

GENERAL NOTES

1. ANY CHANGES FROM APPROVED PLANS SHALL BE SUBMITTED TO THE BULLHEAD CITY UTILITIES DEPARTMENT FOR WRITTEN APPROVAL PRIOR TO INSTALLATION.
2. CONTRACTOR SHALL KEEP A CLEAN, CURRENT SET OF CONTRACT DRAWINGS AS A RECORD OF THE LOCATION OF ALL WORK COMPLETED AS PART OF THE PROJECT. REVISIONS, ADDITIONS, AND DELETIONS SHALL BE ANNOTATED ON THE RECORD SET OF DRAWINGS IN RED.
3. CONTRACTOR SHALL ENSURE THAT SURVEY-GRADE GPS EQUIPMENT IS USED TO RECORD NORTHING, EASTING, AND ELEVATION DATA FOR ALL BURIED APPURTENANCES. FOR WATER MAINS, REUSE LINES AND WATER MAINS APPURTENANCES TO BE LOCATED INCLUDE VALVES, CROSSES, TEES, BENDS, REDUCERS, AND OTHER FITTINGS AS REQUIRED BY THE CONSTRUCTION INSPECTOR. FOR SEWER MAINS, APPURTENANCES INCLUDE THE RIM AND INVERT ELEVATIONS OF MANHOLES, CLEAN-OUTS AND OTHER FEATURES AS REQUIRED. GPS COORDINATES WILL UTILIZE THE NORTH AMERICAN DATUM (NAD) 1983, STATE PLANE ARIZONA WEST ZONE IN MOHAVE COUNTY. ALL UNITS WILL BE IN US FEET. PRIOR TO COMPLETION OF THE WORK, PROVIDE THE RED-LINED DRAWINGS TO THE ENGINEER OF RECORD FOR PREPARATION OF THE PROJECT RECORD DRAWINGS. FINAL COMPLETION WILL NOT BE MADE UNTIL THE ENGINEER OF RECORD RECEIVES SATISFACTORY, RED-LINED DRAWINGS.
4. CONTRACTOR SHALL NOTIFY THE CITY'S CONSTRUCTION INSPECTIONS DEPARTMENT 48 HOURS IN ADVANCE OF ANY CONSTRUCTION. USE THE CONTACT LIST IN THE CITY'S DEVELOPER GUIDE TO SCHEDULE INSPECTION (THE CITY'S GENERAL PHONE NUMBER IS 928-763-9400). WHEN APPOINTMENTS FOR INSPECTION ARE ARRANGED AT LEAST 48 HOURS IN ADVANCE, THE INSPECTION/TEST WILL BE CONDUCTED AS SCHEDULED, OTHERWISE THE REQUEST WILL BE SCHEDULED BASED ON AVAILABILITY.
5. CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING REQUIRED PERMITS AND INSPECTIONS FROM APPROPRIATE GOVERNMENTAL AGENCIES FOR ALL WORK IN PUBLIC RIGHTS-OF-WAY (CITY ENGINEERING DEPARTMENT, ETC.). INSPECTIONS BY THE CITY DO NOT RELIEVE CONTRACTOR OF RESPONSIBILITY TO OBTAIN REQUIRED INSPECTIONS FROM OTHER INTERESTED GOVERNMENTAL AGENCIES (BUILDING SAFETY, FIRE DISTRICT, ETC.).
6. ALL WORK AND TESTING SHALL BE IN ACCORDANCE WITH MARICOPA ASSOCIATION OF GOVERNMENTS (MAG) STANDARD SPECIFICATIONS AND DETAILS UNLESS OTHERWISE STATED ON PLANS.
