEE SEPARATE DETAILS FOR "PIPE INSTALLATION UNDER EXISTING PAVEMENT - OPEN CUT."
 - THE AFFECTED AREA SHALL BE RESTORED TO EQUAL OR BETTER CONDITION OR AS SPECIFIED IN PERMIT/CONTRACT DOCUMENTS.
 - APPROVED 6" WIDE MAGNETIC TAPE IS REQUIRED ON ALL POTABLE WATER MAINS.*
 - CONTINUOUS 4" WIDE BLUE PAINT STRIPPING IS REQUIRED FOR POTABLE WATER MAIN DUCTILE IRON PIPE (D.I.P.) INSTALLED BELOW GRADE ONLY.*
 - A CONTINUOUS 4" WIDE PAINTED STRIP (BLUE) IS REQUIRED FOR ALL DIP/PCCP POTABLE WATER MAINS.*
 - POTABLE WATER MAIN INSTALLATIONS WITHIN PUBLIC ROAD RIGHT-OF-WAYS SHALL BE BY THE SPECIFICATIONS OF THE JURISDICTION GRANTING THE RIGHT-OF-WAY UTILITY PERMIT.*
 - FOR PIPE INSTALLATIONS IN ROAD RIGHTS-OF-WAY, ROAD OWNER'S PERMIT SPECIFICATIONS SHALL APPLY.

POTABLE WATER TRENCH DETAIL

23W



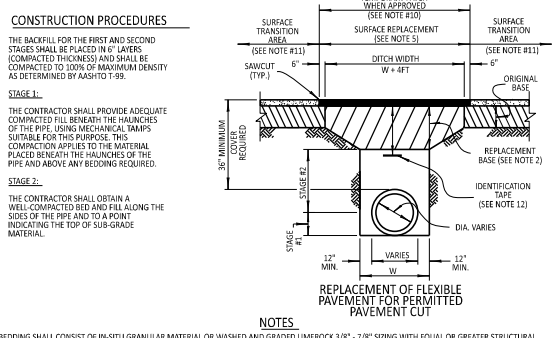
REPLACEMENT OF FLEXIBLE PAVEMENT
FOR PERMITTED PAVEMENT CUT

NOTES

- 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.
- 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.
- ASPHALT CONCRETE PAVEMENT JOINTS SHALL BE MECHANICALLY SAWED AND BUTT-JOINED.
- 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).
- SURFACE MATERIAL WILL BE CONSISTENT WITH THE EXISTING SURFACE OR 1-1/2" SP 12.5 STRUCTURAL COURSE (TRAFFIC LEVEL) ASPHALTIC CONCRETE WITH RC-70 PRIME COAT AT 0.10 GAL/SQ. YD. FOR LIMEROCK BASE AND TACK COAT AT 0.05 GAL/SQ. YD. FOLLOW THE LATEST FOOT SPECIFICATIONS FOR APPLICATION RATES OF PRIME AND TACK COATS. CONTRACTOR TO SUBMIT MATERIALS AND RATES TO ENGINEER FOR APPROVAL PRIOR TO BEGINNING WORK.
- PIPE SHALL BE PLACED IN A DRY TRENCH.
- ALL ROADWAY REPAIR WORK SHALL BE PERFORMED IN CONFORMANCE WITH APPLICABLE FOOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION AND COUNTY PMM EL-D-360S.
- 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.
- 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.
- IF THE PAVEMENT IS NOT COMPLETELY RESTORED IMMEDIATELY FOLLOWING THE OPEN CUT, A SMOOTH TEMPORARY PATCH (MINIMUM 1-1/2" 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.
- 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) WITH TACK COAT AT 0.10 GAL/SQ. YD. FOR A FULL LINE WIDTH ENCOMPASSED BY THE TRENCH INCLUDING A TRANSITION AREA OF 25 FT. EACH SIDE MEASURED FROM TOP OF TRENCH.
- APPROVED MAGNETIC TAPE IS REQUIRED FOR ALL MAIN PRESSURE PIPES AND CONDUIT IN THE COUNTY'S RIGHT-OF-WAY. INSTALL 24" BELOW FINISHED GRADE.
- CONTINUOUS 4" WIDE PAINT STRIP 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.
- CONTINUOUS 4" WIDE PAINT STRIP 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 ALASKA BLUE IN COLOR PER WUD STANDARDS.

OPEN CUT PIPE INSTALLATION
NON-THOROUGHFARE ROAD

24W



REPLACEMENT OF FLEXIBLE PAVEMENT
FOR PERMITTED PAVEMENT CUT

NOTES

- 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.
- REPLACED BASE MATERIAL OVER DITCH SHALL BE 16" LIMEROCK (L8000) MINIMUM FOR THOROUGHFARE PLAN ROADS. ANY ALTERNATE BASE MATERIAL REQUESTED BY THE ENGINEER OF RECORD REQUIRES APPROVAL BY THE ROADWAY PRODUCTION DIVISION.
- ASPHALT CONCRETE PAVEMENT JOINTS SHALL BE MECHANICALLY SAWED AND BUTT-JOINED.
- 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).
- 1" FRICTION COURSE FC-9.5 OVER 1-1/2" TYPE SP STRUCTURAL COURSE (TRAFFIC LEVEL) WITH TACK COAT AT 0.05 GAL/SQ. YD. AND RC-70 PRIME COAT AT 0.10 GAL/SQ. YD. FOLLOW THE LATEST FOOT SPECIFICATIONS FOR APPLICATION RATES OF PRIME AND TACK COATS. CONTRACTOR TO SUBMIT MATERIALS AND RATES TO ENGINEER FOR APPROVAL PRIOR TO BEGINNING WORK.
- PIPE SHALL BE PLACED IN A DRY TRENCH.
- ALL ROADWAY REPAIR WORK SHALL BE PERFORMED IN CONFORMANCE WITH APPLICABLE FOOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION AND COUNTY PMM EL-D-360S.
- 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.
- 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.
- IF THE PAVEMENT IS NOT COMPLETELY RESTORED IMMEDIATELY FOLLOWING THE OPEN CUT, A SMOOTH TEMPORARY PATCH (MINIMUM 1-1/2" 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.
- 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 LINE WIDTH OF THE TRAVEL LANES ENCOMPASSED BY THE TRENCH AREA, INCLUDING A TRANSITION AREA OF 50 FT. ON EACH SIDE MEASURED FROM TOP OF TRENCH.
- 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.
- CONTINUOUS 4" WIDE PAINT STRIP 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 ALASKA BLUE IN COLOR PER WUD STANDARDS.

OPEN CUT PIPE INSTALLATION
THOROUGHFARE ROAD

25W

CONSULTANT:

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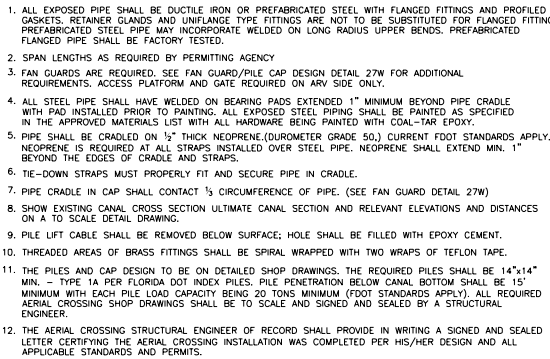
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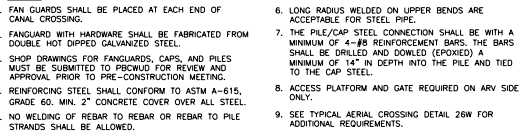
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CHECKED BY: J. LAMMERT
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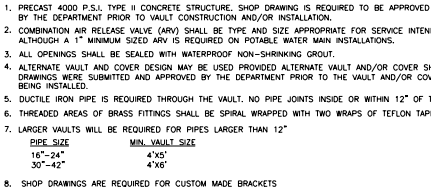
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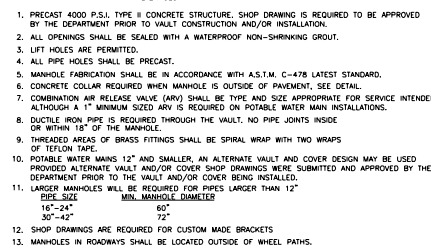
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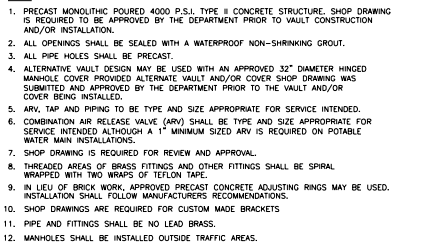
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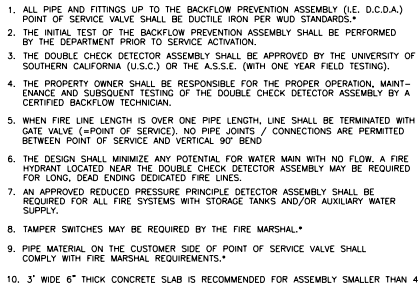
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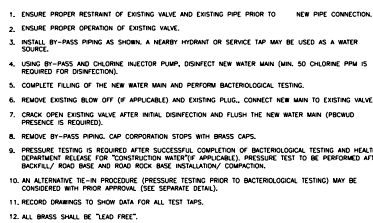
29W



30W



32W



33W

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'
2. THE RESTRAINED PIPE LENGTHS APPLY TO DUCTILE IRON AND PVC PIPE.
3. ALL JOINTS BETWEEN UPPER AND LOWER BENDS SHALL BE RESTRAINED.
4. THE RESTRAINED PIPE LENGTHS APPLY TO ALL TYPES OF ELBOWS AND FITTINGS.
5. MULTIPLY PIPE LENGTH BY 1.4 FOR POLYETHYLENE ENCASED PIPE.
6. RESTRAINED PIPE LENGTHS EQUAL TO AN "UNLIVE VALVE" CONDITION ARE REQUIRED AT EACH END OF THE VALVE.
7. THE DESIGN ENGINEER IS RESPONSIBLE TO PROPERLY SIZE THE RESTRAINT PIPE LENGTHS FOR THE PROJECT.

34W

[illegible]

1. THERE SHALL BE A MINIMUM COVER FROM FINISHED GRADE TO TOP OF PIPE.
2. DUCTILE IRON PIPE (DIP) THICKNESS SHALL CONFORM TO THE DEPARTMENT'S APPROVED MATERIAL LIST. POTABLE WATER AND RECLAIMED WATER MAINS DIP SHALL BE CEMENT LINED. FORCE MAIN DIP SHALL BE CERAMIC EPOXY LINED.
3. PVC PRESSURE PIPE SHALL BE C-900, SDR-18, 150 PSI.
4. ALL FITTINGS SHALL BE DUCTILE IRON WITH MECHANICAL JOINTS AND CEMENT OR APPROVED EPOXY LINED.
5. POTABLE WATER, RECLAIMED WATER AND WASTEWATER FORCE MAIN VALVES TO LARGER AND SMALLER SHALL BE RESILIENT SEAT GATE VALVES. TWELVE-INCH (12") OR LARGER FORCE MAIN VALVES SHALL BE RESILIENT SEAT GATE VALVES, OR ECCENTRIC LOUVE VALVES (IF APPROVED BY THE DEPARTMENT). TWELVE-INCH (12") OR LARGER FORCE MAIN VALVES LARGER THAN 10 INCHES SHALL BE BUTTERFLY VALVES.
6. ALL TRENCHING, PIPE-LAYING, BACKFILL, PRESSURE TESTING, AND DISINFECTION MUST BE IN ACCORDANCE WITH THE CALIFORNIA PUBLIC HEALTH AND SAFETY DEPARTMENT'S STANDARDS AND REGULATIONS.

POTABLE WATER #4 STANDARD DETAILS

MASSE CONSULTING SERVICES, LLC
2101 VISTA PARKWAY, SUITE 277
WEST PALM BEACH, FLORIDA 33411
PH. (561) 568-3197
www.masseconsultingfirm.com

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UTILITIES NOTIFICATION CENTER

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CHECKED BY:	J. LAMMERT	Water Utilities Department
APPROVED BY:	WUD	P.O.Box 16097
		West Palm Beach, FL 33416-6097

**PALM BEACH COUNTY
P.O. BOX 16097
WEST PALM BEACH, FL 33416
(561) 493-6000**

SEAL

31W

32W

33W

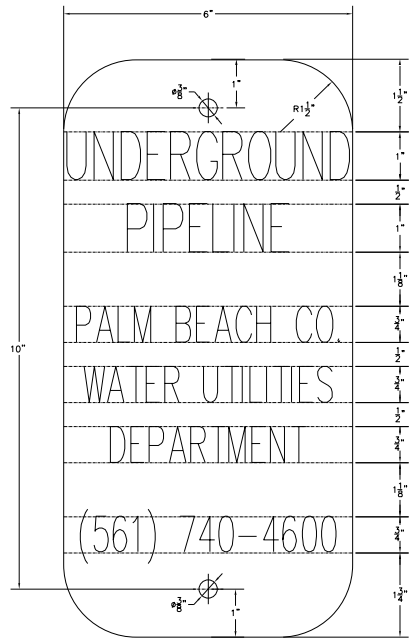
34W

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APPROVED BY:	WUD	P.O.Box 16097
		West Palm Beach, FL 33416-6097

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		West Palm Beach, FL 33416-6097

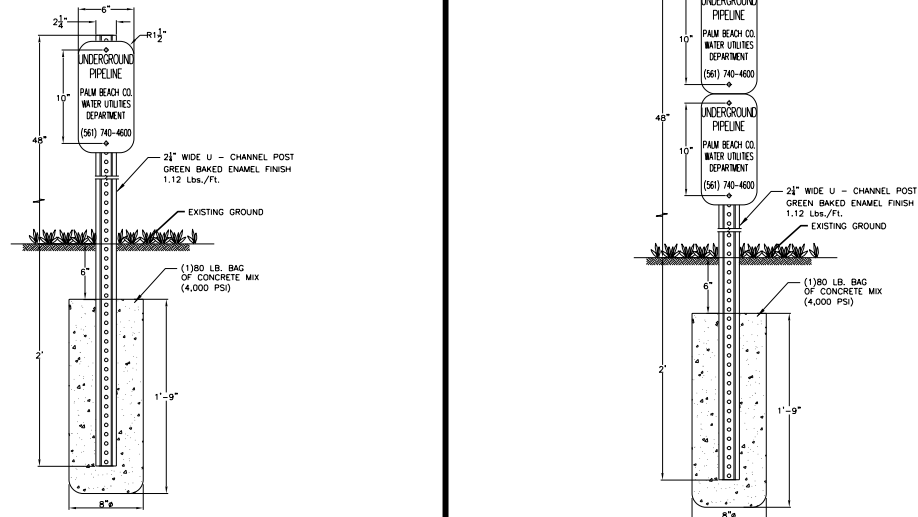
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NOTE:
SIGN SHALL BE 6" WIDE X 12" LONG, ALUMINUM (0.080 GA.). SIGN COLOR IS WHITE WITH BLACK LETTERING. ROUNDED CORNERS (1.5" RAD.), 2 HOLES (3/8" DIA.), 10" O.C.

UNDERGROUND PIPELINE SIGN DETAIL

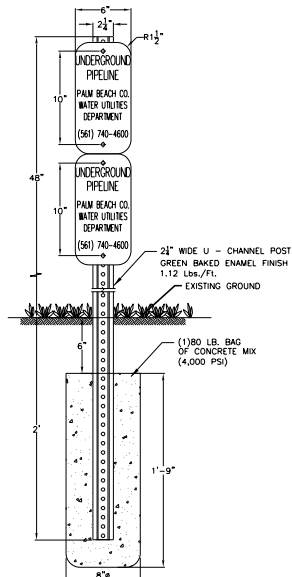
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NOTE:
SIGNS SHALL BE 6" WIDE X 12" LONG, ALUMINUM (0.080 GA.). SIGN COLOR IS WHITE WITH BLACK LETTERING. ROUNDED CORNERS (1.5" RAD.), 2 HOLES (3/8" DIA.), 10" O.C.

SINGLE UNDERGROUND PIPELINE SIGN DETAIL

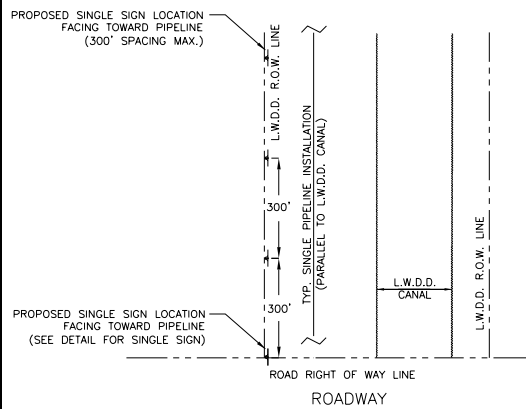
36W



NOTES:
1. SIGNS SHALL BE 6" WIDE X 12" LONG, ALUMINUM (0.080 GA.). SIGN COLOR IS WHITE WITH BLACK LETTERING. ROUNDED CORNERS (1.5" RAD.), 2 HOLES (3/8" DIA.), 10" O.C.
2. THE DUAL UNDERGROUND PIPELINE SIGN SHALL BE UTILIZED FOR TWO UNDERGROUND PIPELINES WITHIN THE L.W.D.D. RIGHT-OF-WAY.

DUAL UNDERGROUND PIPELINE SIGN DETAIL

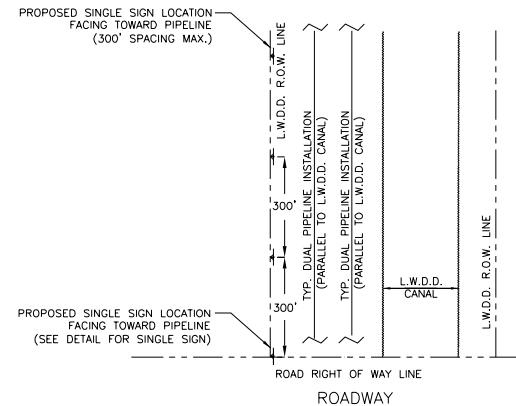
37W



NOTE:
1. UNDERGROUND PIPELINE WARNING SIGNS ARE TO BE PLACED AT THE POINT IN WHICH THE LINE INGRESSES AND EGRESSES THE L.W.D.D. RIGHT-OF-WAY.
2. SIGN SPACING IS TO BE A MAXIMUM OF 300' ALONG THE L.W.D.D. RIGHT-OF-WAY, AS CLOSE AS POSSIBLE TO THE L.W.D.D. RIGHT-OF-WAY.

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

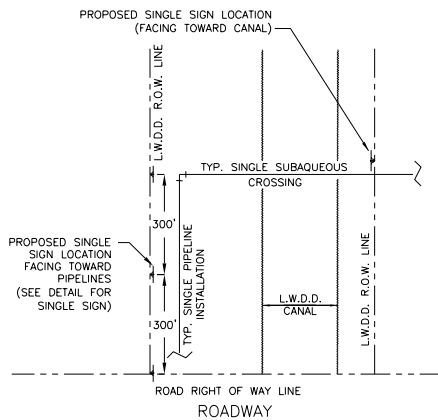
38W



NOTE:
1. UNDERGROUND PIPELINE WARNING SIGNS ARE TO BE PLACED AT THE POINT IN WHICH THE LINE INGRESSES AND EGRESSES THE L.W.D.D. RIGHT-OF-WAY.
2. SIGN SPACING IS TO BE A MAXIMUM OF 300' ALONG THE L.W.D.D. RIGHT-OF-WAY, AS CLOSE AS POSSIBLE TO THE L.W.D.D. RIGHT-OF-WAY.

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

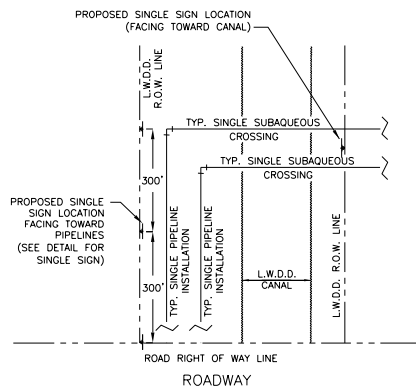
39W



NOTE:
1. UNDERGROUND PIPELINE WARNING SIGNS ARE TO BE PLACED ON BOTH SIDES OF THE CANAL CROSSING; AT THE INSIDE EDGE OF THE RIGHT-OF-WAY.
2. SIGN POST IS NOT TO BE PLACED DIRECTLY OVER PIPELINE. OFFSET SIGN POST 5' FROM PIPELINE.

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

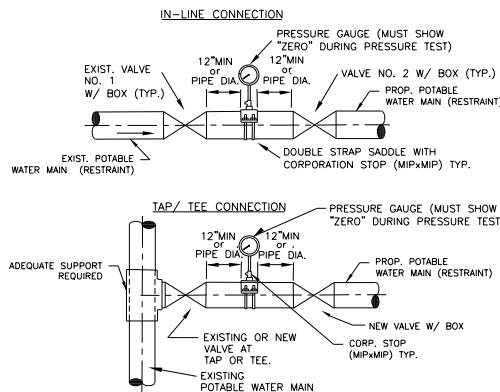
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NOTE:
1. UNDERGROUND PIPELINE WARNING SIGNS ARE TO BE PLACED ON BOTH SIDES OF THE CANAL CROSSING; AT THE INSIDE EDGE OF THE RIGHT-OF-WAY.
2. SIGN POST IS NOT TO BE PLACED DIRECTLY OVER PIPELINE. OFFSET SIGN POST 5' FROM PIPELINE.

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

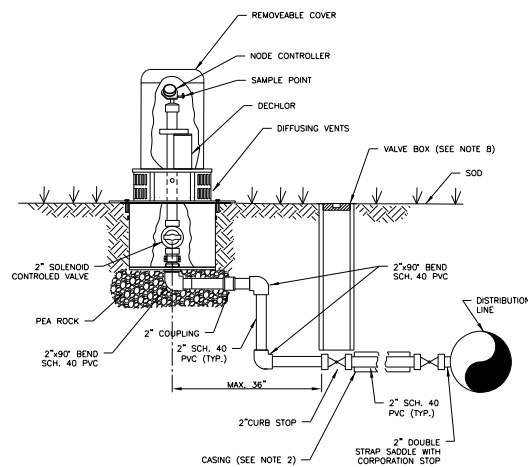
41W



NOTES:
1. THE "ALTERNATIVE" PROCEDURE MUST BE APPROVED BY WUD IN ADVANCE. IT ALLOWS THE NEW PIPE TO BE PRESSURE TESTED PRIOR TO BACTERIOLOGICAL TESTING.
2. BOTH VALVES SHALL BE KEPT CLOSED EXCEPT FOR FILLING AND FLUSHING.
3. WUD SHALL BE NOTIFIED BEFORE FILLING AND FLUSHING.
4. PRESSURE TEST PUMP MAY BE CONNECTED TO SERVICE LINE, FIRE HYDRANT OR BLOWOFF IN THE TESTED WATER MAIN. NO EXTRA TAPS ARE PERMITTED UNLESS UNAVOIDABLE.
5. GAUGE AND RISER TO BE REMOVED AFTER PRESSURE TEST. HOLE TO BE PLUGGED AT SADDLE WITH BRASS PLUG. A BRASS CAP IS REQUIRED.
6. THREAD AREAS OF CORPORATION STOP SHALL BE SPIRAL WRAPPED WITH TWO WRAPS OF TEFLON TAPE.
7. ENSURE PROPER RESTRAINT OF EXISTING VALVE(S) AND PIPE PRIOR TO NEW CONNECTION.
8. SEE ALSO DETAIL FOR "STANDARD POTABLE WATER MAIN TIE-IN PROCEDURE"
9. RECORD DRAWINGS TO SHOW DATA FOR ALL TEST TAPS.
10. ALL BRASS SHALL BE "LEAD FREE".