7. ALL POTABLE WATERLINES AND FITTINGS SHALL HAVE NSF-PW SEAL. ALL MATERIALS AND PRODUCTS USED IN THE POTABLE WATER SYSTEM SHALL CONFORM TO NSF STANDARDS 60 AND 61 IN ACCORDANCE WITH AAC R18-4-213. ALL MATERIALS SHALL BE LEAD-FREE AS DEFINED IN AAC R18-4-101 AND R18-4-107.
8. PIPE SEPARATION: HORIZONTAL SEPARATION BETWEEN WATER AND SEWER LINES WILL BE A MINIMUM OF 6 FEET FROM OUTSIDE EDGE TO OUTSIDE EDGE OF PIPE. TWO FEET VERTICAL SEPARATION IS REQUIRED BETWEEN WATER LINES, STORM DRAINS, AND DRY UTILITIES.
9. VERTICAL AND HORIZONTAL SEPARATION OF PIPES AND PIPE CROSSINGS OF VARYING DEGREES OF WATER QUALITY SHALL BE IN ACCORDANCE WITH STATE & LOCAL GOVERNMENT REQUIREMENTS.
10. CONCRETE ENCASEMENT: ALL WATER AND SEWER ENCASEMENTS SHALL FOLLOW MAG STD. DET.404-1. WHEN A WATER LINE MUST BE CONSTRUCTED UNDER A SEWER OR RECLAIMED WATER LINE, THE WATER LINE SHALL BE A MINIMUM OF 2' BELOW THE SEWER OR RECLAIMED WATER LINE AND EXTRA PROTECTION IS REQUIRED. PROTECTION FOR SEWER FORCE MAINS SHALL BE CONSTRUCTED WITH MECHANICAL JOINT OR RESTRAINED JOINT DUCTILE IRON PIPE FOR A DISTANCE OF TEN FEET ON BOTH SIDES OF THE WATER MAIN. A FULL LENGTH OF DIP WILL BE CENTERED OVER/UNDER THE WATER MAIN. WHEN DIP IS NOT USED FOR THE SEWER MAIN, BOTH THE WATER AND SEWER LINES WILL BE ENCASED IN CONCRETE FOR A LENGTH OF 10' ON BOTH SIDES OF THE CROSSING, PER MAG STD. DET. 404-2. REFER TO MAG STD. DET. 404-1 REGARDING FORCE MAINS. ALL ENCASEMENTS REQUIRE REBAR AND CLASS "C" CONCRETE. DIP WILL NOT BE ALLOWED IN GRAVITY SEWER MAINS.
11. VALVE SUPPORTS SHALL BE IN ACCORDANCE WITH MAG STD. DET. 301.
12. VALVE BOXES SHALL BE IN ACCORDANCE WITH MAG STD. DET. 391-1, TYPE C.
13. CONCRETE THRUST BLOCKS SHALL BE IN ACCORDANCE WITH MAG STD. DET. 380. THRUST BLOCKS ARE NOT ALLOWED IN RIGHT-OF-WAYS (ROWS). RESTRAINED JOINTS PER MAG STD. DET. 303-1 & 2 SHALL BE USED IN ROWS IN PLACE OF CONCRETE THRUST BLOCKS. 90-DEGREE FITTINGS ARE NOT ALLOWED IN ROW'S BUT MAY BE USED IN OTHER AREAS AS APPROVED BY THE CITY.
14. FIELD LOCK GASKETS ARE NOT ALLOWED.
15. DEAD END WATER MAINS SHALL HAVE A FIRE HYDRANT OR BLOW OFF IN ACCORDANCE WITH THE CITY'S STD. DET. 390-1 BUT NOT BOTH.
16. ANY SHUTDOWN TO THE CITY'S SYSTEM REQUIRES A MINIMUM OF 48 HOURS' NOTICE TO THE CITY'S INSPECTOR. SHUTDOWNS WILL ONLY BE ALLOWED ON TUESDAYS, WEDNESDAYS, AND THURSDAYS. TIME RESTRICTIONS MAY ALSO APPLY.
17. SOLID SLEEVES ARE NOT ALLOWED AS A REMEDY TO A FAILED PRESSURE TEST ON A NEW LINE.

Date:
November 2022



2355 Trane Rd.
Bullhead City, AZ. 86442
(928) 763-9400

General Notes

Detail No.
100-1

BACKFLOW PREVENTION GENERAL NOTES:

1. BACKFLOW PREVENTION DEVICES: ALL LANDSCAPE AND COMMERCIAL WATER SERVICES REQUIRE BACKFLOW PREVENTION DEVICES, MEETING THE REQUIREMENTS OF THE CITY. BACKFLOW DEVICES SHALL BE IN PLACE PRIOR TO METERS BEING SET. TESTING OF THE BACKFLOW DEVICES MAY BE COMPLETED AFTER THE INSTALLATION OF THE METER.
2. CONTACT UTILITY WATER QUALITY SPECIALIST (BACKFLOW PREVENTION) AT WATERQUALITYSPECIALIST@BULLHEADCITYAZ.GOV OR (928) 763-9400 FOR APPROVED ASSEMBLY LIST, INSPECTIONS, AND TESTING.
3. USE ONLY A UNIVERSITY OF SOUTHERN CALIFORNIA FOUNDATION FOR CROSS-CONNECTION CONTROL AND HYDRAULIC RESEARCH (USC) APPROVED ASSEMBLY.
4. BACKFLOW PREVENTION ASSEMBLIES SHALL HAVE A CERTIFICATE OF APPROVAL ISSUED BY USC-FCCCHR, OR OTHER APPROVED THIRD-PARTY CERTIFYING ENTITY UNRELATED TO THE PRODUCT MANUFACTURER OR VENDOR, IN ACCORDANCE WITH AAC R18-4-215. ALL ASSEMBLIES SHALL BE INSTALLED IN ACCORDANCE WITH THE CITY STANDARD DETAILS. NO ASSEMBLY SHALL BE PLACED IN SERVICE UNLESS IT HAS BEEN TESTED AND IS FUNCTIONING AS DESIGNED. A CERTIFIED TEST SHALL BE SUBMITTED TO THE CITY WATER QUALITY SPECIALIST (BACKFLOW PREVENTION) AT WATERQUALITYSPECIALIST@BULLHEADCITYAZ.GOV FOR APPROVAL. APPROVAL OF WATER FACILITIES WILL NOT BE GRANTED PRIOR TO BACKFLOW PREVENTION APPROVAL.
5. LOCATE ASSEMBLY WITHIN 36 INCHES OF WATER METER UNLESS OTHERWISE DIRECTED BY UTILITY'S WATER QUALITY SPECIALIST.
6. ALL PRESSURE VACUUM BREAKER ASSEMBLIES SHALL BE INSTALLED A MINIMUM OF 12 INCHES ABOVE ALL DOWNSTREAM PIPING AND OUTLETS.
7. USE LEAD FREE SOLDER ONLY.
8. CLEARANCES:
 - a) WALL OR STRUCTURE: MINIMUM 36"
 - b) ABOVE FINISH GRADE: MINIMUM 12" - MAXIMUM 24"

FIRE LINES:

1. PROVIDE USAGE-TAMPER SWITCHES & WIRING TO ALARM SYSTEM WHERE REQUIRED BY FIRE DEPARTMENT. NOTE: FIRE LINES LONGER THAN 75' REQUIRE BACKFLOW ASSEMBLY AT PROPERTY LINE OR THE CITY APPROVED LOCATION. SUCH FIRE LINES SHALL HAVE BACKFLOW PREVENTION ASSEMBLIES WITH A METERED BYPASS.

APPROVAL PROCESS FOR BACKFLOW PREVENTION ASSEMBLIES:

1. ALL NEW BACKFLOW PREVENTION ASSEMBLIES (BPAS) SHALL BE TESTED AND FUNCTIONING AS DESIGNED PRIOR TO APPROVAL IN ACCORDANCE WITH AAC R18-4-215.
2. DEVELOPER/CONTRACTOR/CUSTOMER SHALL FORWARD PASSING TEST REPORT WITH REQUIRED BPA INFORMATION TO THE CITY WATER QUALITY SPECIALIST, MARKED PENDING APPROVAL.
3. THE CITY WATER QUALITY SPECIALIST (BACKFLOW PREVENTION) WILL NOTIFY DEVELOPER SERVICES THAT AN APPROVED BACKFLOW PREVENTION ASSEMBLY TEST HAS BEEN RECEIVED, AND THIS PROJECT IS READY FOR AN APPROVAL INSPECTION.
4. AN ENGINEERING INSPECTOR THEN SCHEDULES AN APPROVAL INSPECTION WITH THE DEVELOPER/CONTRACTOR/CUSTOMER.