ALTERNATIVE WATER MAIN TIE-IN

42W



NOTES:
1. AUTOMATIC FLUSHING ASSEMBLY TO BE INSTALLED PER MANUFACTURER'S REQUIREMENTS.
2. FOR INSTALLATION OF SERVICES UNDER DRIVEWAYS AND ROADWAYS, USE MIN. 4" DIAMETER BLACK IRON, PVC SCH 40, OR HDPE SDR 9 CASING. CASING SHALL EXTEND MIN. 24" BEYOND EDGE OF PAVEMENT. CASING TO BE SEALED WITH CEMENT. CASING SHALL BE COLOR-CODED BLACK, WHITE, BLUE, OR BLUE STRIPED.
3. AUTOMATIC FLUSHING ASSEMBLY TO BE INSTALLED AS CLOSE AS POSSIBLE TO THE WATER MAIN WITHIN AN UTILITY EASEMENT OR ROAD RIGHT-OF-WAY WITH PRIOR DEPARTMENT APPROVAL. IF AUTOMATIC FLUSHING ASSEMBLY HOUSING IS INSTALLED IN ROAD RIGHT-OF-WAY IT SHALL NOT INTERFERE WITH CLEAR ZONE REQUIREMENTS AS SPECIFIED BY ROAD OWNER.
4. BEDDING (MIN. 4") AND COVER (MIN. 4") OVER SERVICE LINE OR CASING SHALL CONSIST OF FINE GRANULAR MATERIAL. UNSUITABLE IN-SITU MATERIALS SUCH AS MUCK, DEBRIS AND LARGER ROCKS SHALL BE REMOVED WITH 2" MAXIMUM SIZE.
5. ALL HARDWARE (I.E. BOLTS, ETC.) REQUIRED FOR ASSEMBLY INSTALLATION SHALL BE 304 STAINLESS STEEL.
6. THREADED AREAS OF CORPORATION STOP AND OTHER FITTINGS SHALL BE SPIRAL WRAPPED WITH TWO (2) WRAPS OF TEFLON TAPE. ALL BRASS SHALL BE "LEAD FREE".
7. A 4" THICK COMPACTED 3/4" ROCK BASE IS REQUIRED. THE BASE SHALL EXTEND MINIMUM 12" BEYOND AUTOMATIC FLUSHING ASSEMBLY PAD PERIMETER.
8. WHEN VALVE BOX IS LOCATED IN GRASS A CONCRETE COLLAR IS REQUIRED PER DEPARTMENT STANDARDS.

AUTOMATIC FLUSHING ASSEMBLY (TYPE A)

43W

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POTABLE WATER #5
STANDARD DETAILS

CONSULTANT:
MASSE CONSULTING SERVICES, LLC
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WEST PALM BEACH, FLORIDA 33411
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UTILITIES NOTIFICATION CENTER

DESIGNED BY: WUD

DRAWN BY: M. BUCKNER
CHECKED BY: J. LAMMERT
APPROVED BY: WUD

Palm Beach County
Water Utilities Department
P.O. Box 16097
West Palm Beach, FL 33416-6097

WUD PROJECT NO.
24-019

LYONS ROAD FROM LWDD L-30 CANAL TO BOYNTON BEACH BLVD &
LYONS ROAD AND BOYNTON BEACH BLVD INTERSECTION IMPROVEMENTS
(PBCWUD WM, FM, & RCWM UTILITY RELOCATION)



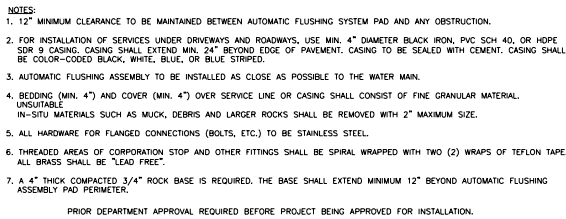
PALM BEACH COUNTY
WATER UTILITIES DEPARTMENT
P.O. BOX 16097
WEST PALM BEACH, FL 33416
(561) 493-6000

NO.	DATE	REVISION / REMARKS
1	JUNE 2019	GENERAL REVISION
2	JAN 2023	GENERAL REVISION

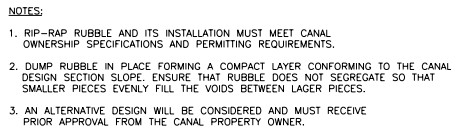
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DETAILS

SHEET
NUMBER
UT-56
OF
UT-69

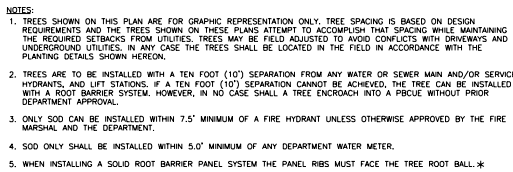
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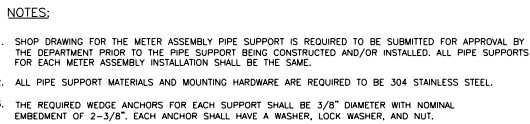
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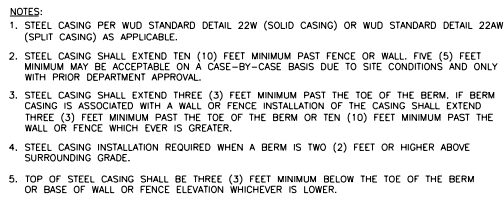
RIP-RAP RUBBLE DETAIL



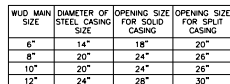
LANDSCAPE AND ROOT BARRIER DETAIL



ABOVE GROUND WATER METER INSTALLATION
PIPE SUPPORT



POTABLE WATER MAIN CROSSING
FENCE, WALL, OR BERM CASING DETAIL*



POTABLE WATER MAIN CONFLICT
STRUCTURE DETAIL*



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POTABLE WATER #6 STANDARD DETAILS

CONSULTANT:
MASSE CONSULTING SERVICES, LLC
2101 VISTA PARKWAY, SUITE 277
WEST PALM BEACH, FLORIDA 33411
PH. (561) 568-3197
www.masseconsultingfirm.com

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SUNSHINE STATE ONE CALL OF FLORIDA, INC.
UTILITIES NOTIFICATION CENTER

DESIGNED BY: WUD

DRAWN BY: M. BUCKNER Palm Beach County
CHECKED BY: J. LAMMERT Water Utilities Department
APPROVED BY: WUD P.O.Box 16097
West Palm Beach, FL 33411

WUD PROJECT No.
24-019

LYONS ROAD FROM LWDD L-30 CANAL TO BOYNTON BEACH BLVD &
LYONS ROAD AND BOYNTON BEACH BLVD INTERSECTION IMPROVEMENTS
(PBCWUD WM. FM. & RCWM UTILITY RELOCATION)



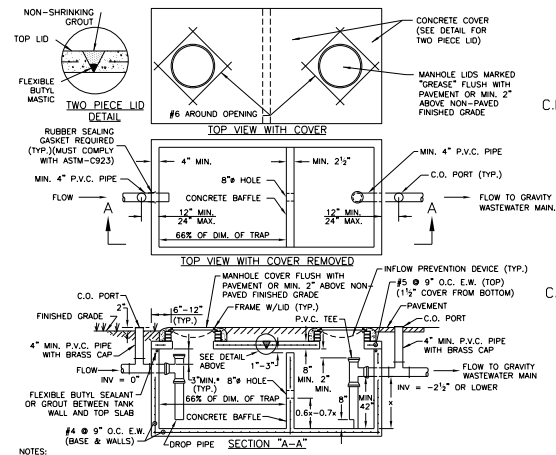
**PALM BEACH COUNTY
WATER UTILITIES DEPARTMENT
P.O. BOX 16097
WEST PALM BEACH, FL 33416
(561)493-6000**

NO.	DATE	REVISION / REMARKS		BY
		GENERAL	REVISION	
*	JUNE 2019	GENERAL	REVISION	J.L.
	JAN 2023	GENERAL	REVISION	J.L.

*STD
DETAILS*

SHEET
NUMBER
UT-57
OF
UT-69

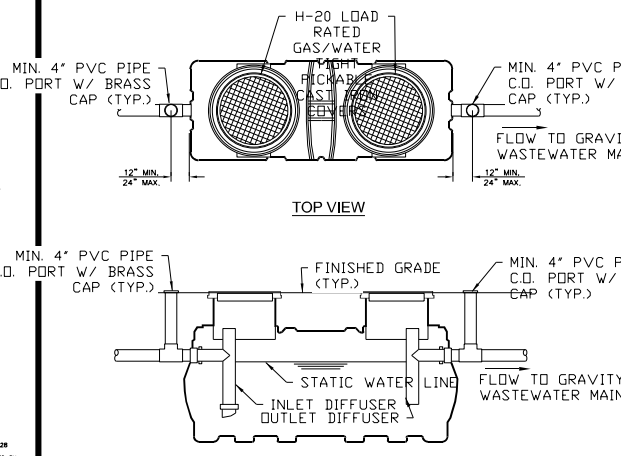
SEAL



NOTES:

1. OIL/GREASE INTERCEPTORS SHALL BE WATER TIGHT AND SHALL BE BUILT OF PRECAST CONCRETE WHICH HAS A DESIGN COMPRESSIVE STRENGTH OF MINIMUM 3000 PSI AFTER 28 DAYS CURE. THE DESIGN, BUILDING AND CONSTRUCTION MUST CONFORM TO THE STANDARD AND TO ALL APPLICABLE BUILDING CODES, HEALTH DEPARTMENT REQUIREMENTS AND REGULATIONS. THE DESIGN SHALL BE SUBMITTED TO THE PALM BEACH COUNTY ENGINEER FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION. THE DESIGN SHALL BE APPROVED BY THE ENGINEER PRIOR TO CONSTRUCTION. THE CONCRETE SHALL BE MONOLITHIC POURED AND SHALL HAVE A PRECAST HOLE ON EACH END ONLY FOR LATERAL, PRECAST HOLES SHALL BE LIMITED TO CHAMFER R4S. FLUOR ADMINISTRATIVE CODES, WALL AND SLAB THICKNESS SHALL BE MINIMUM 8" AND SHALL BE DETERMINED BY THE OWNER'S ENGINEER. THE CONCRETE BOX SHALL BE MONOLITHIC POURED AND SHALL HAVE A PRECAST HOLE ON EACH END ONLY FOR LATERAL. THE PRECAST HOLES SHALL BE LIMITED TO CHAMFER R4S. FLUOR ADMINISTRATIVE CODES, WALL AND SLAB THICKNESS SHALL BE MINIMUM 8" AND SHALL BE DETERMINED BY THE OWNER'S ENGINEER. THE CONCRETE BOX SHALL BE MONOLITHIC POURED AND SHALL HAVE A PRECAST HOLE ON EACH END ONLY FOR LATERAL. THE PRECAST HOLES SHALL BE LIMITED TO CHAMFER R4S. FLUOR ADMINISTRATIVE CODES, WALL AND SLAB THICKNESS SHALL BE MINIMUM 8" AND SHALL BE DETERMINED BY THE OWNER'S ENGINEER.
2. THE OIL/GREASE INTERCEPTOR SHALL BE USED FOR APPLICATIONS EXCEEDING 25 GPM FLOW RATE. DETERMINE USING THE PLUMBING AND DRAINAGE INSTITUTE (PDI) STANDARD. A DESIGN CALCULATION MUST BE SUBMITTED FOR APPROVAL WITH A SHOP DRAWING PRIOR TO THE PRE-CONSTRUCTION MEETING. FOR APPLICATIONS UP TO 25 GPM FLOW RATE, THE INTERCEPTOR SHALL BE 24" MIN. DIAMETER. FOR APPLICATIONS EXCEEDING 25 GPM FLOW RATE, AN APPROVED OUTSIDE TRENCH SHALL BE CONSIDERED UPON SUBMITTAL. INSPECTION PORTS (CLEAN OUTS) ARE REQUIRED TO BE INSTALLED AT EACH END OF ANY TYPE OF INTERCEPTOR WITH PORTS TO REMAIN EASILY ACCESSIBLE FOR UTILITY INSPECTION AND SAMPLING.
3. INSPECTION PORTS (CLEAN OUTS) ARE REQUIRED TO BE INSTALLED AT EACH END OF ANY TYPE OF INTERCEPTOR WITH PORTS TO REMAIN EASILY ACCESSIBLE FOR UTILITY INSPECTION AND SAMPLING.
4. THE INTERCEPTOR AND CLEAN-OUT PORTS SHALL BE LOCATED OUTSIDE AND IN A NON-TRAFFIC AREA WHENEVER POSSIBLE. IF INSTALLED IN A TRAFFIC AREA, MINI-MANHOLES ARE REQUIRED TO BE INSTALLED ON ALL PORTS (CLEANOUTS). THE SURFACE SURROUNDING THE INTERCEPTOR SHALL BE SLOPED TO DRAIN STORM WATER AWAY FROM THE INTERCEPTOR.
5. THE CAPACITY DETERMINATION FOR THE INTERCEPTOR IS THE RESPONSIBILITY OF THE OWNER/CUSTOMER. THE MINIMUM VOLUME OF ANY GREASE INTERCEPTOR SHALL BE 700 GALLONS. THE MINIMUM VOLUME OF A SAND/OIL INTERCEPTOR SHALL BE 100 GALLONS. THE MINIMUM VOLUME OF A SAND/OIL INTERCEPTOR SHALL BE 100 GALLONS. THE MINIMUM VOLUME OF A SAND/OIL INTERCEPTOR SHALL BE 100 GALLONS.
6. NO Baffle is required if there are multiple grease interceptors installed in series. However, cleanout ports must be installed on each end of each intercepter.
7. THE PROPERTY OWNER/CUSTOMER SHALL BE RESPONSIBLE FOR THE OPERATION AND MAINTENANCE OF THE INTERCEPTOR.
8. EACH FACILITY WITH AN OIL/GREASE INTERCEPTOR SHALL HAVE A SEPARATE (NOT SHARED) INTERCEPTOR AND SHALL BE INDIVIDUALLY METERED THROUGH THE DEPARTMENT.
9. A "GREASE TRAP" OR "OIL/GREASE INTERCEPTOR" SHALL BE REQUIRED TO RECEIVE THE DRAINAGE FROM FIXTURES AND EQUIPMENT (SINKS, DISHWASHERS, FLOOR DRAINS, CAN WASH AREAS, ETC.) WITH GREASE LADEN WASTE LOCATED IN COMMERCIAL FOOD PREPARATION AREAS SUCH AS RESTAURANTS, HOTEL KITCHENS, HOSPITALS, SCHOOLS, KITCHENS, BARS, FACTORY CAFETERIAS, CLUBS, ETC.
10. THE "GREASE TRAP" OR "OIL/GREASE INTERCEPTOR" SHALL BE LOCATED AS CLOSE AS PRACTICALLY POSSIBLE TO THE FIXTURES AND EQUIPMENT GENERATING GREASE.
11. THE "GREASE TRAP" OR "OIL/GREASE INTERCEPTOR" SHALL BE LOCATED AS CLOSE AS PRACTICALLY POSSIBLE TO THE FIXTURES AND EQUIPMENT GENERATING GREASE.
12. A "SOLIDS INTERCEPTOR" SHALL BE CONSIDERED TO BE INSTALLED UPSTREAM OF A "GREASE TRAP" WHERE SUBSTANTIAL AMOUNT OF SOLIDS FROM FOOD GRINDERS, DISPOSALS ARE PRESENT.
13. MANHOLE COVER SHALL BE MACHINED TO ACCEPT INFLOW PREVENTER.
14. SEE WUD STANDARD DETAIL 15B FOR REINFORCED TYPE OIL/GREASE INTERCEPTOR INSTALLATIONS.

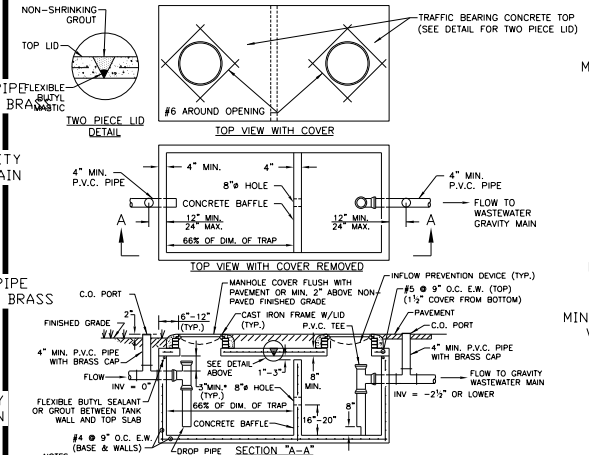
OIL/GREASE INTERCEPTOR CONCRETE STRUCTURE * 1SA



NOTES:

1. INSPECTION PORTS (CLEANOUTS) ARE REQUIRED TO BE INSTALLED AT EACH END OF ANY TYPE OF INTERCEPTOR WITH PORTS TO REMAIN ACCESSIBLE TO FOR UTILITY INSPECTION AND SAMPLING.
2. THE INTERCEPTOR PORTS (CLEANOUTS) SHALL BE LOCATED OUTSIDE AND IN A NON-TRAFFIC AREA WHENEVER POSSIBLE. IF INSTALLED IN A TRAFFIC AREA, MINI-MANHOLES ARE REQUIRED TO BE INSTALLED ON ALL PORTS (CLEANOUTS). THE SURFACE SURROUNDING THE INTERCEPTOR SHALL BE SLOPED TO DRAIN STORM WATER AWAY FROM THE INTERCEPTOR.
3. IF AN INTERCEPTOR NEEDS TO BE INSTALLED IN DOORS DUE TO EXISTING SITE CONDITIONS, PRIOR DEPARTMENT APPROVAL IS REQUIRED WITH IN DOOR INSTALLATIONS APPROVED ON A CASE BY CASE BASIS.
4. THE PROPERTY OWNER/CUSTOMER SHALL BE RESPONSIBLE FOR THE OPERATION AND MAINTENANCE OF THE INTERCEPTOR.
5. EACH FACILITY WITH AN OIL/GREASE INTERCEPTOR SHALL HAVE A DEDICATED (NOT SHARED) INTERCEPTOR WITH THEIR POTABLE WATER SERVICE INDIVIDUALLY METERED THROUGH THE DEPARTMENT.

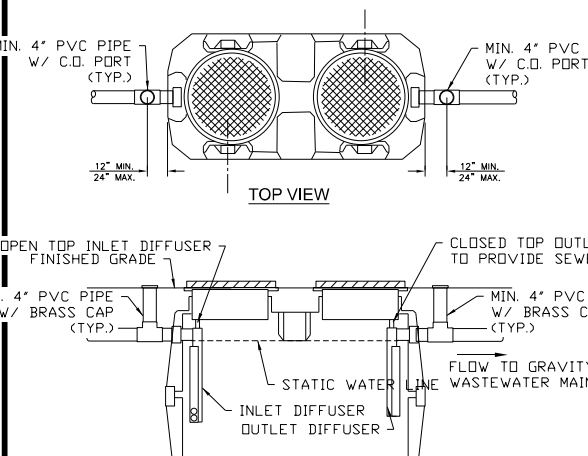
OIL/GREASE INTERCEPTOR FIBERGLASS STRUCTURE ONLY * 1SB



NOTES:

1. SAND/OIL INTERCEPTORS SHALL BE WATER TIGHT AND SHALL BE BUILT OF PRECAST CONCRETE WHICH HAS A DESIGN COMPRESSIVE STRENGTH OF MINIMUM 3000 PSI AFTER 28 DAYS CURE. THE DESIGN, BUILDING AND CONSTRUCTION MUST CONFORM TO THE STANDARD AND TO ALL APPLICABLE BUILDING CODES, HEALTH DEPARTMENT REQUIREMENTS AND REGULATIONS, INCLUDING, BUT NOT LIMITED TO CHAPTER R4S. FLUOR ADMINISTRATIVE CODES, WALL AND SLAB THICKNESS SHALL BE MINIMUM 8" AND SHALL BE DETERMINED BY THE OWNER'S ENGINEER. THE CONCRETE BOX SHALL BE MONOLITHIC POURED AND SHALL HAVE A PRECAST HOLE ON EACH END ONLY FOR LATERAL. THE PRECAST HOLES SHALL BE LIMITED TO CHAMFER R4S. FLUOR ADMINISTRATIVE CODES, WALL AND SLAB THICKNESS SHALL BE MINIMUM 8" AND SHALL BE DETERMINED BY THE OWNER'S ENGINEER.
2. AN ALTERNATIVE TYPE OF INTERCEPTOR STRUCTURE MAY BE INSTALLED ONLY WITH PRIOR DEPARTMENT APPROVAL. SHOP DRAWINGS REQUIRED TO BE SUBMITTED AND APPROVED BY THE DEPARTMENT PRIOR TO THE PRE-CONSTRUCTION MEETING FOR ALL INTERCEPTORS.
3. INSPECTION PORTS (CLEAN OUTS) ARE REQUIRED TO BE INSTALLED AT EACH END OF ANY TYPE OF INTERCEPTOR WITH PORTS TO REMAIN EASILY ACCESSIBLE FOR UTILITY INSPECTION AND SAMPLING.
4. THE INTERCEPTOR SHALL BE LOCATED IN GRASS AREA/IN-TRAFFIC AREA WHENEVER POSSIBLE. THE SURFACE SURROUNDING THE INTERCEPTOR SHALL BE SLOPED TO DRAIN STORM WATER AWAY FROM THE INTERCEPTOR.
5. THE CAPACITY DETERMINATION FOR THE INTERCEPTOR IS THE RESPONSIBILITY OF THE OWNER/CUSTOMER. THE MINIMUM VOLUME OF A SAND/OIL INTERCEPTOR SHALL BE 100 GALLONS. THE MINIMUM VOLUME OF A SAND/OIL INTERCEPTOR SHALL BE 100 GALLONS. THE MINIMUM VOLUME OF A SAND/OIL INTERCEPTOR SHALL BE 100 GALLONS.
6. NO Baffle is required if there are multiple grease interceptors installed in series. However, cleanout ports must be installed on each end of each intercepter.
7. THE PROPERTY OWNER/CUSTOMER SHALL BE RESPONSIBLE FOR THE OPERATION AND MAINTENANCE OF THE INTERCEPTOR.
8. EACH FACILITY WITH AN OIL/GREASE INTERCEPTOR SHALL HAVE A SEPARATE (NOT SHARED) INTERCEPTOR AND SHALL BE INDIVIDUALLY METERED THROUGH THE DEPARTMENT.
9. MANHOLE LIDS SHALL BE MACHINED TO ACCEPT INFLOW PREVENTER.
10. SEE WUD STANDARD DETAIL 25B FOR FIBERGLASS TYPE SAND/OIL INTERCEPTOR INSTALLATIONS.

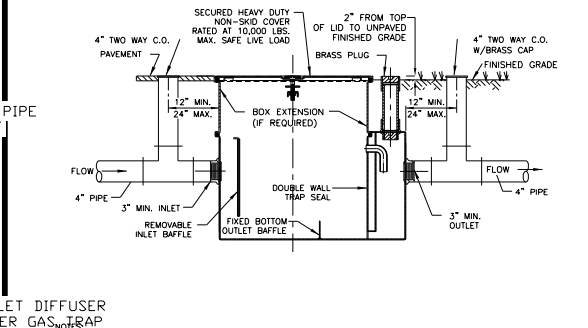
SAND/OIL INTERCEPTOR CONCRETE STRUCTURE * 2SA



NOTES:

1. INSPECTION PORTS (CLEANOUTS) ARE REQUIRED TO BE INSTALLED AT EACH END OF ANY TYPE OF INTERCEPTOR WITH PORTS TO REMAIN ACCESSIBLE TO FOR UTILITY INSPECTION AND SAMPLING.
2. THE INTERCEPTOR PORTS (CLEANOUTS) SHALL BE LOCATED OUTSIDE AND IN A NON-TRAFFIC AREA WHENEVER POSSIBLE. IF INSTALLED IN A TRAFFIC AREA, MINI-MANHOLES ARE REQUIRED TO BE INSTALLED ON ALL PORTS (CLEANOUTS). THE SURFACE SURROUNDING THE INTERCEPTOR SHALL BE SLOPED TO DRAIN STORM WATER AWAY FROM THE INTERCEPTOR.
3. IF AN INTERCEPTOR NEEDS TO BE INSTALLED IN DOORS DUE TO EXISTING SITE CONDITIONS, PRIOR DEPARTMENT APPROVAL IS REQUIRED WITH IN DOOR INSTALLATIONS APPROVED ON A CASE BY CASE BASIS.
4. THE PROPERTY OWNER/CUSTOMER SHALL BE RESPONSIBLE FOR THE OPERATION AND MAINTENANCE OF THE INTERCEPTOR.
5. EACH FACILITY WITH AN SAND/OIL INTERCEPTOR SHALL HAVE A DEDICATED (NOT SHARED) INTERCEPTOR WITH THEIR POTABLE WATER SERVICE INDIVIDUALLY METERED THROUGH THE DEPARTMENT.
6. SEE WUD STANDARD DETAIL 25A FOR CONCRETE STRUCTURE TYPE SAND/OIL INTERCEPTOR INSTALLATIONS.

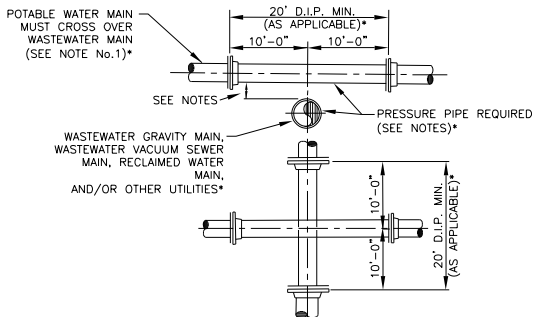
SAND/OIL INTERCEPTOR POLYETHYLENE/FIBERGLASS STRUCTURE ONLY * 2SB



NOTES:

1. THE GREASE TRAP SHALL BE WATER TIGHT AND GAS TIGHT AND SHALL BE FABRICATED FROM STEEL, ACID RESISTANT COATED INTERIOR AND EXTERIOR.
2. THE GREASE TRAP SHALL BE CERTIFIED AND TAGGED BY THE SEAL OF THE PLUMBING AND DRAINAGE INSTITUTE (PDI), AND PDI RATED AT 100 GPM FLOW RATE AND 100 LBS. GREASE CAPACITY. THE GREASE TRAP SIZE, DESIGN AND INSTALLATION MUST COMPLY OR EXCEED THE APPLICABLE BUILDING CODES AND REGULATIONS.
3. THE GREASE TRAP MAY BE USED IF AN OIL/GREASE INTERCEPTOR IS NOT REQUIRED AND ONLY FOR APPLICATIONS UP TO 25 GPM FLOW RATE (ONE MINUTE FLOW) OR 50 GPM (TWO MINUTE FLOW). DETERMINED USING THE PDI 0-101 STANDARD. FOR HIGHER FLOW RATES OR GREASE CAPACITY GREATER THAN 50 GPM, AN APPROVED OIL/GREASE INTERCEPTOR WILL BE REQUIRED. A DESIGN CALCULATION SHALL BE SUBMITTED FOR APPROVAL WITH A SHOP DRAWING PRIOR TO PRE-CONSTRUCTION MEETING. THE SHOP DRAWING SHALL BE SIGNED BY THE DESIGNING ENGINEER AND BY THE CONTRACTOR. THE PROJECT NAME WITH STREET ADDRESS OF THE FACILITY (IF AVAILABLE) SHALL BE SHOWN ON THE SHOP DRAWING. OTHER DESIGNS MAY BE USED UPON APPROVAL OF SHOP DRAWINGS.
4. THE GREASE TRAP SHALL BE LOCATED OUTDOORS, EASY ACCESSIBLE FOR MAINTENANCE AND SAMPLING, PREFERABLY IN GRASS AREA, NOT IN TRAFFIC AREA, PARKING SPACES OR SIDEWALKS. THE SURFACE SURROUNDING THE GREASE TRAP SHALL BE SLOPED TO DRAIN STORM WATER AWAY FROM THE GREASE TRAP.
5. THE GREASE TRAP SHALL NOT BE USED FOR THE PURPOSE OF INTERCEPTING SAND AND OIL FROM NON-FOOD HANDLING ESTABLISHMENTS.
6. THE PROPERTY OWNER/CUSTOMER SHALL BE RESPONSIBLE FOR THE OPERATION AND MAINTENANCE OF THE GREASE TRAP.
7. EACH FACILITY WITH A GREASE TRAP SHALL BE INDIVIDUALLY METERED THROUGH THE DEPARTMENT.
8. EACH FACILITY WHICH IS REQUIRED TO INSTALL A GREASE TRAP SHALL HAVE A SEPARATE (NOT SHARED) GREASE TRAP.
9. INSPECTION PORTS (CLEAN OUTS) ARE REQUIRED TO BE INSTALLED AT EACH END OF ANY TYPE OF INTERCEPTOR WITH PORTS TO REMAIN EASILY ACCESSIBLE FOR UTILITY INSPECTION AND SAMPLING.
10. A "GREASE TRAP" OR "OIL/GREASE INTERCEPTOR" SHALL BE REQUIRED TO RECEIVE THE DRAINAGE FROM FIXTURES AND EQUIPMENT (SINKS, DISHWASHERS, FLOOR DRAINS, CAN WASH AREAS, ETC.) WITH GREASE LADEN WASTE LOCATED IN COMMERCIAL FOOD PREPARATION AREAS SUCH AS RESTAURANTS, HOTEL KITCHENS, HOSPITALS, SCHOOLS, KITCHENS, BARS, FACTORY CAFETERIAS, CLUBS, ETC.
11. THE "GREASE TRAP" OR "OIL/GREASE INTERCEPTOR" SHALL BE LOCATED AS CLOSE AS PRACTICALLY POSSIBLE TO THE FIXTURES AND EQUIPMENT GENERATING GREASE.
12. GREASE TRAPS SHALL BE EQUIPPED WITH DEVICES TO CONTROL THE RATE OF FLOW, SO THE RATE OF THE FLOW DO NOT EXCEED 25 GPM. THE FLOW CONTROL DEVICE SHALL BE INSTALLED IN ACCORDANCE WITH THE CODE AND MANUFACTURER'S INSTRUCTIONS.
13. A "SOLIDS INTERCEPTOR" SHALL BE CONSIDERED TO BE INSTALLED UPSTREAM OF A "GREASE TRAP" WHERE SUBSTANTIAL AMOUNT OF SOLIDS FROM FOOD GRINDERS, DISPOSALS MAY BE PRESENT.

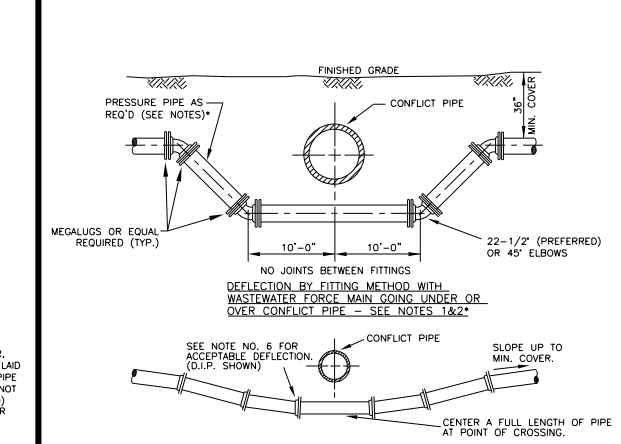
GREASE TRAP * 3S



NOTES:

1. WHEN A WASTEWATER FORCE 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 WASTEWATER 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 WASTEWATER FORCE 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 WASTEWATER FORCE MAIN HAVING A TWENTY (20) FOOT SECTION CENTERED ON THE CROSSING AND ONLY WITH PRIOR DEPARTMENT APPROVAL. A WASTEWATER FORCE 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 WASTEWATER MAIN AND POTABLE WATER MAIN, A STORM SEWER, AND/OR RECLAIMED WATER MAIN. A SIX (6) FOOT MINIMUM HORIZONTAL SEPARATION (OUTSIDE WALL TO OUTSIDE WALL) IS ACCEPTABLE WITH PRIOR DEPARTMENT APPROVAL BEFORE THE INSTALLATION OF THE WASTEWATER MAIN. A THREE (3) FOOT MINIMUM HORIZONTAL SEPARATION (OUTSIDE WALL TO OUTSIDE WALL) BETWEEN A WASTEWATER MAIN AND A RECLAIMED WATER MAIN IS ACCEPTABLE WITH PRIOR DEPARTMENT APPROVAL BEFORE THE INSTALLATION OF THE WASTEWATER MAIN.
3. WHEN A WASTEWATER 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 WASTEWATER PIPE SHALL ALWAYS CROSS OVER THE OTHER UTILITY MAINS UNLESS APPROVED BY THE DEPARTMENT BEFORE THE INSTALLATION OF THE WASTEWATER MAIN. WHEN THE WASTEWATER MAIN IS D.I.P. AND THE GAS MAIN IS STEEL PIPE, THE WASTEWATER MAIN SHALL BE POLY-WRAPPED PER DEPARTMENT STANDARDS.
4. WASTEWATER LATERALS SHALL CROSS UNDER POTABLE WATER MAINS WITH 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 POTABLE WATER DUCTILE IRON PIPE MAIN IS CENTERED OVER THE WASTEWATER LATERAL AND THE LATERAL IS PVC C-900 PIPE. WHEN A WASTEWATER LATERAL MUST CROSS OVER A POTABLE WATER MAIN A MINIMUM TWELVE (12) INCH VERTICAL SEPARATION IS REQUIRED WITH THE LATERAL MAIN BEING PVC C-900 PIPE AND THE POTABLE WATER MAIN HAVING A TWENTY (20) FOOT SECTION OF POTABLE WATER DUCTILE IRON PIPE MAIN CENTERED ON CROSSING.
5. WASTEWATER MAINS SHALL ALWAYS CROSS UNDER POTABLE WATER SERVICE LINES WITH A MINIMUM TWELVE (12) INCH VERTICAL SEPARATION BETWEEN THE BOTTOM OF THE UPPER PIPE AND THE CROWN OF THE LOWER PIPE. IF THE MINIMUM TWELVE (12) INCH VERTICAL SEPARATION CANNOT BE MAINTAINED THE WATER SERVICE LINE SHALL BE ENCASED IN A TEN (10) FOOT MINIMUM LONG CASING CENTERED OVER THE CROSSING WITH SIX (6) INCH MINIMUM VERTICAL SEPARATION.
6. WASTEWATER MAINS SHALL CROSS PERPENDICULAR TO ALL POTABLE WATER MAINS, STORM MAINS, STORM SEWER MAINS, RECLAIMED WATER MAINS, AND/OR OTHER UTILITIES WHENEVER POSSIBLE.

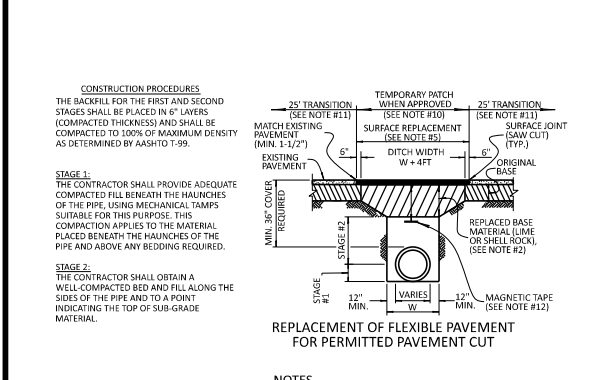
WASTEWATER MAIN CROSSING OTHER MAINS AND UTILITIES * 4S



NOTES:

1. DEFLECTION BY FITTINGS AND/OR PIPE JOINT METHODS APPLIES TO WASTEWATER FORCE MAIN CROSSING OVER OR UNDER CONFLICT PIPE WITH CROSSING OVER CONFLICT PIPE PREFERRED. WHEN A WASTEWATER FORCE MAIN CROSSES OVER A STORM SEWER, GRAVITY WASTEWATER, VACUUM GRAVITY 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 WASTEWATER DUCTILE IRON PIPE MAIN IS CENTERED ON THE CROSSING WITH THE OTHER PIPE HAVING A TWENTY (20) FOOT SECTION CENTERED ON THE CROSSING. A WASTEWATER FORCE 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 WASTEWATER FORCE MAIN HAVING A TWENTY (20) FOOT SECTION CENTERED ON THE CROSSING. A WASTEWATER FORCE 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. THE PREFERRED PIPE DEFLECTION METHOD IS BY USING MECHANICAL RESTRAINT FITTINGS.
3. WASTEWATER FORCE MAIN DEFLECTION BY PIPE JOINT METHOD REQUIRES DEPARTMENT APPROVAL PRIOR TO THE INSTALLATION OF THE FORCE 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.

WASTEWATER MAIN CONFLICT DEFLECTION DETAIL * 4S



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 BED BENEATH THE HALFOUNDS OF THE PIPE, USING MECHANICAL TAMPERS. SUITABLE FOR THIS PURPOSE. THIS COMPACTION APPLIES TO THE MATERIAL PLACED BENEATH THE HALFOUNDS 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.

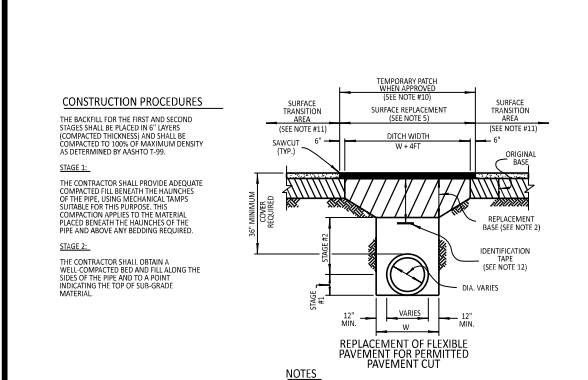
NOTES:

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 ROADWAY PRODUCTION 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 SAWN 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-99).
5. SURFACE MATERIAL SHALL BE CONSISTENT WITH THE EXISTING SURFACE OR 1-1/2" SP 12.5 STRUCTURAL COURSE (TRAFFIC LEVEL A) ASPHALTIC CONCRETE WITH 1-1/2" PRIME COAT AT 0.10 GAL/SY. TO FOR LIMEROCK BASE AND TACK COAT AT 0.05 GAL/SY FOLLOW THE LATEST FDOT SPECIFICATIONS FOR APPLICATION RATES OF PRIME AND TACK COATS. CONTRACTOR TO SUBMIT MATERIALS AND NOTES 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 PRM E.L. 3-605.
8. DENSITY TESTS SHALL BE TAKEN IN 1 FT. LIFTS ABOVE THE PIPE AT INTERVALS OF 400 FT MAXIMUM (1 SET MINIMUM) OR END OF ROADWAY. THE TEMPORARY PATCH SHALL BE INSTALLED ABOVE THE PIPE AT INTERVALS OF 400 FT MAXIMUM (1 SET MINIMUM) OR END OF ROADWAY. THE TEMPORARY PATCH SHALL BE INSTALLED ABOVE THE PIPE AT INTERVALS OF 400 FT MAXIMUM (1 SET MINIMUM) OR END OF ROADWAY. THE TEMPORARY PATCH SHALL BE INSTALLED ABOVE THE PIPE AT INTERVALS OF 400 FT MAXIMUM (1 SET MINIMUM) OR END OF ROADWAY.
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" SP 12.5 STRUCTURAL COURSE ASPHALT) SHALL BE INSTALLED PROPERLY MATCHING THE EXISTING GRADING OF THE ROADWAY. THE TEMPORARY PATCH SHALL BE REPAIRED PER NOTE 1 ABOVE AND A FULL-LANE WIDTH OF THE TRAVEL LANES ENCASED BY THE TRENCH AREA INCLUDING A TRANSITION AREA OF 50 FT. ON EACH SIDE MEASURED FROM TOP OF TRENCH.
11. FOR FIRM WASTEWATER MAINS, THE BEDDING SURFACE REPLACEMENT AREA OVER THE TRENCH, THE ROAD SHALL BE MILLED 1" MILLING DEPTH, REPAIRED PER NOTE 1 ABOVE AND A FULL-LANE WIDTH OF THE TRAVEL LANES ENCASED 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/PCP WATER MAINS (BLUE), DIP SANITARY FORCE MAINS (GREEN), DIP RECLAIMED WATER MAINS (PURPLE), GAS MAINS (YELLOW), OR AS REQUIRED BY THE FDOT.

WUD ONLY UTILITY NOTE:

THE CONTINUOUS PAINTED STRIPE REFERENCED IN NOTE #13 ABOVE SHALL BE EUCLID GREEN IN COLOR PER WUD STANDARDS.

OPEN CUT PIPE INSTALLATION NON-THOROUGHFARE ROAD * 5S



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 BED BENEATH THE HALFOUNDS OF THE PIPE, USING MECHANICAL TAMPERS. SUITABLE FOR THIS PURPOSE. THIS COMPACTION APPLIES TO THE MATERIAL PLACED BENEATH THE HALFOUNDS 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.

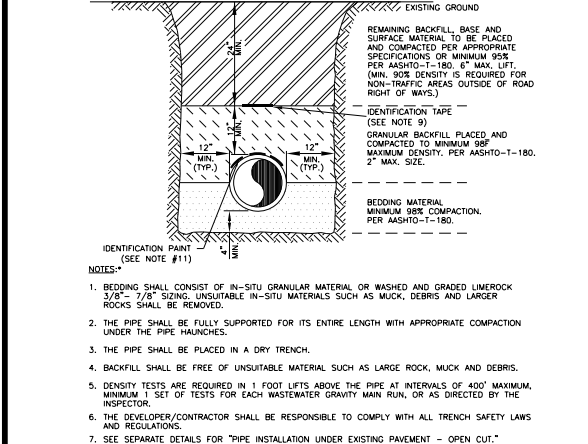
NOTES:

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 ROADWAY PRODUCTION 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 SAWN 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-99).
5. SURFACE MATERIAL SHALL BE CONSISTENT WITH THE EXISTING SURFACE OR 1-1/2" SP 12.5 STRUCTURAL COURSE (TRAFFIC LEVEL A) ASPHALTIC CONCRETE WITH 1-1/2" PRIME COAT AT 0.10 GAL/SY. TO FOR LIMEROCK BASE AND TACK COAT AT 0.05 GAL/SY FOLLOW THE LATEST FDOT SPECIFICATIONS FOR APPLICATION RATES OF PRIME AND TACK COATS. CONTRACTOR TO SUBMIT MATERIALS AND NOTES 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 PRM E.L. 3-605.
8. DENSITY TESTS SHALL BE TAKEN IN 1 FT. LIFTS ABOVE THE PIPE AT INTERVALS OF 400 FT MAXIMUM (1 SET MINIMUM) OR END OF ROADWAY. THE TEMPORARY PATCH SHALL BE INSTALLED ABOVE THE PIPE AT INTERVALS OF 400 FT MAXIMUM (1 SET MINIMUM) OR END OF ROADWAY. THE TEMPORARY PATCH SHALL BE INSTALLED ABOVE THE PIPE AT INTERVALS OF 400 FT MAXIMUM (1 SET MINIMUM) OR END OF ROADWAY.
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" SP 12.5 STRUCTURAL COURSE ASPHALT) SHALL BE INSTALLED PROPERLY MATCHING THE EXISTING GRADING OF THE ROADWAY. THE TEMPORARY PATCH SHALL BE REPAIRED PER NOTE 1 ABOVE AND A FULL-LANE WIDTH OF THE TRAVEL LANES ENCASED BY THE TRENCH AREA INCLUDING A TRANSITION AREA OF 50 FT. ON EACH SIDE MEASURED FROM TOP OF TRENCH.
11. FOR FIRM WASTEWATER MAINS, THE BEDDING SURFACE REPLACEMENT AREA OVER THE TRENCH, THE ROAD SHALL BE MILLED 1" MILLING DEPTH, REPAIRED PER NOTE 1 ABOVE AND A FULL-LANE WIDTH OF THE TRAVEL LANES ENCASED 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/PCP WATER MAINS (BLUE), DIP SANITARY FORCE MAINS (GREEN), DIP RECLAIMED WATER MAINS (PURPLE), GAS MAINS (YELLOW), OR AS REQUIRED BY THE FDOT.

WUD ONLY UTILITY NOTE:

THE CONTINUOUS PAINTED STRIPE REFERENCED IN NOTE #13 ABOVE SHALL BE EUCLID GREEN IN COLOR PER WUD STANDARDS.

OPEN CUT PIPE INSTALLATION THOROUGHFARE ROAD * 6S



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 FORCE MAINS.
10. CONTINUOUS FOUR (4) INCH WIDE GREEN PAINT STRIPPING IS REQUIRED FOR FORCE MAIN DUCTILE IRON PIPE (D.I.P.) INSTALLED BELOW GRADE ONLY.
11. A CONTINUOUS 4" WIDE PAINTED STRIP (GREEN) IS REQUIRED FOR ALL DIP SEWER (FORCE OR GRAVITY) MAINS.
12. WASTEWATER 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.

FORCE MAIN TRENCH DETAIL * 8S

WASTEWATER #1 STANDARD DETAILS

CONSULTANT:

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2101 VISTA PARKWAY, SUITE 277
WEST PALM BEACH, FLORIDA 33411
PH. (561) 568-3197
www.masseconsultingfirm.com

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SUNSHINE STATE ONE CALL OF FLORIDA, INC.
UTILITIES NOTIFICATION CENTER

DESIGNED BY: WUD

DRAWN BY: M. BUCKNER

CHECKED BY: J. LAMMERT

APPROVED BY: WUD

Palm Beach County
Water Utilities Department
P.O. Box 16097
West Palm Beach, FL 33416-6097

\$ (estimate, 0, MON DD, YYYY)

WUD PROJECT NO. 24-019

LYONS ROAD FROM LWDD L-30 CANAL TO BOYNTON BEACH BLVD & LYONS ROAD AND BOYNTON BEACH BLVD INTERSECTION IMPROVEMENTS (PBCWUD WM, FM, & RCWM UTILITY RELOCATION)

PALM BEACH COUNTY
WATER UTILITIES DEPARTMENT
P.O. BOX 16097
WEST PALM BEACH, FL 33416
(561)493-6000

NO.	DATE	REVISION / REMARKS
1	DEC 2021	GENERAL REVISION
2	JAN 2023	GENERAL REVISION

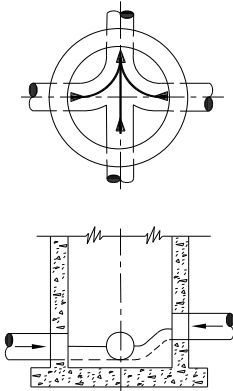
BY: J.L. J.L.

STANDARD DETAILS

SHEET NUMBER

UT-58 OF UT-69

SEAL

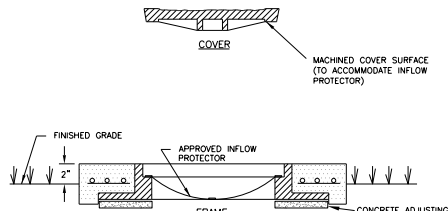
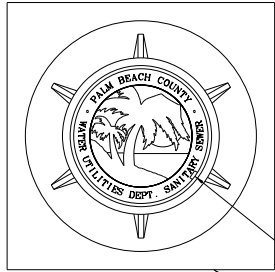


NOTES:

1. PROPERLY SHAPED INVERT CHANNELS AND SPILLWAYS SHALL BE CONSTRUCTED BETWEEN PIPES WITH DIFFERENT INVERT ELEVATIONS TO PROVIDE FOR SMOOTH FLOWS.
2. SERVICE LATERALS SHALL NOT ENTER MANHOLES UNLESS SPECIFIED ON PLANS AND THEN MUST BE TREATED AS MAINS (ELEVATIONS SHOWN, PRECAST HOLE, FLOW CHANNEL).
3. APPROVED PRECAST POLYPROPYLENE OR FIBER REINFORCED POLYMER (FRP) FLOW CHANNELS WITH INTEGRATED PIPE INVERTS (SEE SEPARATE DETAILS), PRECAST CONCRETE FLOW CHANNELS, OR FIELD INSTALLED CONCRETE FLOW CHANNELS ARE REQUIRED.
4. SIDEWALLS OF FLOW CHANNELS SHALL BE AT LEAST HALF OF PIPE HEIGHT AT ALL POINTS.
5. NO INSIDE DROP LARGER THAN 6" SHALL BE ALLOWED WITH 3 OR 4 INVERTS AND MANHOLES WITH A CHANGE OF DIRECTION OF FLOW OF MORE THAN 45 DEGREES.
6. THE FIELD APPLIED CORROSION BARRIER SYSTEM SHALL BE INSTALLED AFTER INVERT CHANNEL CONSTRUCTION UNLESS PRECAST THERMOPLASTIC BASELINER IS USED. THE FIELD APPLIED CORROSION BARRIER MAY NOT BE APPLIED TO THE FLOW CHANNEL.