APPROVAL PROCESS FOR BACKFLOW PREVENTION ASSEMBLIES (CONTINUED):

5. THE CITY ENGINEERING INSPECTOR CONFIRMS PRESENCE OF BPA AND CONFIRMS PROPER INSTALLATION GUIDELINES HAVE BEEN FOLLOWED.
6. BACKFLOW PREVENTION APPROVAL PROCESS COMPLETE.
7. APPROVAL MAY BE GRANTED PROVIDED ALL OTHER REQUIRED OPERATION INSPECTION ITEMS HAVE NO DEFICIENCIES.

WATER SYSTEM MATERIAL SPECIFICATION: DISTRIBUTION PIPING:

1. C900 POLYVINYL CHLORIDE (PVC): IN ACCORDANCE WITH AMERICAN WATER WORKS ASSOCIATION (AWWA) STANDARD C900 FOR PIPE DIAMETERS THRU 12": DR=14, ELASTOMERIC GASKET, BELL-END, OR RESTRAINED JOINTS.
2. DUCTILE IRON PIPE, MORTAR-LINED (DIP) SHALL BE USED FOR PIPE DIAMETERS GREATER THAN 12".
3. DUCTILE IRON PIPE, MORTAR-LINED (DIP): IN ACCORDANCE AWWA STANDARDS C150 & C151 MORTAR LINING SHALL BE IN ACCORDANCE WITH AWWA C104. ALL DUCTILE IRON PIPE SHALL BE POLYETHYLENE WRAPPED FOR THE ENTIRE LENGTH IN ACCORDANCE WITH MAG SEC. 610.6. 6" THROUGH 14" DIAMETER MUST BE PRESSURE CLASS 350 MINIMUM: 16" THROUGH 24" MUST BE PRESSURE CLASS 250 MINIMUM, 30" AND LARGER MUST BE PRESSURE CLASS 150 MINIMUM.
4. CONCRETE PRESSURE PIPE, STEEL CYLINDER TYPE: IN ACCORDANCE WITH AWWA STANDARD C303 AND MAG SEC. 758 FOR PIPE DIAMETERS GREATER THAN 24". MANUFACTURER'S TECHNICAL DATA SHEETS SHALL BE SUBMITTED TO THE CITY FOR REVIEW AND APPROVAL. SERVICE TAPS ARE NOT PERMITTED ON CONCRETE PRESSURE PIPE.

DISTRIBUTION FITTING:

1. PUSH-ON OR MECHANICAL JOINT IN ACCORDANCE WITH AWWA C111 AND MAG SEC. 750.4. JOINT RESTRAINTS, WHERE REQUIRED, SHALL BE MECHANICAL RESTRAINED JOINT WITH PRODUCT APPROVED BY THE CITY OR FLANGED JOINT FOR LENGTHS IN ACCORDANCE WITH MAG STD. DET.303-2. FIELD LOCK GASKETS ARE NOT ALLOWED.

WATER LINE VALVE:

1. MUELLER, CLOW, WATEROUS, OR M&H RESILIENT WEDGE SEATED GATE VALVE IN ACCORDANCE WITH MAG SEC. 630.3 WITH VALVE BOX AND COVER IN ACCORDANCE WITH MAG STD. DET. 391-1 TYPE "C" MINIMUM LID WEIGHT OF 16LBS. VALVES INSTALLED OUTSIDE THE PAVEMENT OR IN THE FLOW LINE OF A ROADWAY SHALL HAVE A DEBRIS CAP INSTALLED PER MAG STD. DET. 392. BUTTERFLY VALVES ARE NOT ALLOWED WITHOUT THE CITY APPROVAL.
2. AIR/VACUUM RELEASE VALVES ARE REQUIRED AT ALL HIGHPOINTS AND AT VERTICAL REALIGNMENTS OF THE WATER LINE.

CONTROL VALVES:

1. THE EXTERNAL TUBING NEEDS TO BE STAINLESS STEEL, NOT COPPER. CLA-VAL IS THE ONLY ACCEPTABLE MANUFACTURER.

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2355 Trane Rd.
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BACKFLOW PREVENTION GENERAL NOTES BACKFLOW
PREVENTION APPROVAL PROCESS WATER SYSTEM
MATERIAL SPECIFICATION

Detail No.
100-2

WATER SYSTEM MATERIAL SPECIFICATION (CONTINUED):

TAPPING SLEEVE & VALVE:

1. STAINLESS STEEL - APPROVED MANUFACTURERS FORD, ROMAC, AND SMITH-BLAIR OR APPROVED EQUAL.
2. THE CITY MAY REQUIRE A BYPASS ON VALVES ON 12" OR LARGER PIPE. CONTACT THE CITY FOR APPROVAL ON A CASE-BY-CASE BASIS.

WATER SERVICE:

1. FOR TAPS, PIPE, AND FITTINGS FOR WATER SERVICES THROUGH 2". THE SIZE SHALL BE IN ACCORDANCE WITH THE CITY'S STD. DET. 342-2. REQUESTS FOR LARGER SIZES MUST BE SUBMITTED FOR REVIEW AND APPROVAL. MINIMUM WATER SERVICE LINE SIZE DIAMETER SHALL BE 1".
2. APPROVED SADDLES, ALL IRON PIPE THREAD TAP AND BRONZE STRAP: FOR PVC, JONES J-995, JONES J-996, MUELLER H-13000 SERIES FORD STYLE S90; FOR DUCTILE IRON PIPE, FORD 202B, JONES J-979, MUELLER BR2B SERIES, MUELLER BR2S SERIES.
3. ALL BRASS FITTINGS SHALL BE MANUFACTURED BY FORD, MUELLER, OR JAMES JONES. ALL ANGLE METER STOPS SHALL INCLUDE LOCKING WINGS.
4. ALL CORP STOPS AND ANGLE VALVES SHALL BE BALL STYLE. ALL FITTINGS SHALL BE "PAC-JOINT" TYPE.
5. ALL BRASS SHALL BE LEAD FREE.
6. CUSTOMER IS REQUIRED TO INSTALL AND MAINTAIN A SHUT OFF VALVE AND CHECK VALVE WITHIN 18" OF METER.
7. SERVICE LINES SHALL BE ONE (1) PIECE WITH NO SPLICES FROM MAIN TO METER.

FIRE HYDRANTS:

1. ALL HYDRANTS SHALL BE DRY BARREL AND BE MANUFACTURED BY MUELLER, OR CLOW 5 1/4" MAIN VALVE OPENING .
2. ALL HYDRANTS SHALL BE EQUIPPED WITH NATIONAL STANDARD HOSE THREADS.
3. HYDRANT COATING: "SAFETY YELLOW". COMPLETE HYDRANT PREPARATION PRIOR TO INSPECTION FOR PAINTING. INSPECTION IS ALSO REQUIRED AFTER PAINTING FOR CONTRACTOR TO RECEIVE FINAL ACCEPTANCE.
4. PUMPER NOZZLE SHALL BE ORIENTED TO PROVIDE BEST ACCESSIBILITY FOR FIRE TRUCK. ALL HYDRANT PORTS SHALL BE LUBRICATED WITH A FOOD-GRADE LUBRICANT, OR NSF 60 PRODUCT.
5. DEAD END WATER MAINS SHALL HAVE A FIRE HYDRANT OR A BLOW OFF IN ACCORDANCE WITH CITY STD. DET. 390-1, BUT NOT BOTH.
6. FIRE HYDRANTS SHALL BE IN ACCORDANCE WITH THE CITY STD. DET. 360-1.