INVERT FLOW CHANNELS

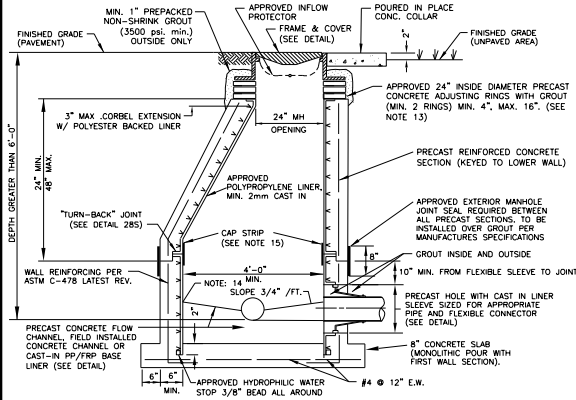
16S



- NOTES:
1. COLLAR IS REQUIRED ONLY WHEN MANHOLE IS OUT OF PAVEMENT.
 2. STANDARD FRAME AND COVER SIZE SHALL BE SEVEN INCHES (7"). A 4" FRAME MAY ONLY BE USED WITH PRIOR APPROVAL.
 3. A STEEL MANHOLE RISER, APPROVED PRECAST CONCRETE ADJUSTING RINGS OR ADDITIONAL BRICKS MAY BE USED TO ELEVATE EXISTING MANHOLE COVERS TO RESURFACED GRADE (MAX. 4" HEIGHT).
 4. COVER SHALL FIT FLUSH WITH THE FRAME WITH THE INFLOW PROTECTOR INSTALLED.

GRAVITY SEWER MANHOLE FRAME & COVER

17S

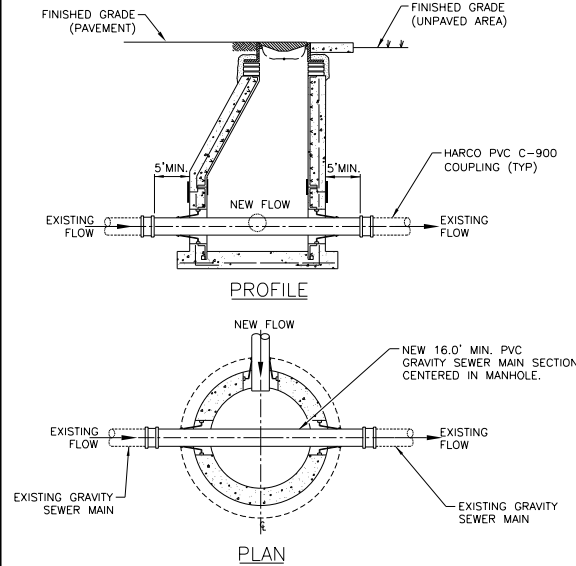


NOTES:

1. PRECAST CONCRETE TYPE II 4000 P.S.I. CALCAREOUS AGGREGATE REQUIRED (MIN. C60/3 CONTENT: 65% IN LARGE AGGREGATE, 35% IN CONCRETE SCREENING).
2. APPROVED PRIMER AND SEALANT GASKET AT ALL RISER JOINTS. SEALANT GASKET SIZE AND PLACEMENT SHALL BE CALLED OUT ON SHOP DRAWINGS. PRIMER TO BE APPLIED BY THE PRECASTER (TONGUE SECTION ONLY).
3. ALL PIPE OPENINGS SHALL BE GAS TIGHT AND WATER TIGHT WITH NO EXPOSED CONCRETE SURFACES.
4. CAST OPENINGS SHALL BE MANUFACTURED WITH A POLYPROPYLENE SLEEVE CAST IN. APPROVED FLEXIBLE MANHOLE CONNECTORS SHALL BE USED AT PIPE CONNECTIONS. HOLE SIZE PER BOOT MANUFACTURER'S SPECIFICATIONS. DOUBLE PIPE CLAMPS MUST BE INSTALLED ON FLEXIBLE SLEEVES WHERE REQUIRED BY BOOT MANUFACTURER'S INSTALLATION INSTRUCTIONS.
5. CORED PIPE OPENINGS SHALL BE INSTALLED PER DETAIL. APPROVED FLEXIBLE CONNECTOR WILL BE INSTALLED ONTO POLYPROPYLENE WALL SLEEVE. WALL SLEEVE SHALL BE EPOXYED INTO CORED OPENING AND THERMAL WELDED TO WALL LINER.
6. FLOW CHANNELS SHALL BE CONSTRUCTED TO DIRECT INFLUENT INTO FLOW STREAM. APPROVED CAST-IN PP/FRP BASE LINER IS ACCEPTABLE (SEE DETAIL).
7. LIFT HOLES ARE PERMITTED.
8. INSIDE DROPS SHALL NOT BE DESIGNED TO EXCEED 1.80 FEET AND NOT CONSTRUCTED TO EXCEED 2.0 FEET. MAX. 6" INSIDE DROP IS PERMITTED FOR MANHOLES WITH 3 OR MORE INVERTS AND MANHOLES WITH A CHANGE IN FLOW DIRECTION OF MORE THAN 45 DEGREES.
9. MANHOLE FABRICATION SHALL BE IN ACCORDANCE WITH ASTM C-478, LATEST STANDARD.
10. MINIMUM 5 FEET IS REQUIRED BETWEEN OUTSIDE OF MANHOLE AND SERVICE WYE OR ANY PIPE JOINT.
11. ONLY APPROVED THERMOPLASTIC LINER SYSTEM SHALL BE USED. LINERS MUST BE WELDED BY LINER MFG CERTIFIED WELDERS AND BE CAST INTO THE MANHOLE BY A LINER MANUFACTURER CERTIFIED PRECASTER.
12. APPROVED INFLOW PROTECTORS ARE REQUIRED.
13. MAXIMUM HEIGHT OF CHIMNEY SHALL NOT EXCEED 24" (INCLUDING FRAME CASTING).
14. SEAL INVERT BENCH AND CHANNEL TO WALL LINER WITH 3M WEATHERBAN 5354 SEALANT TAPE OR APPROVED EQUAL.
15. MIN. 4" WIDE FIELD WELDED CAP STRIP IS REQUIRED FOR ALL JOINTS.
16. SOLID THERMOPLASTIC CAST-IN LINER IS REQUIRED FOR LAST MANHOLE PRIOR TO LIFT STATION. MANHOLES DEEPER THAN 14 FT., MANHOLES WITH OUTSIDE DROP, AND MANHOLES WITH A FORCE MAIN CONNECTION. (SEE APPROPRIATE DETAILS)
17. MANHOLES IN ROADWAYS SHALL BE LOCATED OUTSIDE OF WHEEL PATHS.

STANDARD MANHOLE WITH CAST-IN LINER

18SA

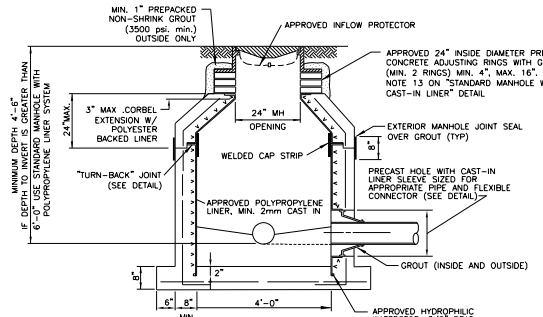


NOTES:

1. MANHOLE TO BE CONSTRUCTED AND INSTALLED PER WUD STANDARD DETAIL 18SA.
2. A TEMPORARY GRAVITY SEWER MAIN BYPASS SIXTEEN(16) FOOT MINIMUM TO BE INSTALLED THROUGH NEW MANHOLE TO MAINTAIN EXISTING WASTEWATER FLOW DURING CONSTRUCTION OF NEW GRAVITY SEWER SYSTEM.
3. ONCE THE NEW GRAVITY SEWER SYSTEM INSTALLATION IS COMPLETED AND HAS RECEIVED FINAL DEP WASTEWATER CERTIFICATION THE TEMPORARY BYPASS PIPE SHALL BE CUT AND REMOVED FROM WITHIN THE MANHOLE WITH A NEW FLOW CHANNEL CONSTRUCTED PER WUD MINIMUM DESIGN STANDARDS.
4. AFTER ALL CONSTRUCTION HAS BEEN COMPLETED, INCLUDING THE REMOVAL OF THE BYPASS PIPE AND CONSTRUCTION OF THE NEW FLOW CHANNEL, THE EXISTING UPSTREAM AND DOWNSTREAM GRAVITY SEWER MAIN SHALL BE LAMPED TO VERIFY NO ADVERSE DAMAGE OCCURRED DURING CONSTRUCTION TO THE EXISTING GRAVITY SEWER MAIN.

NEW MANHOLE CUT INTO EXISTING GRAVITY SEWER MAIN

18SB

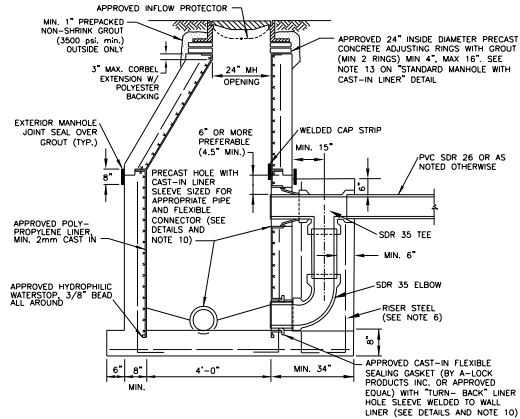


NOTES:

1. ALL "STANDARD MANHOLE WITH POLYPROPYLENE LINER SYSTEM" NOTES AND DETAILS ARE APPLICABLE.
2. SEAL INVERT BENCH AND CHANNEL TO WALL LINER WITH 3M WEATHERBAN 5354 SEALANT TAPE (OR APPROVED EQUAL).
3. SEE SEPARATE DETAIL FOR OPTIONAL CAST-IN POLYPROPYLENE OR FIBER REINFORCED POLYMER BASE LINER.

SHALLOW MANHOLE WITH CAST-IN LINER

19S

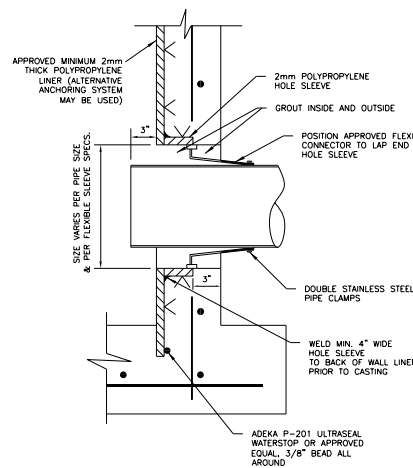


NOTES:

1. ALL DETAILS AND SPECIFICATIONS FOR "STANDARD MANHOLE WITH SOLID POLYPROPYLENE LINER SYSTEM" ARE APPLICABLE EXCEPT FOR REFERENCES TO DROP ASSEMBLY.
2. THE PRECAST BASE SHALL EXTEND FULLY UNDER THE DROP ASSEMBLY.
3. PRECAST DROP ENGAGEMENT REQUIRED UP TO TOP EDGE OF 90 DEGREE ELBOW, BRICK AND CONCRETE RUBBLE ARE PERMITTED AS FILLER IN REMAINDER OF DROP ENGAGEMENT.
4. DROP CONNECTIONS SHALL BE REQUIRED WHENEVER AN INFLUENT INVERT IS LOCATED 2.0 FEET OR MORE ABOVE THE MAIN INVERT CHANNEL. DROP CONNECTIONS SHOULD NOT BE DESIGNED FOR LESS THAN A 2.4 FOOT DROP.
5. PVC SDR 26 PIPE WITH PVC SDR 35 FITTINGS SHALL BE UTILIZED IN THE DROP ASSEMBLY.
6. DROP ENGAGEMENT REINFORCING STEEL TO BE CAST IN PLACE WITH BASE (4 RODS) OR USE 4-1/2" DIA. COIL LOOP INSERTS CAST IN PLACE WITH BASE (TO BE USED WITH 1/2" COIL RODS). COIL LOOP INSERTS TO BE "DAYTON SUPERIOR" B16, 1/2"x 4" OR APPROVED EQUAL.
7. MIN. 4" WIDE FIELD WELDED CAP STRIP IS REQUIRED OVER ALL JOINTS.
8. SEAL INVERT BENCH AND CHANNEL TO WALL LINER WITH 3M WEATHERBAN 5354 SEALANT TAPE (OR APPROVED EQUAL).
9. SEE SEPARATE DETAIL FOR OPTIONAL CAST-IN POLYPROPYLENE OR FIBER REINFORCED POLYMER BASE LINER.

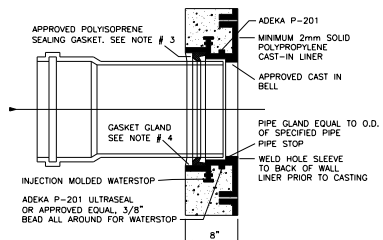
OUTSIDE DROP MANHOLE WITH CAST-IN LINER

20S



PIPE TO MANHOLE CONNECTION - TYPE "A"

21S



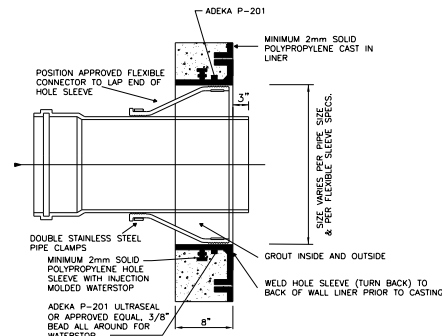
INSTALLATION:

- 1) CLEAN BELL
- 2) INSTALL GASKET AS SHOWN
- 3) LUBRICATE PIPE SPOOT AND SLIDE INTO BELL AND GASKET UNTIL REACHING PIPESTOP
- 4) CHECK FOR WATER TIGHT CONNECTION

DO NOT LUBRICATE THE GASKET OR THE BELL

CAST-IN BELL WITH COMPRESSION SEAL GASKET

22S



INSTALLATION:

- 1) CLEAN BOOT HUB
- 2) INSTALL RUBBER BOOT CONNECTOR (PER MANUFACTURER'S INSTRUCTIONS).
- 3) LUBRICATE PIPE SPOOT AND SLIDE INTO RUBBER BOOT CONNECTOR.
- 4) TIGHTEN RUBBER BOOT CLAMPS (PER MANUFACTURER'S INSTRUCTIONS)
- 5) SECURE AND BACKFILL WITH PROPER MATERIAL AS SPECIFIED
- 6) CHECK FOR WATER TIGHT CONNECTION

DO NOT LUBRICATE THE BOOT CONNECTOR OR THE BOOT HUB

TURN BACK BOOT HUB WITH BOOT CONNECTOR

23S

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WASTEWATER #3
STANDARD DETAILS

CONSULTANT:

MASSE CONSULTING SERVICES, LLC
2101 VISTA PARKWAY, SUITE 277
WEST PALM BEACH, FLORIDA 33411
PH. (561) 568-3197
www.masseconsultingfirm.com

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DESIGNED BY: WUD

DRAWN BY: M. BUCKNER Palm Beach County

CHECKED BY: J. LAMMERT Water Utilities Department

APPROVED BY: WUD West Palm Beach, FL 33416-6097

WUD PROJECT NO:
00-000

LYONS ROAD FROM LWDD L-30 CANAL TO BOYNTON BEACH BLVD &
LYONS ROAD AND BOYNTON BEACH BLVD INTERSECTION IMPROVEMENTS
(PBCWUD WM, FM, & RCWM UTILITY RELOCATION)



PALM BEACH COUNTY
WATER UTILITIES DEPARTMENT
P.O. BOX 16097
WEST PALM BEACH, FL 33416
(561)493-6000

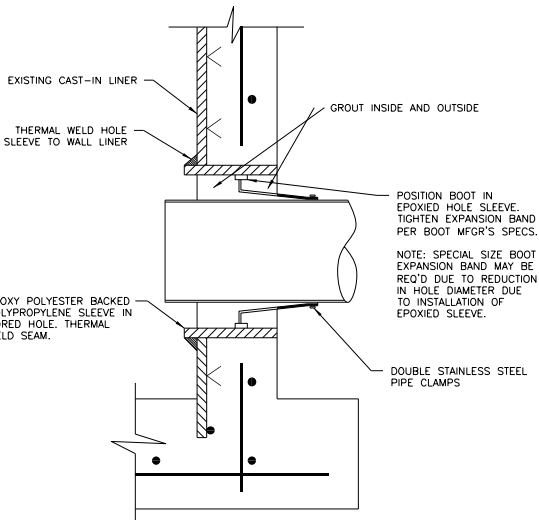
NO.	DATE	REVISION / REMARKS
1	DEC 2021	GENERAL REVISION
2	JAN 2023	GENERAL REVISION

STD
DETAILS

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NUMBER

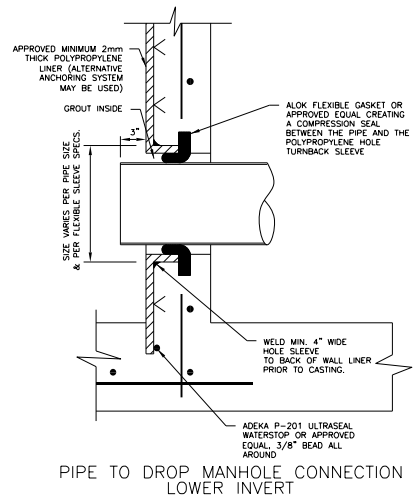
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OF
UT-69

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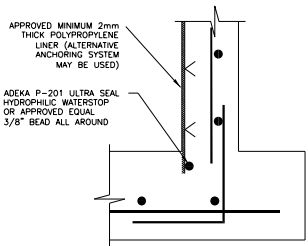
CORED HOLE W/FLEX. CONNECTOR & TURNBACK SLEEVE POLYPROPYLENE LINER SYSTEM CAST-IN

24S



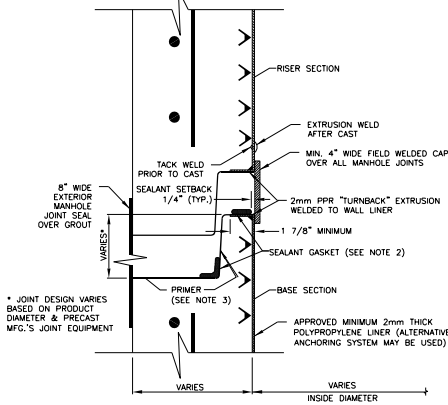
PIPE TO DROP MANHOLE CONNECTION LOWER INVERT