DIP SECTIONS:

1. ALL DIP SECTIONS SHALL BE CONSTRUCTED OF RESTRAINED DUCTILE IRON PIPE (DIP) PER THE CITY'S STD. DET. 370-1. ALL DIP SECTIONS SHALL BE JOINT RESTRAINED DIP WITH POLYETHYLENE WRAP FOR THE ENTIRE LENGTH PER MAG SEC. 610.6. JOINT RESTRAINED LENGTHS WILL FOLLOW MAG STD. DET. 303-1 AND 303-2. ANCHOR BLOCKS/THRUST BLOCKS MUST BE INSTALLED FOR VERTICAL BENDS PER MAG STD. DET. 381.
2. AIR/VACUUM RELEASE VALVES ARE REQUIRED AT HIGHPOINTS AND AT VERTICAL REALIGNMENTS OF THE WATER LINE.

LOCATION MARKERS:

1. SEE THE CITY'S STD. DET. 350-1. LOCATING BALLS MANUFACTURED BY OMNI, 3M OR APPROVED EQUAL MUST BE PLACED AT WATER MAIN ABOVE WATER SERVICE LINE.
2. LOCATING BALLS SHOULD BE PLACED NO DEEPER THAN 4' BELOW GROUND SURFACE.
3. LOCATED EVERY 500' ON TRANSMISSION MAINS.
4. LOCATED ON EVERY JOINT ON CURVILINEAR ALIGNMENTS.

MARKING TAPE:

1. SEE THE CITY'S STD. DET. 350-1. DETECTABLE MARKING TAPE SHALL BE USED FOR ALL WATER LINES AND SERVICES.

MARKING POSTS:

1. CARSONITE MARKING POSTS ARE REQUIRED FOR ALL WATER VALVES LOCATED OUTSIDE OF ROW AND OUTSIDE OF PAVED AREAS.

OTHER ITEMS:

1. IN ACCORDANCE WITH MAG SPECIFICATIONS.
2. WHERE CITY STD. ARE SPECIFIED, THOSE STDS SUPERSEDE MAG STDS REGARDLESS OF PROJECT LOCATION.
3. GATE VALVES SHALL BE RESILIENT SEATED IN ACCORDANCE WITH THE CITY'S WATER SYSTEM MATERIAL SPECIFICATIONS AND MAG SEC. 630.3.
4. WATER VALVE DEBRIS CAPS: DEBRIS CAPS ARE REQUIRED WHEN WATER VALVES ARE CONSTRUCTED WITHIN 2 FEET OF THE EDGE OF GUTTER, IN AREAS THAT ARE UNPAVED, AND AREAS PRONE TO FLOODING. VALVES SHOULD BE SET 2-TENTHS ABOVE FINISH GRADE IN ALL UNPAVED AREAS. CONCRETE COLLAR WITH CARSONITE MARKER IS REQUIRED ON ALL VALVE LOCATIONS OUTSIDE OF RIGHT-OF-WAY.
5. WATER PRESSURE TESTING: ALL WATER LINES WILL BE TESTED PER MAG SEC. 610.15. MODIFICATIONS TO THESE SPECIFICATIONS INCLUDE THE TESTING TO BE AT A MINIMUM OF 200 PSI, HIGHER TEST PRESSURES MAY BE REQUIRED IN CERTAIN CIRCUMSTANCES, AND LOSS/LEAKAGE CALCULATIONS SHALL BE BASED UPON A MAXIMUM OF 1500-FEET, STARTING WITH THE SMALLEST DIAMETER PIPE.
6. WATER SERVICES 2 INCHES AND SMALLER SHALL BE IN ACCORDANCE WITH THE CITY STD. DET. 342-2.