25S



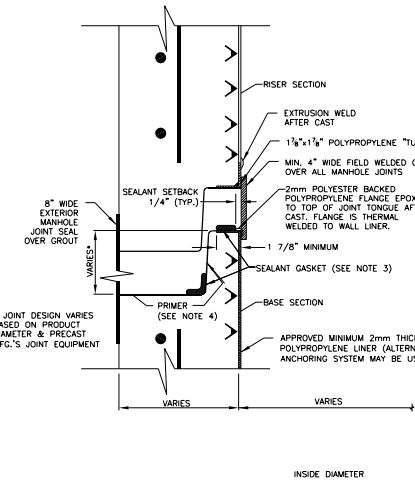
BASE MANHOLE SECTION WATERSTOP DETAIL

26S



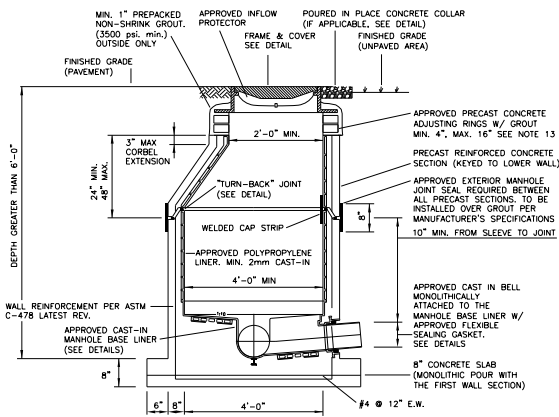
TURN BACK JOINT INSTALLED PRIOR TO CAST

27S



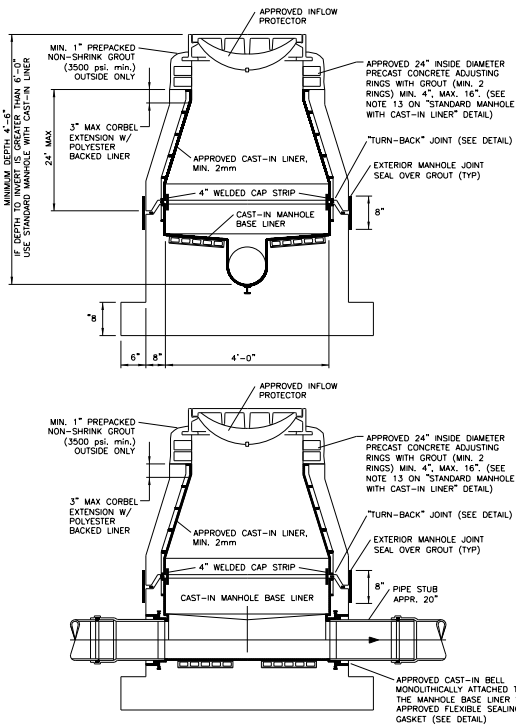
TURN BACK JOINT INSTALLED AFTER CAST

28S



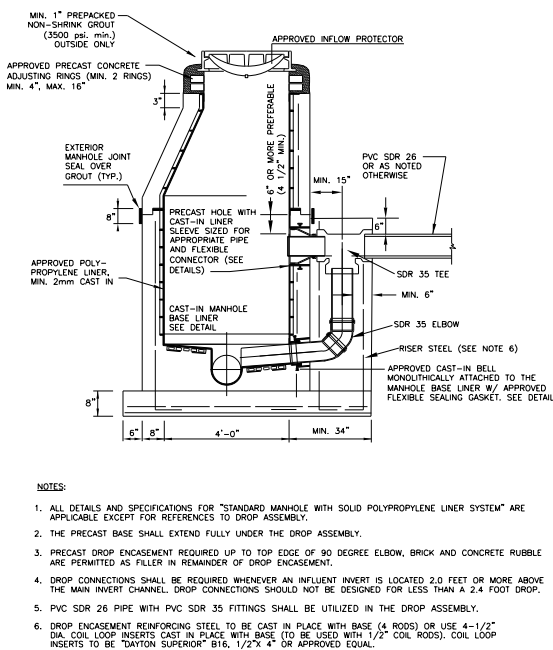
STANDARD MANHOLE WITH CAST-IN LINER AND BASE LINER

29S



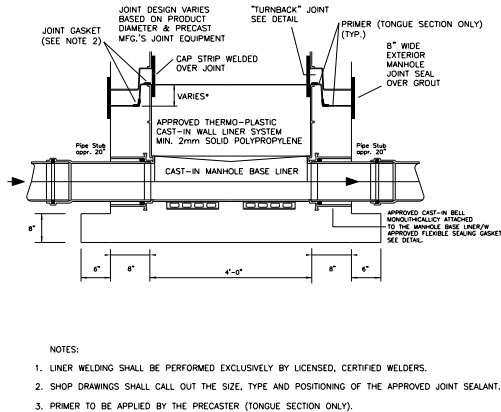
SHALLOW MANHOLE WITH CAST-IN LINER AND BASE LINER

30S



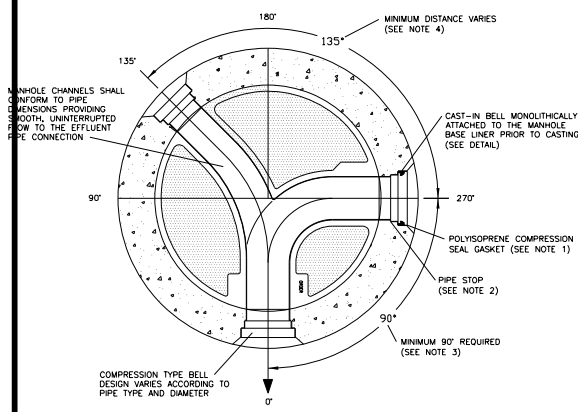
OUTSIDE DROP MANHOLE WITH CAST-IN LINER AND BASE LINER

31S



MANHOLE BASE SECTION

32S



FLOW CHANNEL/PIPE CONNECTION TO NEW CAST-IN BASE LINER

33S

- NOTES:
1. PRECAST CONCRETE TYPE II 4000 P.S.I. CALCREOUS AGGREGATE REQUIRED (MIN. C6003 CONTENT: 65% IN LARGE AGGREGATE, 50% IN CONCRETE SCREENING).
 2. RUB'R NEX (RU 106) OR APPROVED EQUAL AT ALL RISER JOINTS. SIZES TO BE SPECIFIED ON SHOP DRAWINGS.
 3. ALL PIPE OPENINGS SHALL BE GAS TIGHT AND WATER TIGHT WITH NO EXPOSED CONCRETE SURFACES.
 4. CAST OPENINGS SHALL BE MANUFACTURED WITH A POLYPROPYLENE SLEEVE CAST IN. APPROVED FLEXIBLE MANHOLE CONNECTORS SHALL BE USED AT PIPE CONNECTIONS. HOLE SIZE PER BOOT MANUFACTURER'S SPECIFICATIONS. DOUBLE PIPE CLAMPS MUST BE INSTALLED ON FLEXIBLE SLEEVES WHERE REQUIRED BY BOOT MANUFACTURER'S INSTALLATION INSTRUCTIONS.
 5. CORED PIPE OPENINGS SHALL BE INSTALLED PER DETAIL. APPROVED FLEXIBLE CONNECTOR WILL BE INSTALLED ONTO POLY-PROPYLENE WALL SLEEVE. WALL SLEEVE SHALL BE EXPOSED INTO CORED OPENING AND THERMAL WELDED TO WALL LINER. BY LICENSED CONTRACTOR.
 6. FLOW CHANNELS SHALL DIRECT INFLUENT INTO FLOW STREAM. (SEE DETAIL)
 7. LIFT HOLES ARE PERMITTED.
 8. INSIDE DROPS SHALL NOT BE DESIGNED TO EXCEED 1.80 FEET AND NOT CONSTRUCTED TO EXCEED 2.0 FEET. MAX. 6" INSIDE DROP IS PERMITTED FOR MANHOLES WITH 3 OR MORE INVERTS AND MANHOLES WITH A CHANGE IN FLOW DIRECTION OF MORE THAN 45 DEGREES.
 9. MANHOLE FABRICATION SHALL BE IN ACCORDANCE WITH ASTM C-478, LATEST STANDARD.
 10. MINIMUM 5 FEET IS REQUIRED BETWEEN OUTSIDE OF MANHOLE AND SERVICE WYE.
 11. MANHOLES SHALL BE LINED INSIDE WITH AN APPROVED POLYPROPYLENE LINER SYSTEM. LINERS MUST BE WELDED BY LINER MFG CERTIFIED WELDERS AND BE CAST INTO THE MANHOLE BY A LINER MANUFACTURER CERTIFIED PRECASTER.
 12. APPROVED INFLOW PROTECTORS ARE REQUIRED.
 13. MAXIMUM HEIGHT OF CHIMNEY SHALL NOT EXCEED 24" (INCLUDING FRAME CASTING).
 14. APPROVED THERMO-PLASTIC CHIMNEY LINER SHALL COMPLETELY COVER THE PRECAST CONCRETE GRADE RINGS AND SHALL BE SEALED TO THE CORREL LINER BY MEANS OF AN APPROVED POLYISOPRENE LIP SEAL GASKET AND SEALED TO THE RING USING APPROVED BUTYL STRIPS. SEE DETAILS.
 15. SOLID THERMO-PLASTIC CAST-IN LINER SYSTEM IS REQUIRED FOR LAST MANHOLE PRIOR TO A LIFT STATION. MANHOLES DEEPER THAN 14 FEET, MANHOLES WITH AN OUTSIDE DROP, AND MANHOLES WITH A FORCE MAIN CONNECTION, SEE APPROPRIATE DETAILS.
 16. MANHOLES IN ROADWAYS SHALL BE LOCATED OUTSIDE OF WHEEL PATHS.

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WASTEWATER #4
STANDARD DETAILS

CONSULTANT:
MASSE CONSULTING SERVICES, LLC
2101 VISTA PARKWAY, SUITE 277
WEST PALM BEACH, FLORIDA 33411
PH. (561) 568-3197
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DESIGNED BY: WUD
DRAWN BY: M. BUCKNER
CHECKED BY: J. LAMMERT
APPROVED BY: WUD
Palm Beach County
Water Utilities Department
P.O. Box 16097
West Palm Beach, FL 33416-6097

SEAL

WUD PROJECT NO.
24-019

LYONS ROAD FROM LWDD L-30 CANAL TO BOYNTON BEACH BLVD &
LYONS ROAD AND BOYNTON BEACH BLVD INTERSECTION IMPROVEMENTS
(PBCWUD WM, FM, & RCWM UTILITY RELOCATION)

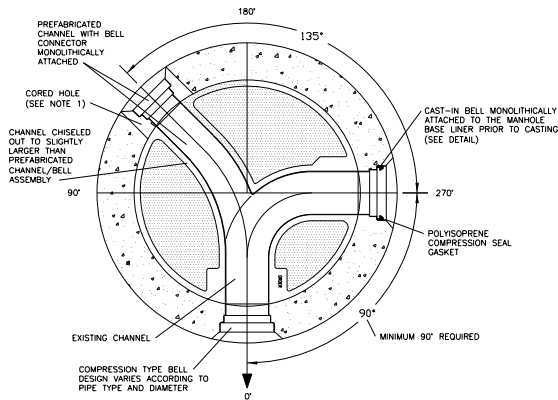


PALM BEACH COUNTY
WATER UTILITIES DEPARTMENT
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WEST PALM BEACH, FL 33416
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NO.	DATE	REVISION / REMARKS
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2	JAN 2023	GENERAL REVISION

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DETAILS

SHEET
NUMBER
UT-61
OF
UT-69

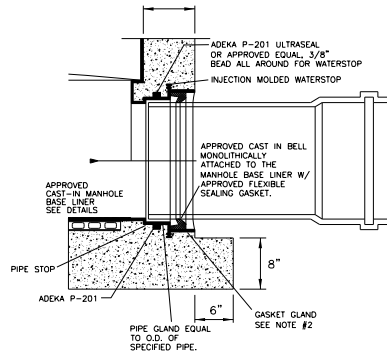


NOTES:

1. CORED OPENING AND CHANNEL DIAMETER PER CHANNEL/BELL MANUFACTURER REQUIREMENTS. SIZES SHALL BE SPECIFIED ON SHOP DRAWING.
2. ONLY AN APPROVED CHANNEL/BELL ASSEMBLY PROVIDED BY THE BASE LINER MANUFACTURER SHALL BE USED.
3. CHANNEL/BELL ASSEMBLY MUST BE COMPLETELY GROUTED IN PLACE USING AN APPROVED CEMENT.
4. UPON "SETTING" OF GROUT, THE NEW CHANNEL/BELL ASSEMBLY MUST BE JOINED TO THE EXISTING MANHOLE BASE LINER BY EITHER THERMO-PLASTIC WELDING OR FRP PATCH AS SPECIFIED BY BASE LINER MANUFACTURER.

FLOW CHANNEL/ PIPE CONNECTION TO EXISTING CAST-IN BASE LINER

34S



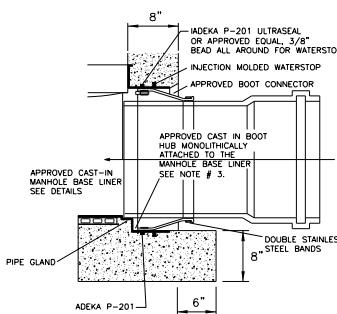
DO NOT LUBRICATE THE GASKET OR THE BELL

NOTES:

1. MANHOLE SHOP DRAWINGS SHALL IDENTIFY THE TYPE OF MANHOLE/PIPE CONNECTION.
2. ONLY THE POLYISOPRENE GASKET SUPPLIED BY THE BELL MANUFACTURER SHALL BE USED IN COMPRESSION TYPE BELLS.
3. BOOT HUB VARIES ACCORDING TO GASKET MANUFACTURER'S SPECIFICATION FOR SPECIFIC PIPE SIZE AND TYPE.
4. MANHOLE SHOP DRAWINGS MUST IDENTIFY THE PIPE SIZE, TYPE, GASKET TYPE AND HOLE SIZE.

PIPE TO MANHOLE CONNECTION DETAIL TYPE "A" (GASKET)

35S



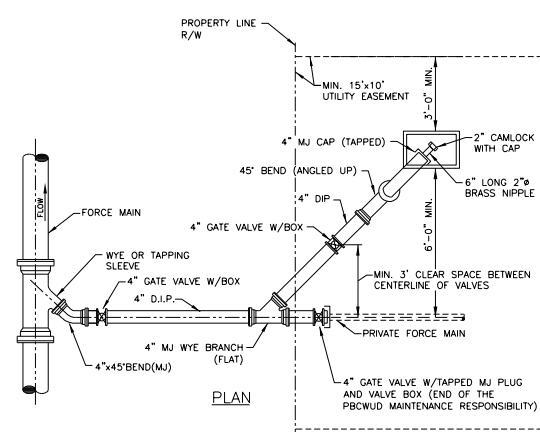
DO NOT LUBRICATE THE GASKET OR THE BELL

NOTES:

1. MANHOLE SHOP DRAWINGS SHALL IDENTIFY THE TYPE OF MANHOLE/PIPE CONNECTION.
2. ONLY THE POLYISOPRENE GASKET SUPPLIED BY THE BELL MANUFACTURER SHALL BE USED IN COMPRESSION TYPE BELLS.
3. BOOT HUB VARIES ACCORDING TO GASKET MANUFACTURER'S SPECIFICATION FOR SPECIFIC PIPE SIZE AND TYPE.
4. MANHOLE SHOP DRAWINGS MUST IDENTIFY THE PIPE SIZE, TYPE, GASKET TYPE AND HOLE SIZE.

PIPE TO MANHOLE CONNECTION TYPE "B" (BOOT)

36S

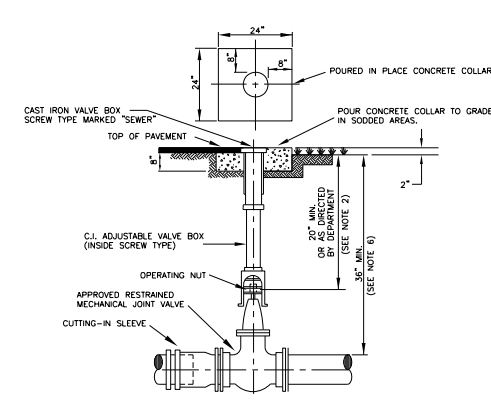


NOTE:

1. THE FLUSHING CONNECTION SHALL BE LOCATED IN GRASS AREA.
2. ALL 4" PIPES SHALL BE RESTRAINED.

CONNECTION OF PRIVATE FORCE MAIN UNDER 4" IN DIAMETER

37S



NOTES:

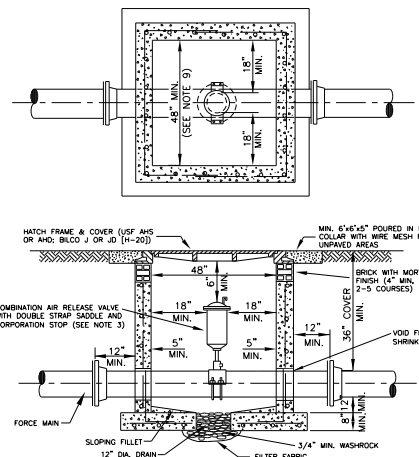
1. CONCRETE COLLAR IS NOT REQUIRED IN PAVED AREAS IF PAVEMENT SURFACE IS FINISHED PRIOR TO CONDITIONAL FINAL INSPECTION.
2. WHEN OPERATING NUT IS DEEPER THAN 3/8" A ONE PRICE EXTENSION WILL BE REQUIRED TO BRING OPERATING NUT 20"-30" BELOW FINISHED GRADE. EXTENSION BOLTS & NUTS ARE TO BE STAINLESS STEEL, A HIGH STRENGTH STEEL CENTERING PLATE, WELDED TO THE EXTENSION, IS ALSO REQUIRED.
3. VALVE BOXES SHALL HAVE COVERS MARKED "SEWER".
4. EXTENSION VALVE BOX TO BE D.I.P. OR C-900 PVC OR 18" (COLOR: GREEN).
5. A CUT-IN INSTALLATION SHALL REQUIRE MEGALUGS OR EQUAL THROUGHOUT ASSEMBLY. THE EXTENSION, IS ALSO REQUIRED.
6. IN ORDER TO MAINTAIN ADEQUATE COVER OVER VALVE NUT, THE FOLLOWING MINIMUM COVERS OVER PIPE ARE REQUIRED:

DATE VALVE SIZE	MIN. COVER OVER PIPE
16"	48"
20"	54"
24"	60"
30"	72"
36"	84"

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

TYPICAL FORCE MAIN GATE VALVE SETTING AND CUT-IN DETAIL

38S



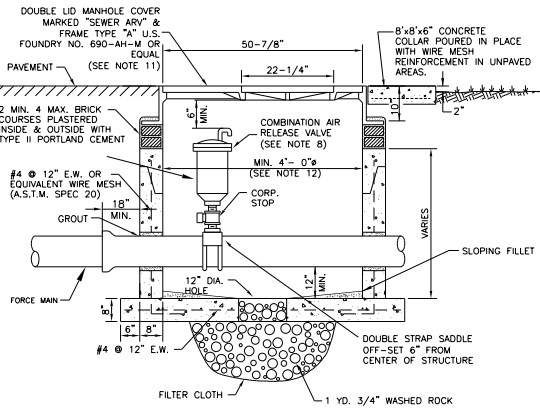
NOTES:

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 TYPE AND SIZE 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. COAT INSIDE WITH AN APPROVED CORROSION BARRIER SYSTEM.
7. DUCTILE IRON PIPE IS REQUIRED THROUGH THE VAULT. NO PIPE JOINTS WITHIN THE VAULT.
8. THREADED AREAS OF CORROSION STOP SHALL BE 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'W x 5'L
30"-42"	4'W x 6'L

FORCE MAIN AIR RELEASE VALVE AND VAULT OUTSIDE OF R/W, NON-TRAFFIC AREAS

39S



NOTES:

1. PRECAST 4000 P.S.I. TYPE II CONCRETE STRUCTURE. SHOP DRAWING IS REQUIRED TO BE APPROVED BY THE DEPARTMENT.
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. COAT INSIDE WITH AN APPROVED PROTECTIVE CORROSION BARRIER SYSTEM.
7. CONCRETE COLLAR REQUIRED WHEN MANHOLE IS OUTSIDE OF PAVEMENT, SEE DETAIL.
8. COMBINATION AIR RELEASE VALVE (ARV) SHALL BE TYPE AND SIZE 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 INSIDE THE MANHOLE.
10. THREADED AREAS OF CORROSION STOP SHALL BE SPIRAL WRAPPED WITH TWO WRAPS OF TEFLON TAPE.
11. FORCE 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"

FORCE MAIN AIR RELEASE VALVE AND MANHOLE IN PAVED AREAS AND ROAD R/W

40S

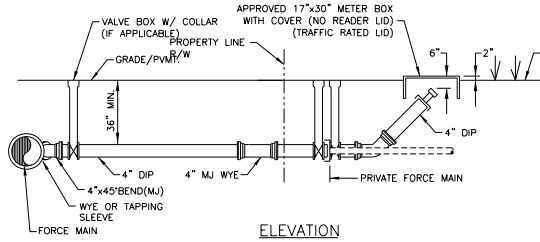
MIN. LENGTH OF PIPE (FEET) TO BE RESTRAINED		PIPE SIZE															
(SOURCES: EBAA IRON RESTRAINT LENGTH CALCULATION PROGRAM FOR PVC PIPE, RELEASE 3.1, AND DIPRA TRENCH RESTRAINT FOR DUCTILE IRON PIPE, RELEASE 3.2)		4"	6"	8"	10"	12"	14"	16"	18"	20"	24"	30"	36"	42"	48"		
FITTING TYPE	90° HORIZ. BEND	14	20	25	30	35	40	45	54	62	73	84	93	101			
	45° HORIZ. BEND	6	8	11	13	15	19	22	26	30	35	38	42				
	22.5° HORIZ. BEND	3	4	5	6	7	9	11	12	15	17	18	20				
	11.25° HORIZ. BEND	1	2	3	3	4	4	5	6	7	8	9	10				
	90° VERT. OFFSET	29	41	53	64	74	85	115	134	160	185	207	228				
	45° VERT. OFFSET	7	10	13	16	19	25	30	35	42	49	56	62				
	22.5° VERT. OFFSET	12	19	24	29	34	39	48	56	66	77	86	94				
	11.25° VERT. OFFSET	3	4	6	7	8	10	12	15	18	20	23	26				
	90° VERT. OFFSET	6	9	12	14	17	19	23	27	32	37	41	45				
	45° VERT. OFFSET	1	2	4	4	4	5	6	7	8	10	11	12				
TEE (BRANCH RESTRAINT)	UPPER BEND	3	4	6	7	8	9	11	13	16	18	20	22				
	LOWER BEND	1	2	4	4	4	5	6	7	8	10	11	12				
	90° VERT. OFFSET	6	9	12	14	17	19	23	27	32	37	41	45				
	45° VERT. OFFSET	1	2	4	4	4	5	6	7	8	10	11	12				
	22.5° VERT. OFFSET	3	4	6	7	8	9	11	13	16	18	20	22				
	11.25° VERT. OFFSET	1	1	1	2	2	2	3	3	4	5	5	6				
	90° VERT. OFFSET	32	45	59	70	83	107	129	151	160	185	207	228				
	45° VERT. OFFSET	32	45	45	45	45	55	65	80	85	95	105	115				
	22.5° VERT. OFFSET	32	45	45	45	45	55	65	80	85	95	105	115				
	11.25° VERT. OFFSET	32	45	45	45	45	55	65	80	85	95	105	115				
REDUCER (LARGER PIPE RESTRAINT)	6"x 8"	21	35	-	-	-	-	-	-	-	-	-	-				
	8"x 10"	18	34	47	-	-	-	-	-	-	-	-	-				
	10"x 12"	13	30	44	57	69	-	-	-	-	-	-	-				
	12"x 14"	7	26	41	55	67	90	-	-	-	-	-	-				
	14"x 16"	1	21	38	52	65	88	109	-	-	-	-	-				
	16"x 18"	1	16	34	49	62	86	108	129	-	-	-	-				
	18"x 20"	1	8	28	44	58	83	106	127	154	-	-	-				
	20"x 24"	1	1	22	39	54	80	103	124	153	179	-	-				
	24"x 30"	1	1	15	33	49	77	100	122	151	177	201	-				
	30"x 36"	1	1	7	27	44	73	97	120	149	176	200	222				
REDUCER (SMALLER PIPE RESTRAINT)	6"x 8"	23	-	-	-	-	-	-	-	-	-	-	-				
	8"x 10"	28	25	-	-	-	-	-	-	-	-	-	-				
	10"x 12"	57	43	24	-	-	-	-	-	-	-	-	-				
	12"x 14"	72	60	44	41	-	-	-	-	-	-	-	-				
	14"x 16"	99	90	78	75	45	-	-	-	-	-	-	-				
	16"x 18"	123	116	107	105	81	45	-	-	-	-	-	-				
	18"x 20"	146	140	132	131	111	82	45	-	-	-	-	-				
	20"x 24"	157	153	148	147	133	87	56	-	-	-	-	-				
	24"x 30"	182	179	175	169	163	147	126	101	56	-	-	-				
	30"x 36"	205	202	199	194	189	175	150	138	100	54	-	-				
	36"x 48"	226	224	221	217	213	201	187	169	138	98	53	-				

NOTES:

1. THE DATA IN THE ABOVE TABLE ARE BASED UPON THE FOLLOWING INSTALLATION CONDITIONS:
SOIL TYPE-SAND TEST PRESSURE-150 PSI DEPTH OF BURY-3'
TRENCH TYPE-3 SAFETY FACTOR-1.5 VERTICAL OFFSET-3'
MINIMUM PIPE LENGTH ALONG TIE 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 "IN-LINE VALVE" CONDITION ARE REQUIRED AT EACH END OF A TRANSITION FROM HOPE PIPE TO OTHER PIPE MATERIALS.
7. DESIGN ENGINEER IS RESPONSIBLE FOR PROPER RESTRAINT PIPE LENGTH SIZING FOR THE PROJECT.

MECHANICAL THRUST RESTRAINT MINIMUM PIPE LENGTHS (FORCE MAINS)

41S



NOTE:

1. THE FLUSHING CONNECTION SHALL BE LOCATED IN GRASS AREA.
2. ALL 4" PIPES SHALL BE RESTRAINED.

TYPICAL THRUST BLOCKS FOR PRESSURE PIPING

42S

CONSULTANT:

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DRAWN BY: M. BUCKNER
CHECKED BY: J. LAMMERT
APPROVED BY: WUD

Palm Beach County
Water Utilities Department
P.O. Box 16097
West Palm Beach, FL 33416-6097

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OF

UT-69

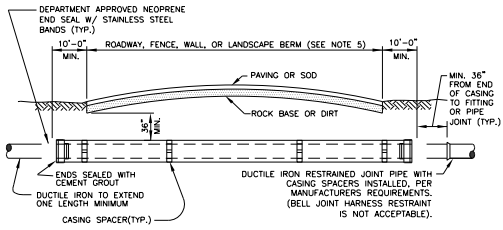
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43S

FORCE MAIN ENTERING MANHOLE

WASTEWATER #5
STANDARD DETAILS



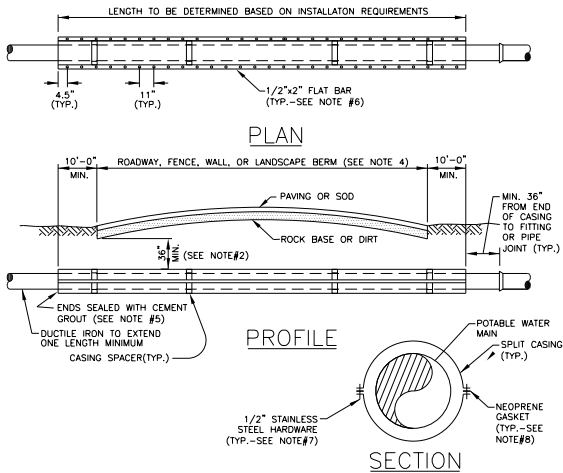
CARRIER PIPE SIZE	STEEL CASING INSIDE DIAMETER (MIN)	MINIMUM WALL THICKNESS (SEE NOTE 2)
4"	12"	.188
6"	14"	.250
8"	20"	.250
10"	20"	.250
12"	24"	.250
14"	24"	.250
16"	30"	.312
18"	30"	.312
20"	36"	.372
24"	42"	.500
30"	48"	.500
36"	54"	.625
42"	60"	.625
48"	72"	.625

NOTES:

- A PROFILE DRAWING TO SCALE FOR EACH JACK AND BORE, DIRECTIONAL DRILL, OR DIRECT BURIED INSTALLATION IS REQUIRED TO BE APPROVED BY THE DEPARTMENT PRIOR TO INSTALLATION. IF A SPLIT CASING IS REQUIRED THEN SHOP DRAWINGS ARE REQUIRED TO BE SUBMITTED AND APPROVED BY THE DEPARTMENT PRIOR TO CONSTRUCTION AND/OR INSTALLATION.
- THICKER WALL CASINGS AND LARGER COVER OVER CASING MAY BE REQUIRED BY THE RIGHT-OF-WAY OWNER.
- STEEL CASING SHALL BE COATED OUTSIDE WITH COAL TAR EPOXY (MIN. 16 MILS DFT) AND BE PAINTED WITH A 4" MINIMUM WIDE CONTINUOUS STRIPE, COLOR CODED TO MATCH THE PIPE INSIDE, ALONG THE TOP AXIS OF THE CASING.
- PIPE IN CASING SHALL BE PULLED TO FULLY ENGAGE RESTRAINT.
- STEEL CASING IS REQUIRED FOR ALL WASTEWATER MAIN INSTALLATIONS UTILIZING JACK AND BORE CONSTRUCTION AND WHEN MAINS ARE INSTALLED UNDER FENCES, WALLS, OR LANDSCAPE BERMS. WHEN THE CASING IS INSTALLED UNDER FENCES, WALLS, OR LANDSCAPE BERMS IT SHALL BE CENTERED ON THE PREVIOUS BARRIER AND IS REQUIRED TO EXTEND 10' MINIMUM PAST BARRIER ON EACH SIDE UNLESS OTHERWISE PREVIOUSLY APPROVED BY THE DEPARTMENT.

WASTEWATER MAIN CASING INSTALLATION

* 44SA



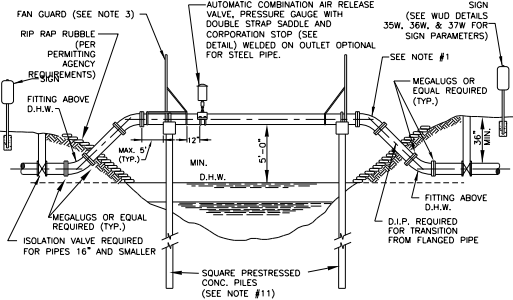
CARRIER PIPE SIZE	STEEL CASING INSIDE DIAMETER (MIN)	MINIMUM WALL THICKNESS (SEE NOTE 2)
4"	12"	.188
6"	14"	.250
8"	20"	.250
10"	20"	.250
12"	24"	.250

NOTES:*

- A SHOP DRAWING TO SCALE FOR EACH SPLIT CASING INSTALLATION IS REQUIRED AND TO BE APPROVED BY THE DEPARTMENT PRIOR TO INSTALLATION.
- THE RIGHT-OF-WAY OWNER MAY REQUIRE THICKER WALL CASING AND LARGER COVER OVER CASING.
- STEEL CASING SHALL BE COATED OUTSIDE WITH COAL TAR EPOXY (MIN. 16 MILS DFT) AND BE PAINTED WITH A 4" MINIMUM CONTINUOUS STRIPE, ALASKA BLUE IN COLOR, ALONG THE TOP SIDE OF THE CASING.
- SPLIT CASING IS REQUIRED ON ALL EXISTING WASTEWATER 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 POTABLE WATER MAIN. WHEN A SPLIT CASING IS INSTALLED UNDER A FENCE, WALL, OR LANDSCAPE BERM SEE WUD STANDARD DETAIL 91S FOR INSTALLATION REQUIREMENTS.
- NON-SHRINKABLE CEMENT GROUT TO BE INSTALLED TO OBTAIN WATER TIGHT SEAL AT EACH END OF CASING.*
- FLAT BARS TO BE STITCH WELDED AT 6" LENGTHS TO EDGE OF CASING ON EACH SIDE.
- CASING TO BE ASSEMBLED IN FIELD WITH 1/2" STAINLESS STEEL BOLTS, WASHERS, AND NUTS ON EACH SIDE.
- 1/4" NEOPRENE GASKET MATERIAL EXTENDING PAST CASING JOINT FOR POSITIVE SEAL ON EACH SIDE.

WASTEWATER MAIN SPLIT CASING INSTALLATION

* 44SB

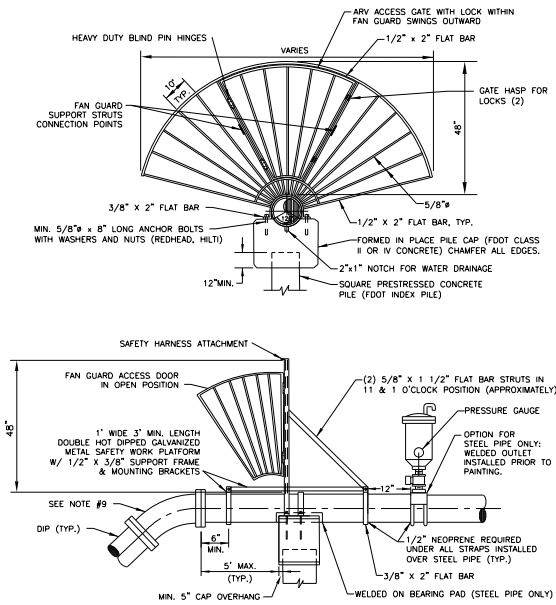


NOTES:

- ALL EXPOSED PIPE SHALL BE DUCTILE IRON OR PREFABRICATED STEEL WITH FLANGED FITTINGS AND PROFILED GASKETS. RETAINER GLANDS AND UNFLANGE 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.
- SPAN LENGTHS AS REQUIRED BY PERMITTING AGENCY
- FAN GUARDS ARE REQUIRED. SEE FAN GUARD/PILE CAP DESIGN DETAILS, FOR ADDITIONAL REQUIREMENTS. ACCESS PLATFORM AND GATE REQUIRED ON ARV SIDE ONLY.
- ALL EXPOSED PIPING SHALL BE PAINTED AS SPECIFIED IN THE APPROVED MATERIAL LIST.
- ALL HARDWARE SHALL BE PAINTED WITH COAL-TAR EPOXY.
- PIPE SHALL BE CRADLED ON 1/2" THICK NEOPRENE. (DURUMETER GRADE 50) CURRENT FOOT STANDARDS APPLY. NEOPRENE IS REQUIRED AT ALL STRAPS INSTALLED OVER STEEL PIPE. NEOPRENE SHALL EXTEND 1" BEYOND THE EDGES OF CRADLE AND STRAPS.
- TIE-DOWN STRAPS MUST PROPERLY FIT AND SECURE PIPE IN CRADLE.
- PIPE CRADLE IN CAP SHALL CONTACT 1/3 CIRCUMFERENCE OF PIPE. (SEE FAN GUARD DETAIL)
- SHOW EXISTING CANAL CROSS SECTION, ULTIMATE CANAL SECTION, AND RELEVANT ELEVATIONS AND DISTANCES ON A TO SCALE DETAIL DRAWING.
- PILE LIFT CABLE SHALL BE REMOVED BELOW SURFACE; HOLE SHALL BE FILLED WITH EPOXY CEMENT.
- THROGGLED AREAS OF BRASS FITTINGS SHALL BE SPIRAL WRAPPED WITH TWO WRAPS OF TEFLON TAPE.
- THE PILES AND CAP DESIGN SHALL BE SHOWN ON TO SCALE SIGNED AND SEALED DETAIL DRAWINGS. MIN. 12"x12" TYPE 1A FLORIDA DOT INDEX PILES ARE REQUIRED. PILE PENETRATION BELOW CANAL BOTTOM SHALL BE 15' MINIMUM. MINIMUM LOAD CAPACITY OF 20 TONS PER PILE IS REQUIRED (FDOT STANDARDS APPLY). SIGNED AND SEALED SHOP DRAWINGS ARE REQUIRED.
- PREFABRICATED STEEL PIPE SHALL HAVE BODIES ON BEARING PADS EXTENDING MIN. 1" BEYOND PIPE CRADLE. SET PADS SHALL BE INSTALLED BY STEEL PIPE MANUFACTURER PRIOR TO PAINTING.
- FORCE MAIN CROSSINGS OVER BODIES OF WATER MAY BE SUBJECT TO A D.E.P. "NOTICED GENERAL ENVIRONMENTAL RESOURCE PERMIT" (NGP)

TYPICAL FORCE MAIN AERIAL CANAL CROSSING - SINGLE PIPE (SINGLE PILES)

* 45S

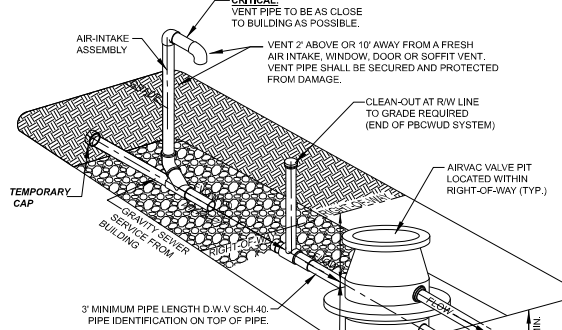
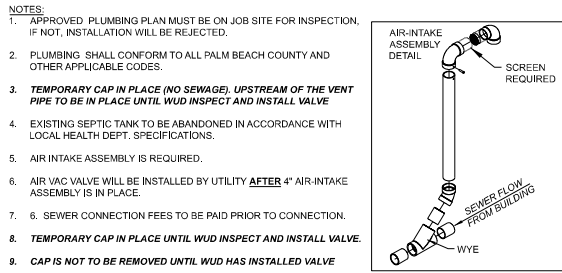


NOTES:

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

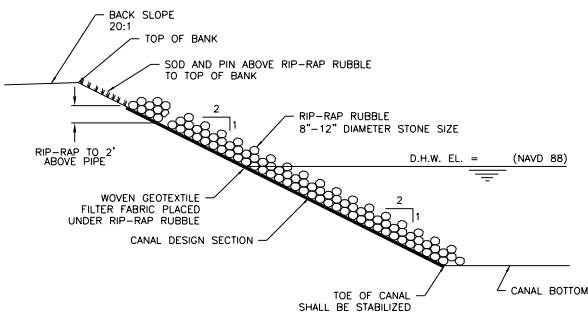
FAN GUARD/ PILE CAP DESIGN - SINGLE PIPE (SINGLE PILES)

* 46S



TYPICAL WASTEWATER SERVICE INSTALLATION FOR VACUUM SEWER

* 87S

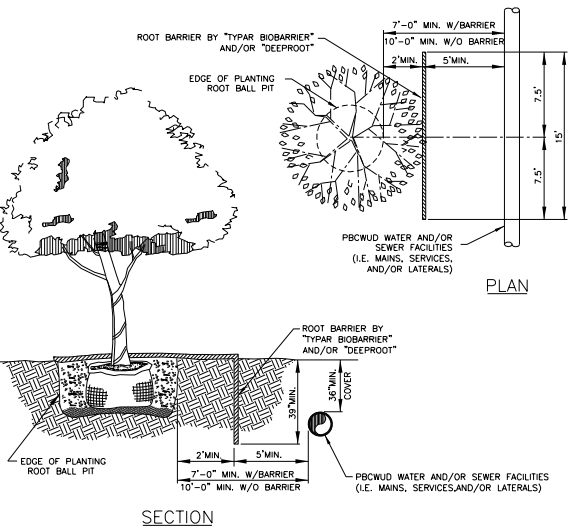


NOTES:

- RIP-RAP RUBBLE AND ITS INSTALLATION MUST MEET CANAL OWNERSHIP SPECIFICATIONS AND PERMITTING REQUIREMENTS.
- DUMP RUBBLE IN PLACE FORMING A COMPACT LAYER CONFORMING TO THE CANAL DESIGN SECTION SLOPE. ENSURE THAT RUBBLE DOES NOT SEGREGATE SO THAT SMALLER PIECES EVENLY FILL THE VOIDS BETWEEN LARGER PIECES.
- AN ALTERNATIVE DESIGN WILL BE CONSIDERED AND MUST RECEIVE PRIOR APPROVAL FROM THE CANAL PROPERTY OWNER.

RIP-RAP RUBBLE DETAIL (N.T.S.)

* 88S

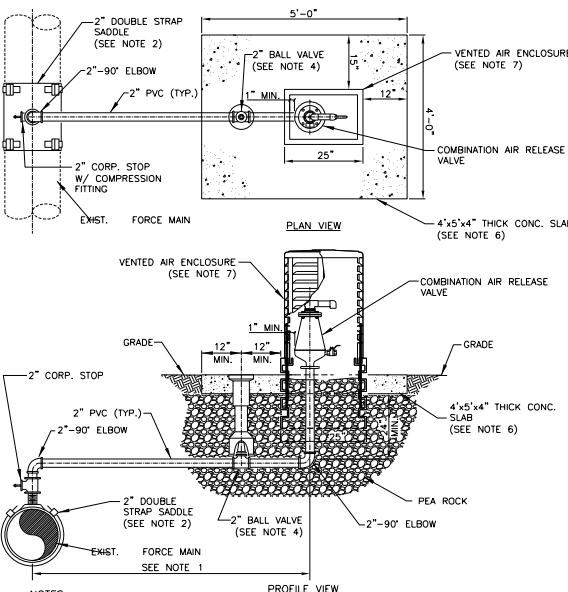


NOTES:

- 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.
- 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 ENCRUSH INTO A PBCUE WITHOUT PRIOR DEPARTMENT APPROVAL.

LANDSCAPE AND ROOT BARRIER DETAIL

* 89S

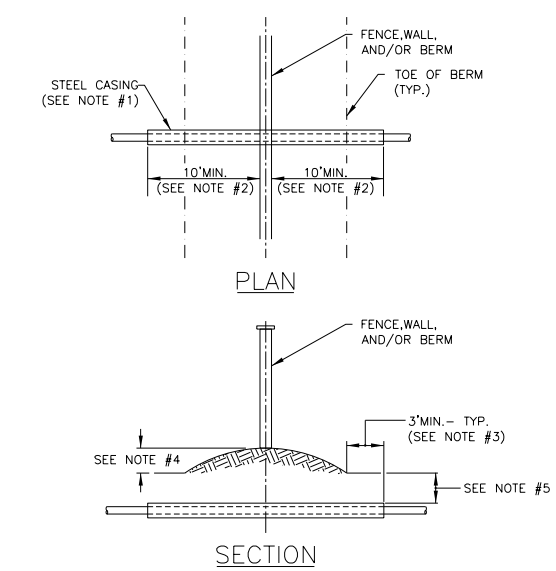


NOTES:

- OFF-SET DISTANCE VARIES ON LOCATION OF FORCE MAIN TO ARV ENCLOSURE. IN NO CASE SHALL THE OFF-SET DISTANCE EXCEED 10' UNLESS OTHERWISE APPROVED BY THE DEPARTMENT PRIOR TO INSTALLATION.
- 2" DOUBLE STRAP SADDLE TO BE INSTALLED PERPENDICULAR TO FORCE MAIN IN THE DIRECTION OF TOP.
- ALL PVC PIPING AND FITTINGS TO BE SCHEDULE 80.
- 2" BALL VALVE AND CORPORATION STOP SHALL BE BRASS WITH COMPRESSION FITTINGS ON EACH END.
- ALL FITTINGS AND VALVES SHALL BE COMPRESSION TYPE.
- CONCRETE PAD FOR WATER METER ASSEMBLY SHALL BE 4" THICK WITH WIRE MESH (4"x4") CONCRETE PAD IS REQUIRED TO BE BROOM FINISHED.
- VENTED ENCLOSURE SHALL BE CHANNELL COMPANY #SPH1420, SEE APPROVED MATERIALS AND EQUIPMENT LIST. ENCLOSURE SHALL BE CAPABLE OF ALLOWING THE SAME AMOUNT OF AIR FLOW AS THE ARV.
- THIS FORCE MAIN OFF-SET ARV REQUIRES PREVIOUS DEPARTMENT APPROVAL PRIOR TO INSTALLATION.

FORCE MAIN AIR RELEASE VALVE W/ VENTED AIR ENCLOSURE

* 90S



NOTES:

- STEEL CASING PER WUD STANDARD DETAIL 44S (SOLID CASING) OR WUD STANDARD DETAIL 44AS (SPLIT CASING) AS APPLICABLE.
- 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.
- 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 WHICHEVER IS GREATER.
- STEEL CASING INSTALLATION REQUIRED WHEN A BERM IS TWO (2) FEET OR HIGHER ABOVE SURROUNDING GRADE.
- 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.

WASTEWATER MAIN CROSSING FENCE, WALL, OR BERM CASING DETAIL

* 91S

CONSULTANT:

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APPROVED BY: WUD

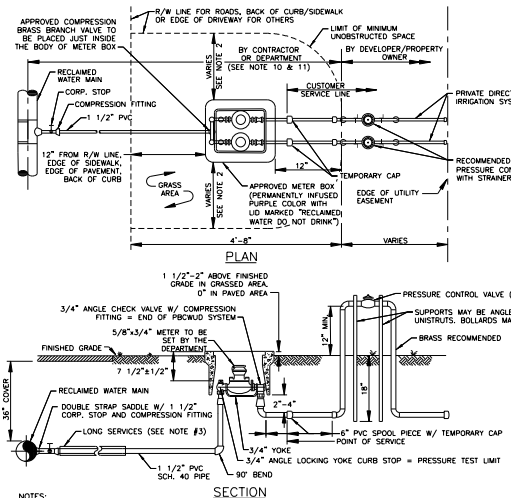
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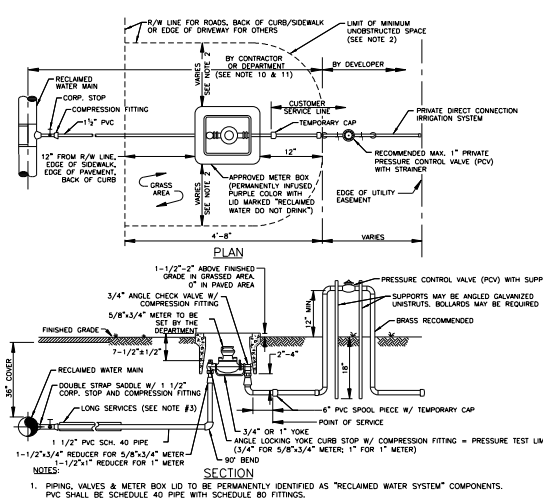
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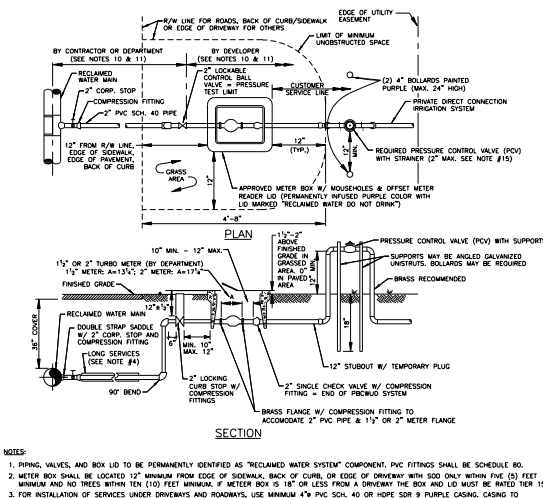
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DIRECT SERVICE ONLY

1R



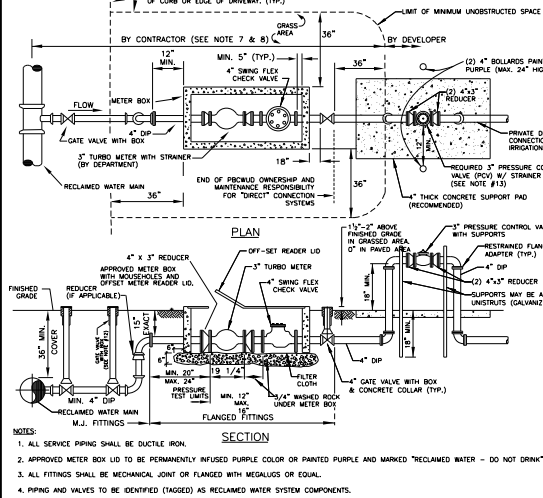
RECLAIMED WATER SINGLE 5/8" x 3/4" OR 1" METER SERVICE DETAIL - DIRECT CONNECT ONLY
DIRECT SERVICE ONLY

2R



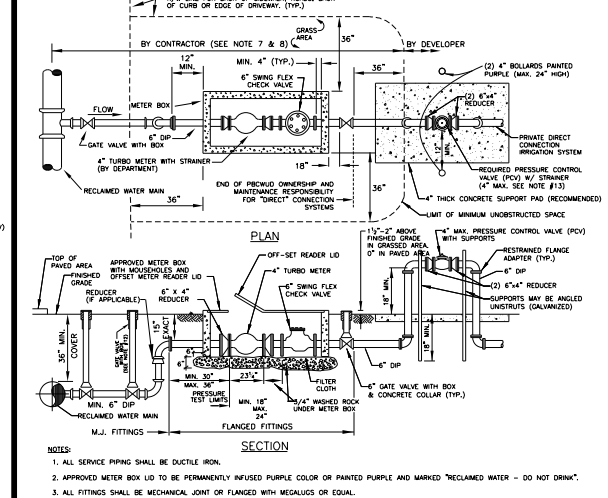
RECLAIMED WATER SINGLE 1" x 1/2" & 2" METER DETAIL
DIRECT SERVICE ONLY
PRIOR DEPARTMENT APPROVAL REQUIRED

3R



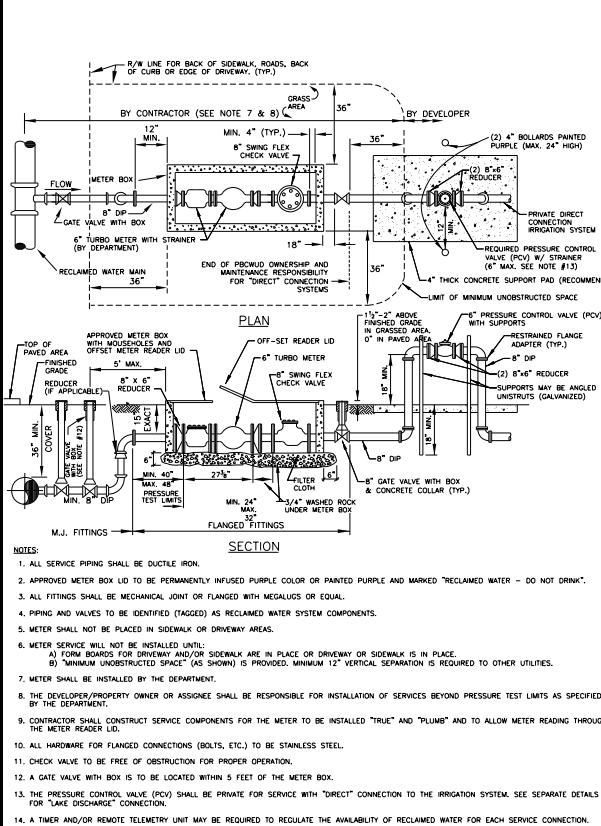
RECLAIMED WATER 3" METER SERVICE DETAIL
DIRECT SERVICE ONLY
PRIOR DEPARTMENT APPROVAL REQUIRED

4R



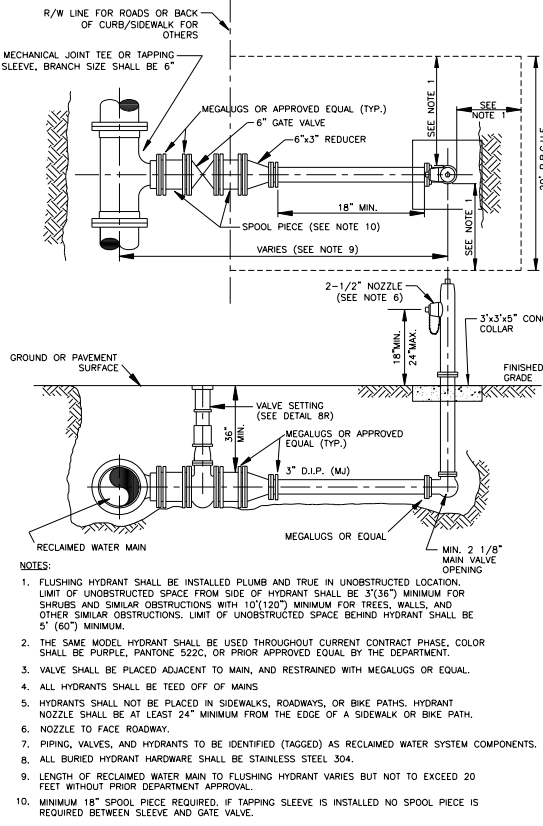
RECLAIMED WATER 4" METER SERVICE DETAIL
DIRECT SERVICE ONLY
PRIOR DEPARTMENT APPROVAL REQUIRED

5R



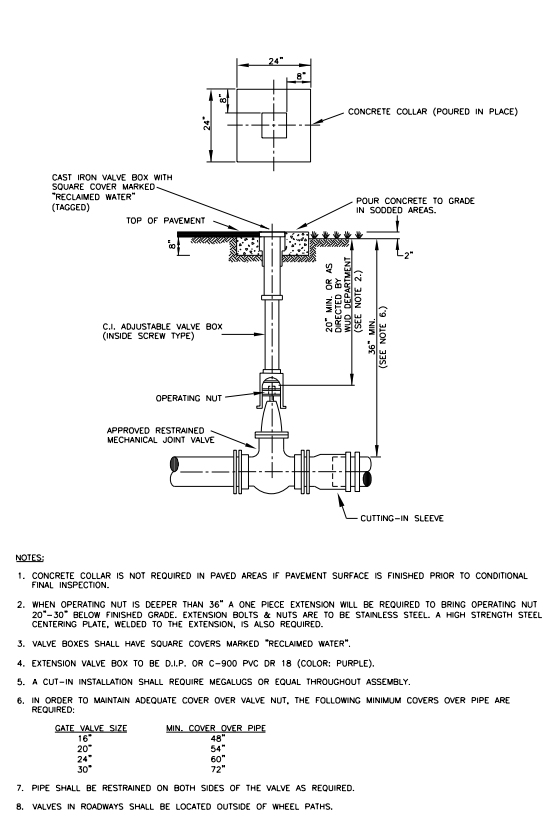
RECLAIMED WATER 6" METER SERVICE DETAIL
DIRECT CONNECT ONLY
PRIOR DEPARTMENT APPROVAL REQUIRED

6R



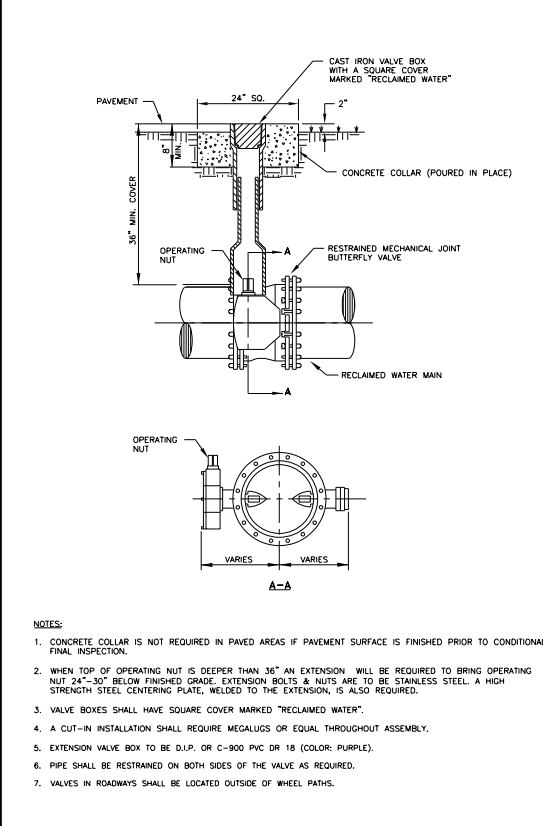
TYPICAL FLUSHING HYDRANT INSTALLATION

7R



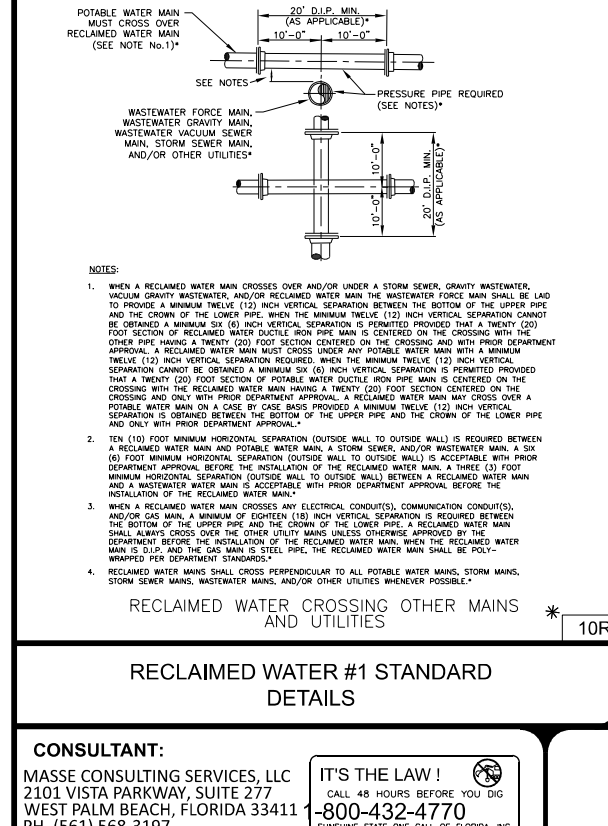
RECLAIMED WATER MAIN
TYPICAL GATE VALVE SETTING AND
MAIN CUT-IN DETAIL

8R



RECLAIMED WATER MAIN
TYPICAL BUTTERFLY VALVE SETTING

9R



RECLAIMED WATER #1 STANDARD
DETAILS

10R

CONSULTANT:
MASSE CONSULTING SERVICES, LLC
2101 VISTA PARKWAY, SUITE 277
WEST PALM BEACH, FLORIDA 33411
PH. (561) 568-3197
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DESIGNED BY: WUD
DRAWN BY: M. BUCKNER
CHECKED BY: J. LAMMERT
APPROVED BY: WUD

Palm Beach County
Water Utilities Department
P.O. Box 16097
West Palm Beach, FL 33416-6097

STANDARD DETAILS
SHEET NUMBER
UT-64
OF
UT-69

SEAL

WUD PROJECT NO.
24-019

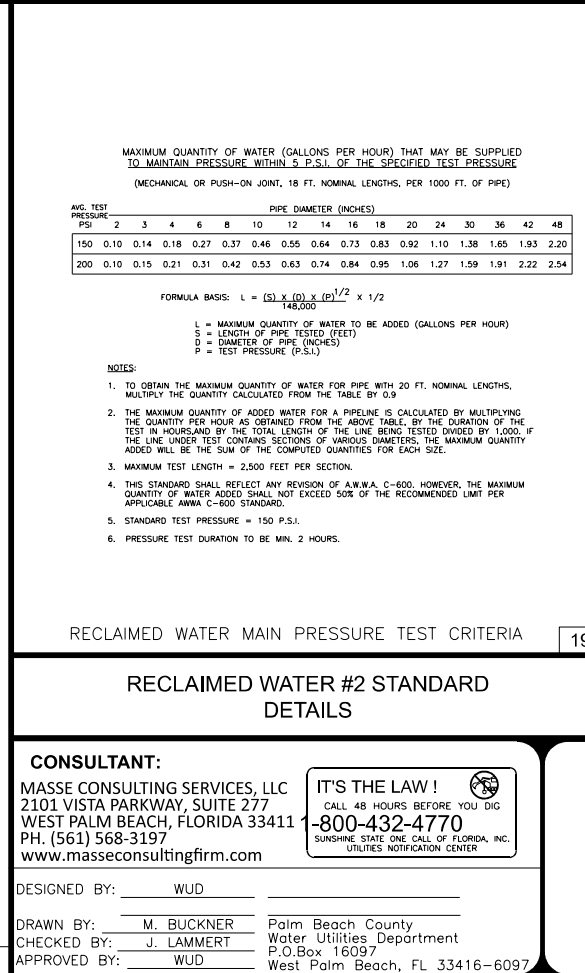
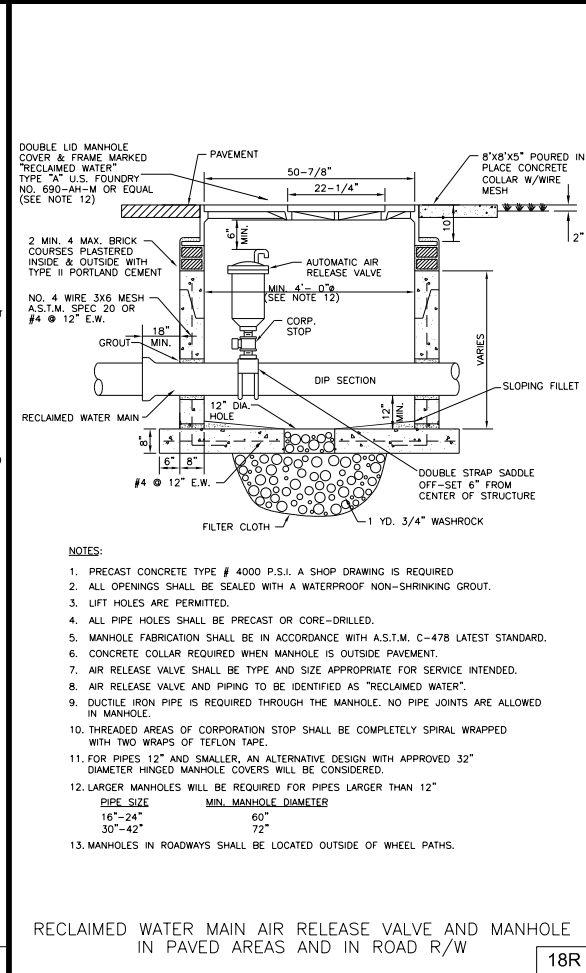
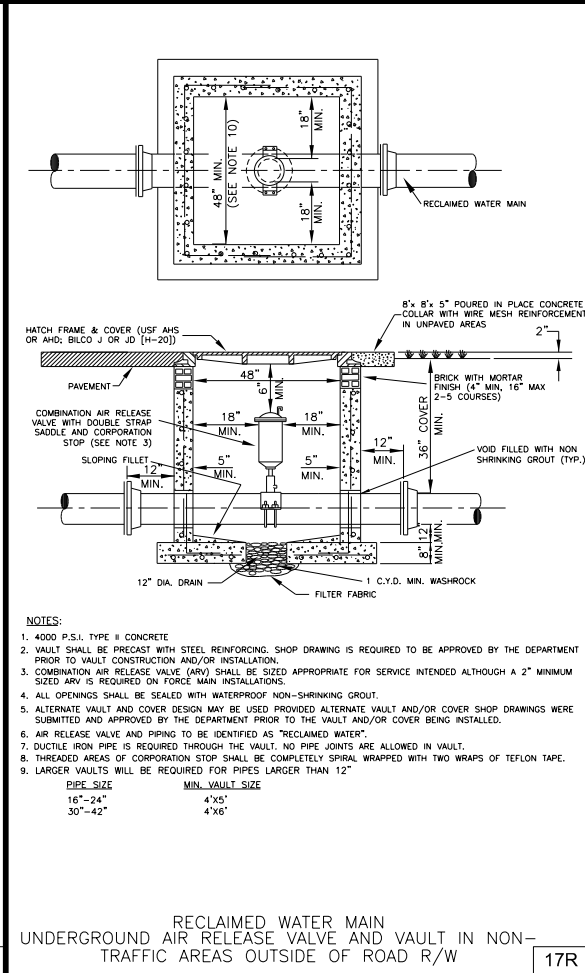
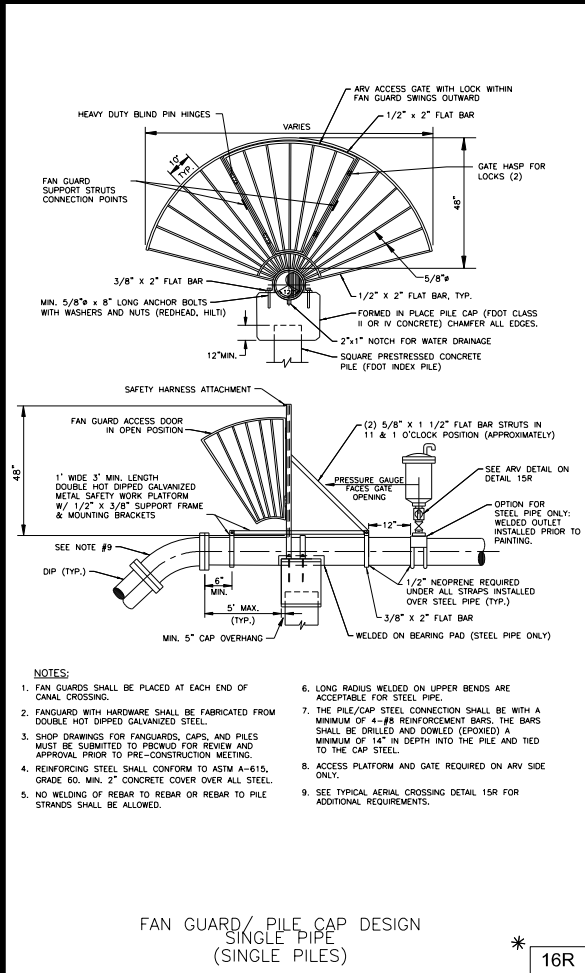
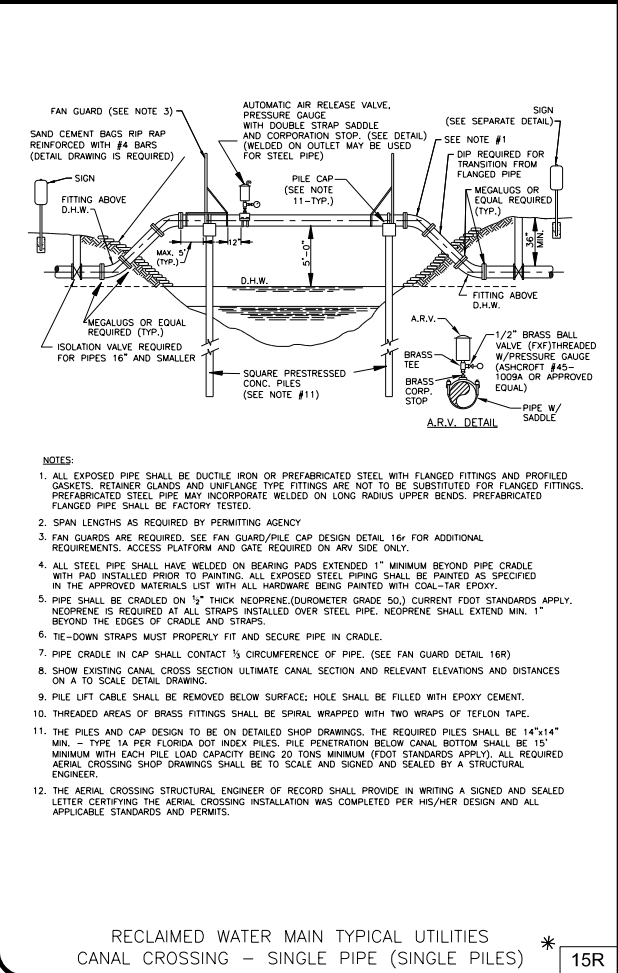
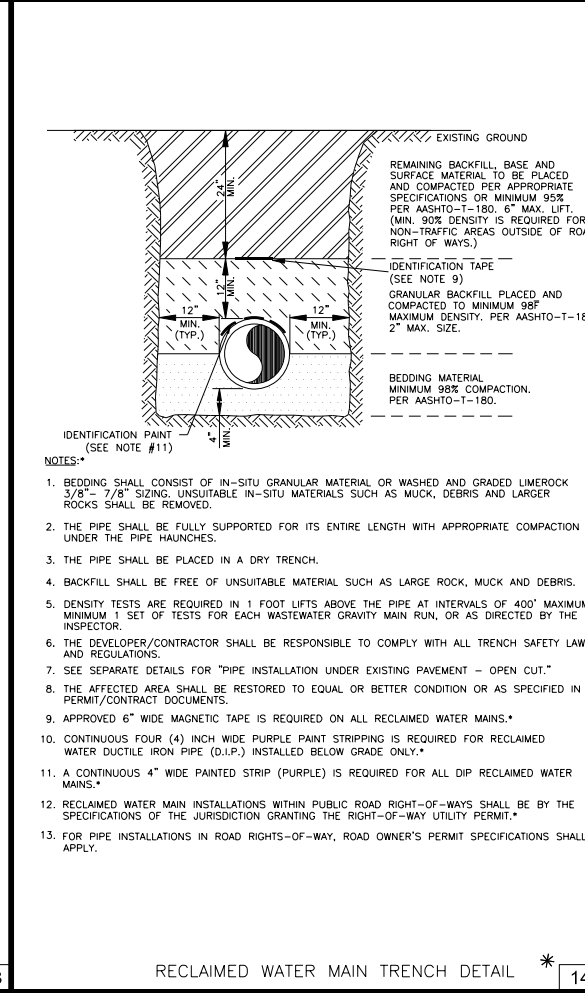
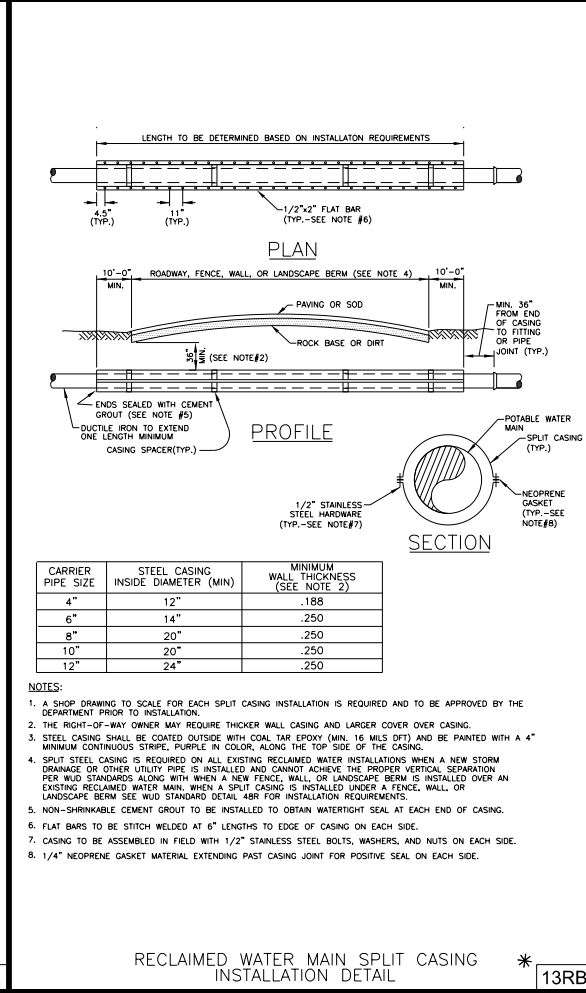
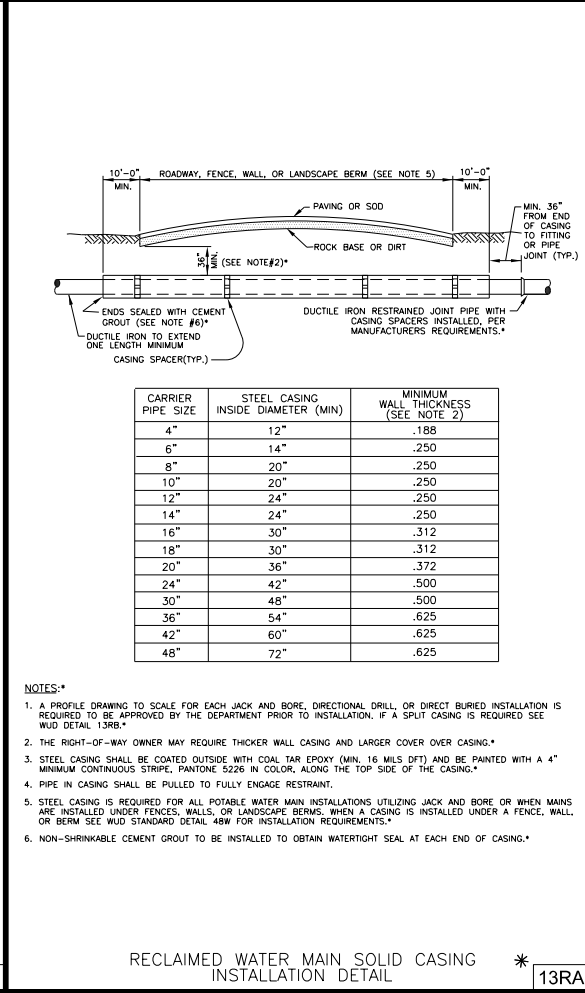
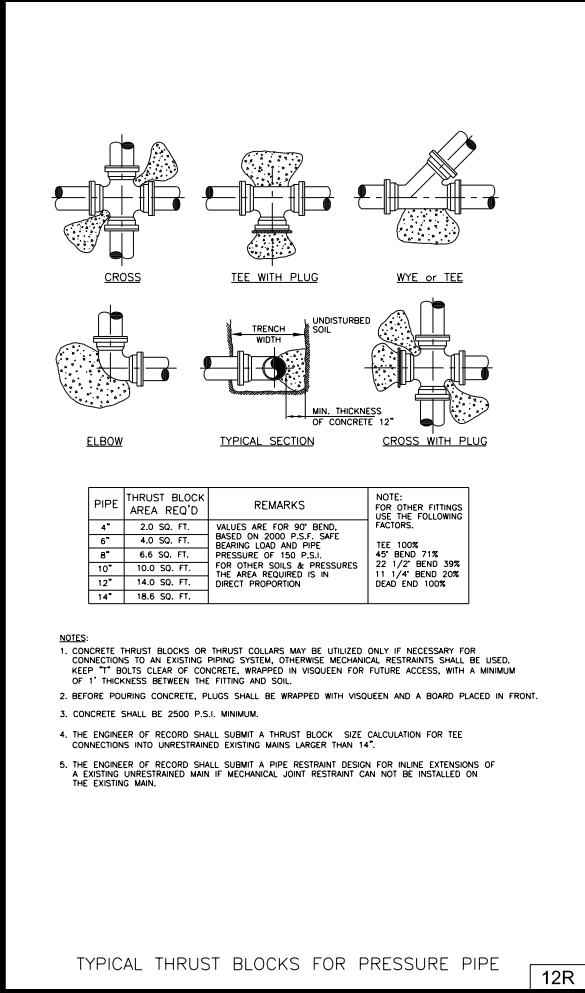
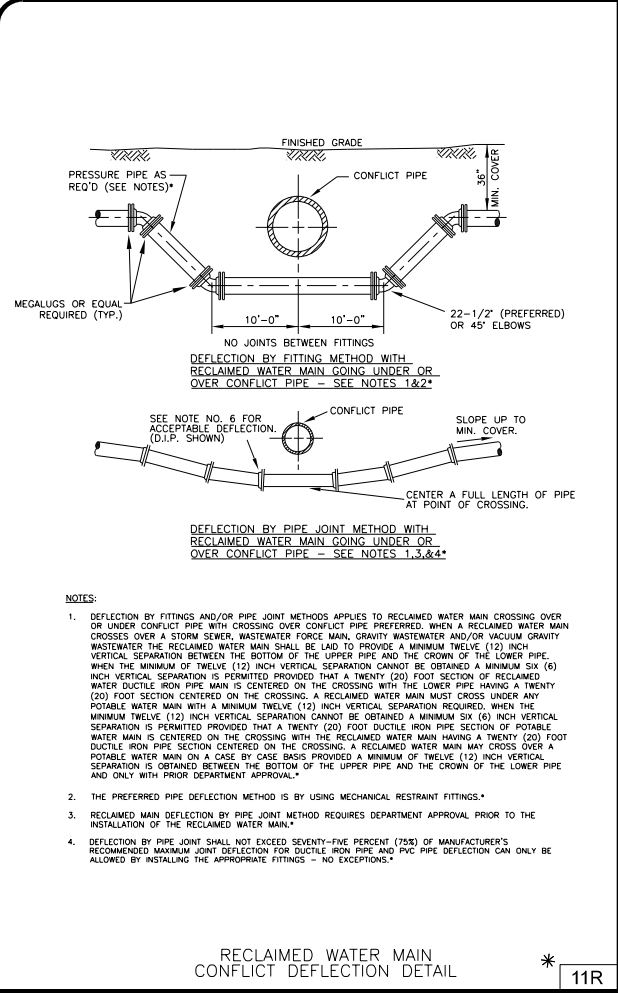
LYONS ROAD FROM LYND L-30 CANAL TO BOYNTON BEACH BLVD &
LYONS ROAD AND BOYNTON BEACH BLVD INTERSECTION IMPROVEMENTS
(PBCWUD WM, FM, & RCWM UTILITY RELOCATION)

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(561) 493-6000

NO.	DATE	REVISION / REMARKS
1	JUNE 2019	GENERAL REVISION
2	JUNE 2023	GENERAL REVISION

BY: J.L. J.L.



WUD PROJECT NO.
24-019

LYONS ROAD FROM LWDD L-30 CANAL TO BOYNTON BEACH BLVD &
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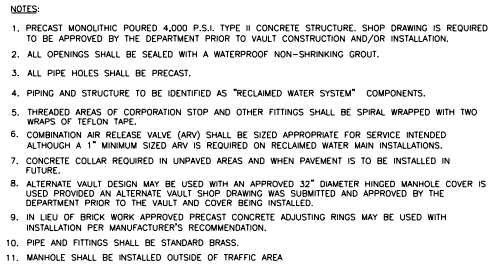
NO.	DATE	REVISION / REMARKS
1	JUN 2019	GENERAL REVISION
2	JUN 2023	GENERAL REVISION

**STD
DETAILS**

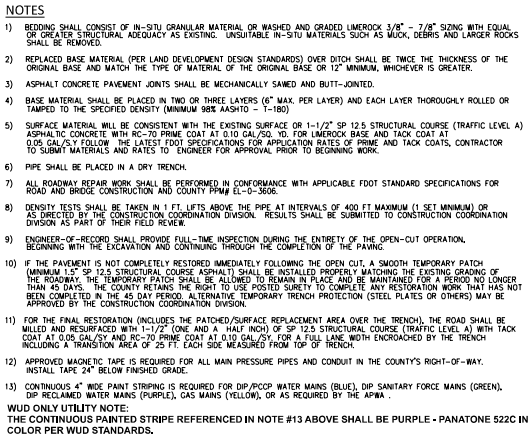
**SHEET
NUMBER**
**UT-65
OF
UT-69**

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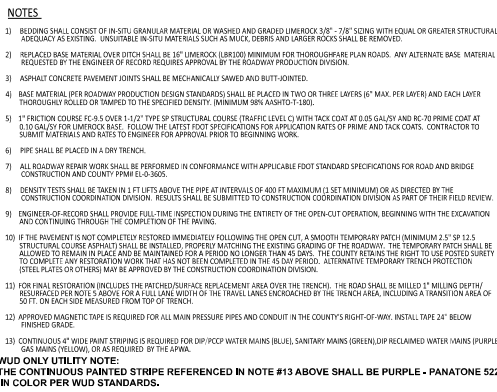
\$ (estimate, 0, MON DD", "YYY")



20R



24



225



NOTES:

1. THE DATA IN THE ABOVE TABLE ARE BASED UPON THE FOLLOWING INSTALLATION CONDITIONS: SOIL TYPE-SAND TRENCH TYPE-3 SAFETY FACTOR-1.5	2. TEST PRESSURE-150 PSI/200 PSI DEPTH OF BURIAL-3' VERTICAL OFFSET-3"
--	--

3. THE RESTRAINED PIPE LENGTHS APPLY TO DUCTILE IRON AND PVC PIPE.

4. ALL JOINTS BETWEEN UPPER AND LOWER BENDS SHALL BE RESTRAINED.

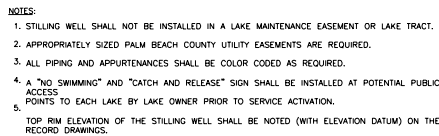
5. ALL JOINTS BETWEEN 90° ELBOWS SHALL BE RESTRAINED.

6. MULTIPLE PIPE LENGTHS BY 1.4 FOR POLYETHYLENE ENCASED PIPE.

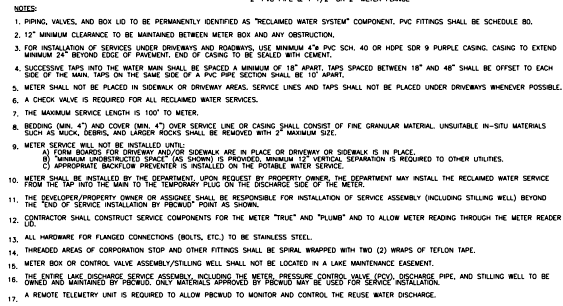
7. RESTRAINED PIPE LENGTHS EQUAL TO AN "INLINE VALVE" CONDITION ARE REQUIRED AT EACH MANHOLE OR TRANSITION FROM RESTRAINED TO FREE-PIPE LENGTHS AND FITTINGS.

8. DESIGN ENGINEER IS RESPONSIBLE FOR PROPER RESTRAINT PIPE LENGTHS FOR THE PROJECT.

24R



29R



25R

PRESSURE PIPE NOTES

1. THERE SHALL BE 36" MINIMUM COVER FROM FINISHED GRADE TO TOP OF PIPE.
2. DUCTILE IRON PIPE (DIP) THICKNESS SHALL CONFORM TO THE DEPARTMENT'S STANDARD WATER MAINS SPECIFICATIONS. REINFORCED CONCRETE WATER MAINS DIP SHALL BE OBTAINED FROM THE DEPARTMENT. FORCE MAIN DIP SHALL BE CERAMIC EPOXY LINED.
3. PVC PRESSURE PIPE SHALL BE C-900, SDR-18, 150 PSI.
4. ALL FITTINGS SHALL BE DUCTILE IRON WITH MECHANICAL JOINTS AND CEMENT OR APPROVED EPOXY LINING.
5. POTABLE WATER, RECLAIMED WATER AND ESTIMATED WATER FORCE MAINS VALVES 10 INCHES AND SMALLER SHALL BE RESILIENT SEAT GATE VALVES. TWELVE-INCH (12") OR LARGER FORCE MAIN VALVES SHALL BE RESILIENT SEAT GATE VALVES OR ECCENTRIC FLUG VALVES APPROVED BY THE DEPARTMENT. RECLAIMED WATER AND RECLAIMED WATER MAIN VALVES LARGER THAN 10 INCHES SHALL BE BUTTERFLY VALVES.
6. ALL TRENCING, PIPE-LAYING, BACKFILL, PRESSURE TESTING, AND DISINFECTION SHALL BE IN ACCORDANCE WITH THE FEDERAL, STATE, COUNTY AND HEALTH DEPARTMENT STANDARDS AND REGULATIONS.

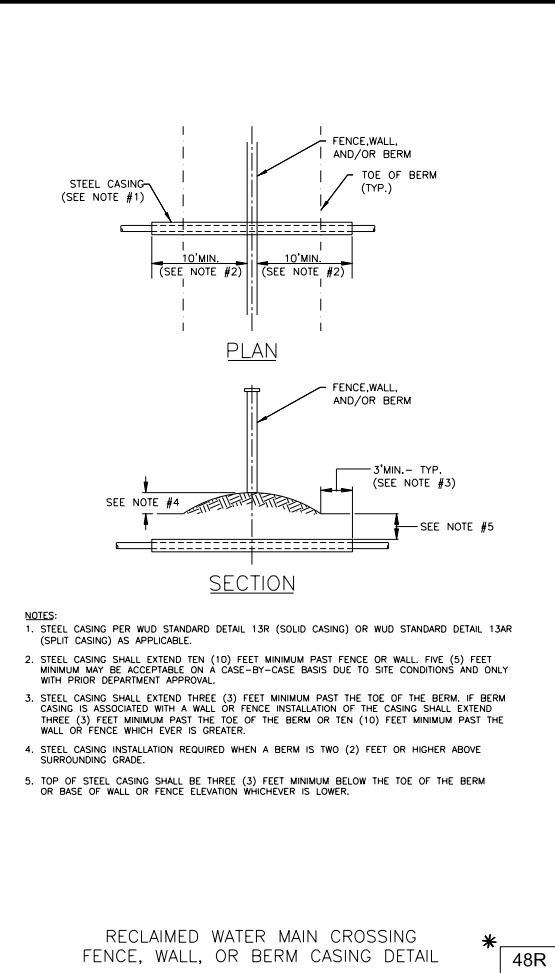
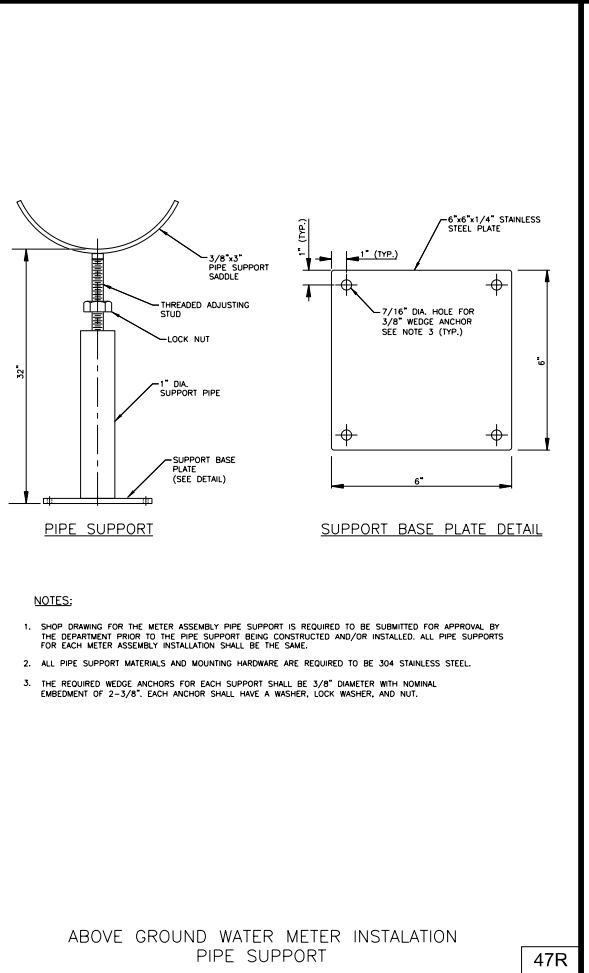
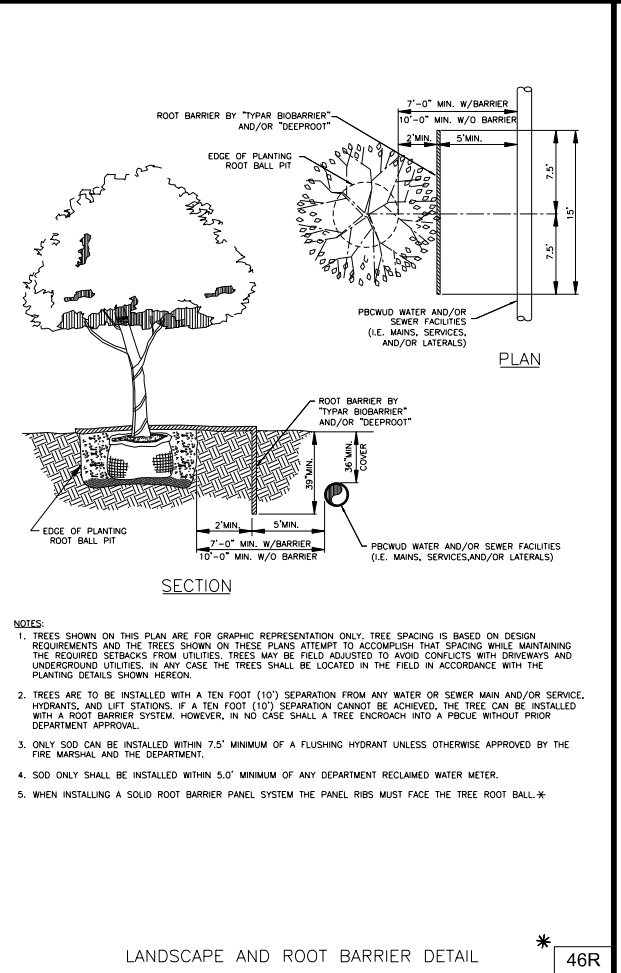
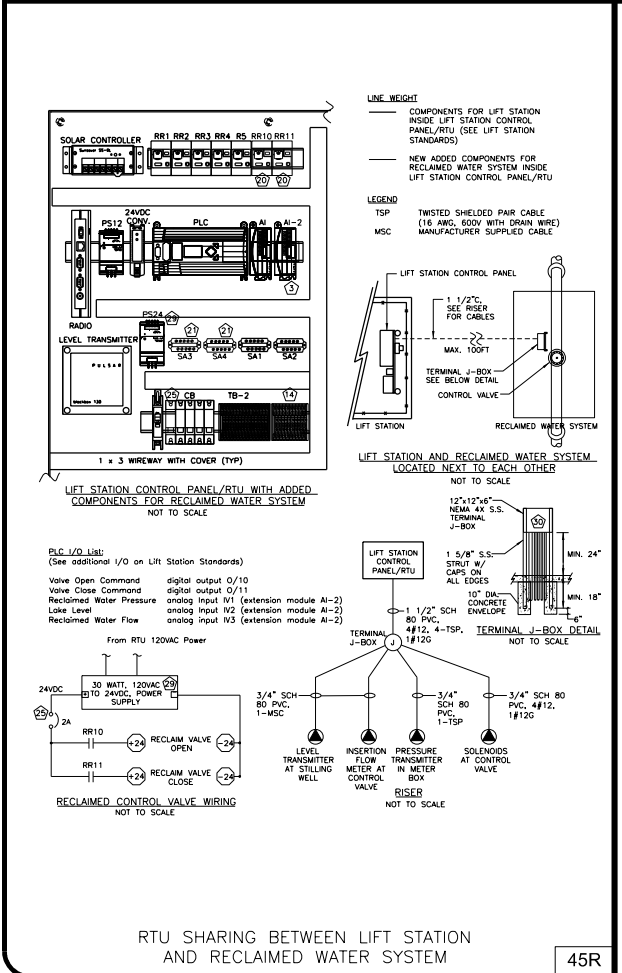
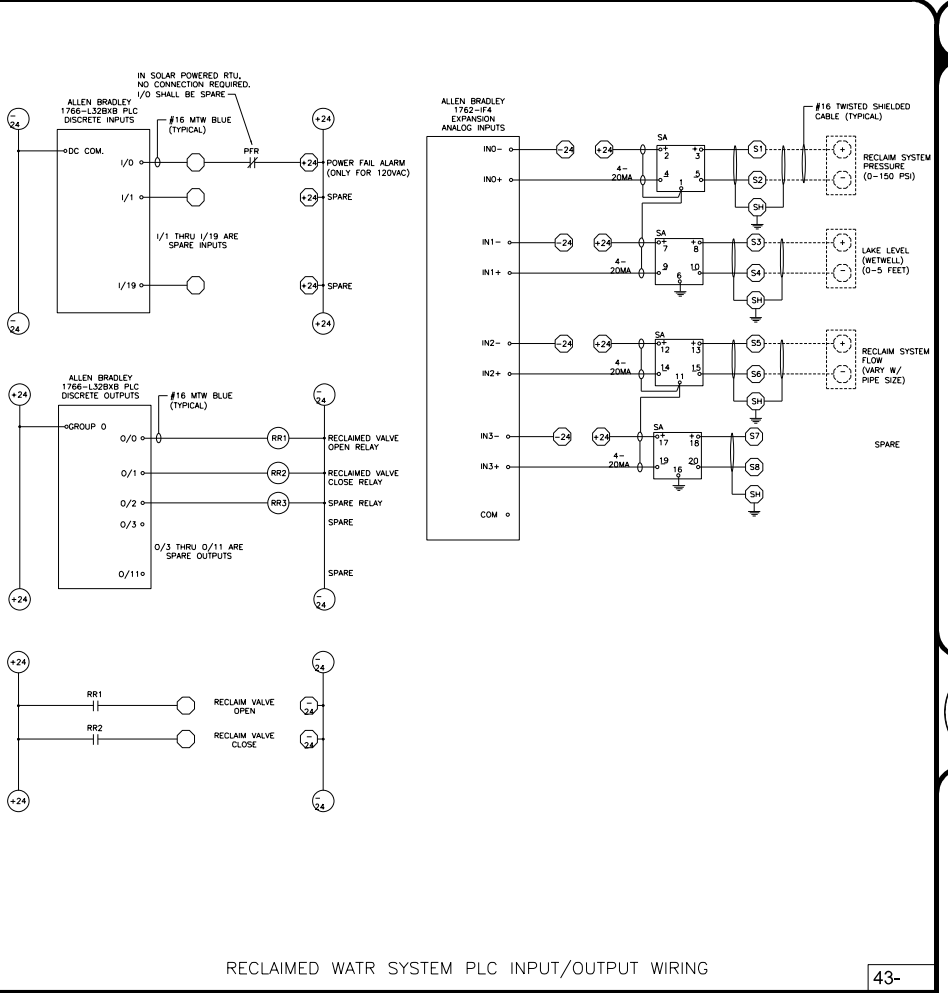
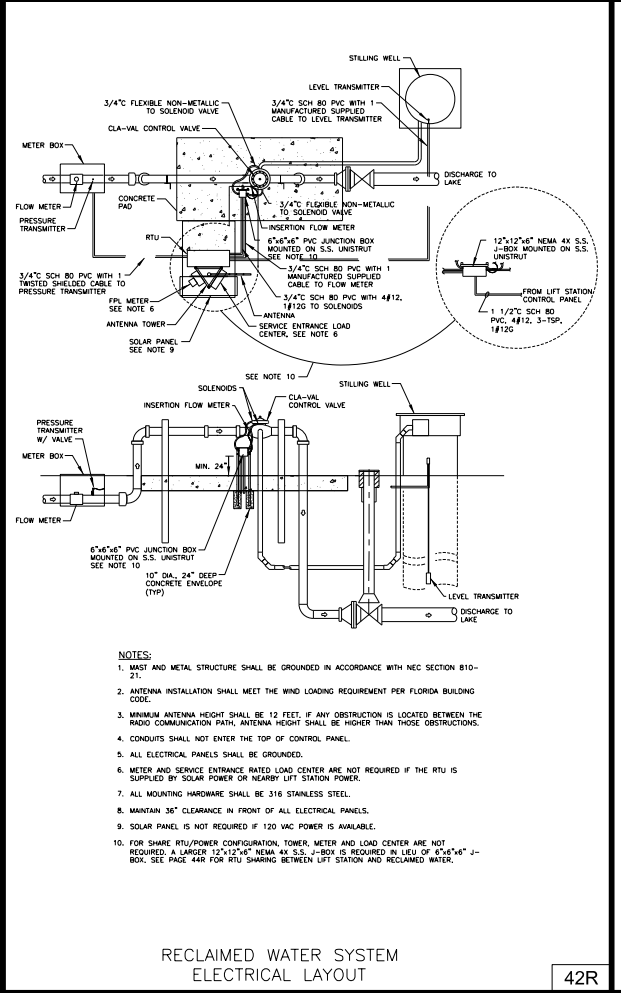
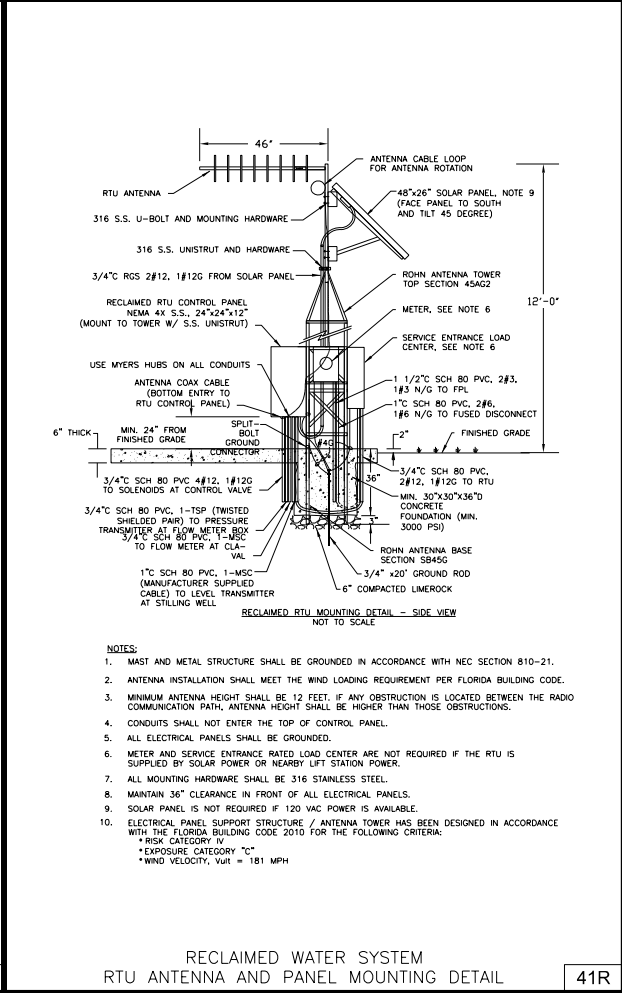
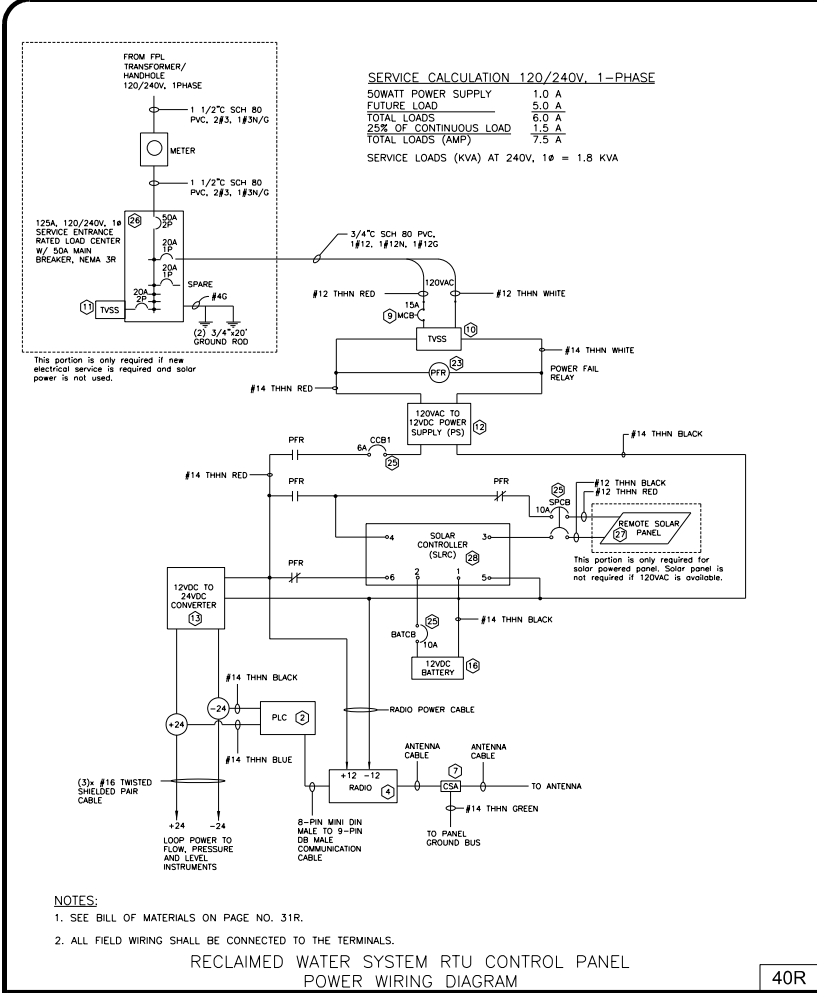
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SEARCH

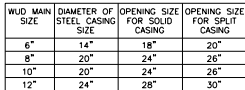


Project information and details for the Reclaimed Water #5 Standard Details. Includes project name, location, consultant information, and a table for revision tracking.

NO.	DATE	REVISION / REMARKS
1	JUNE 2019	GENERAL REVISION
2	JAN 2023	GENERAL REVISION

CONSULTANT: MASSE CONSULTING SERVICES, LLC. 2101 VISTA PARKWAY, SUITE 277 WEST PALM BEACH, FLORIDA 33411. PH. (561) 568-3197. www.masseconsultingfirm.com

DESIGNED BY: WUD. DRAWN BY: M. BUCKNER. CHECKED BY: J. LAMMERT. APPROVED BY: WUD.



1. THE CONFLICT STRUCTURE IS TO BE DESIGNED PER CURRENT FDOT UTILITY CONFLICT TROUGH DRAINAGE STRUCTURE STANDARDS.
2. A SHOP DRAWING TO SCALE FOR EACH CONFLICT STRUCTURE INSTALLATION IS REQUIRED TO BE APPROVED BY THE DISTRICT ENGINEER PRIOR TO INSTALLATION.
3. SLOPE SHALL BE MINIMUM 2% DRAINAGE DETAIL 13R (SOLID CASING) OR WUD STANDARD DETAIL 13AR (SPILT CASING) FOR EXISTING RECLAIMED WATER MAIN DUE TO.
4. STEEL CASING SHALL BE 18" MINIMUM DETAIL 13R (SOLID CASING) OR WUD STANDARD DETAIL 13AR (SPILT CASING) FOR EXISTING RECLAIMED WATER MAIN DUE TO.
5. STEEL CASING SHALL BE GROUNDED IN PLACE WITH NON-SHRINKABLE CEMENT GROUT TO PROVIDE A WATERTIGHT SEAL TO THE CASING.
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 DISTRICT ENGINEER PRIOR TO INSTALLATION.

*

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