TRANSMISSION LINES:

1. TRANSMISSIONS LINES DEFINED AS FORCE MAIN, RECLAIMED LINE, RAW OR POTABLE WATER LINES THAT DO NOT HAVE SERVICES AND RUN FOR LONG LENGTHS.
2. ISOLATION VALVES MAY BE SPACED AT FURTHER THAN STANDARD DISTRIBUTION LINE INTERVALS AND ARE REQUIRED AT WASH CROSSINGS. ALL VALVES OUTSIDE ROW AND PAVEMENT SHALL HAVE CARSONITE MARKERS.
3. ALL CHECK VALVES SHALL BE PLACED IN A VAULT AND APPROVED BY CITY ENGINEER.
4. MARKER BALLS AND DETECTABLE TAPE OF THE APPROPRIATE COLOR SHALL BE PLACED EVERY 500' AND AT ANY BEND.
 - BLUE: POTABLE / DRINKING WATER
 - PURPLE: RECLAIMED
 - GREEN: SEWER
 - YELLOW: RAW WATER

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WATER SYSTEM MATERIAL SPECIFICATION

Detail No.
100-3

SEWER SYSTEM MATERIAL SPECIFICATION

COLLECTION MAINS:

1. SEWER MAINS SHALL BE SDR35 PVC SEWER PIPE AND SHALL BE INSTALLED IN ACCORDANCE WITH MAG SPECIFICATIONS, PIPE SHALL MEET ASTM D-3034, AND ASTM F-679 STD.

SEWER SERVICE:

1. SEWER SERVICE LINES SHALL BE SDR35 PVC SEWER PIPE AND SHALL BE INSTALLED IN ACCORDANCE WITH MAG SPECIFICATIONS PIPE MATERIAL SHALL MEET ASTM D-3034 STD.

MANHOLES:

1. MANHOLES SHALL BE INSTALLED IN ACCORDANCE WITH MAG SPECIFICATIONS, EXCEPT THAT NO STEPS SHALL BE INSTALLED IN ANY MANHOLES.
 - STANDARD CONCRETE MANHOLE: SEWER MAIN 8" - 10"
 - ARMOROCK POLYMER CONCRETE MANHOLE OR APPROVED EQUIVALENT: 12" AND LARGER
 - PIPES OVER 30" MUST BE APPROVED BY THE CITY

MANHOLE COVER:

1. MANHOLE COVERS FOR SEWER LINES 10" AND SMALLER SHALL HAVE A 24" FRAME AND COVER, SEWER LINES 12" AND GREATER SHALL HAVE A 30" FRAME AND COVER. LIDS AND FRAMES SHALL BE PURCHASED THROUGH BULLHEAD CITY.
2. POLYMER MANHOLES WILL REQUIRE CORROSION RESISTANT GRADE RINGS
3. COMPOSITE LIDS AND FRAMES SHALL BE PURCHASED THROUGH BULLHEAD CITY.

ALL OTHER ITEMS:

1. IN ACCORDANCE WITH MAG STD.

FORCE MAINS:

1. PVC PRESSURE PIPE MANUFACTURED IN ACCORDANCE WITH AWWA C900 OR C905 OR US PIPE PROTECTO 401 LINED DUCTILE IRON PIPE AND FITTINGS MIN. PRESSURE CLASS 150. ALL DUCTILE IRON PIPE SHALL BE POLYETHYLENE WRAPPED FOR THE ENTIRE LENGTH IN ACCORDANCE WITH MAG SEC. 610.6. ALL CUT ENDS MUST BE RECOATED PER MANUFACTURERS SPECIFICATIONS.
2. ALL VALVES ON FORCE MAINS SHALL BE PLUG VALVES.
3. AIR/VACUUM RELEASE VALVES ARE REQUIRED AT ALL HIGHPOINTS AND AT VERTICAL REALIGNMENTS OF THE SEWER FORCE MAIN.

LOCATION MARKERS:

1. SEE THE CITY STD. DET. 350-1. LOCATING BALLS MANUFACTURED BY OMNI, 3M OR APPROVED EQUAL SHALL BE PLACED AT PROPERTY LINE ABOVE SEWER SERVICES AT DEPTHS NO GREATER THAN 4'.

MARKING TAPE:

1. SEE THE CITY'S STD. DET. 350-1. DETECTABLE MARKING TAPE MUST BE USED FOR ALL SEWER LINES AND SERVICES.

MARKING POSTS:

1. CARSONITE MARKING POSTS ARE REQUIRED FOR ALL SEWER MANHOLES, MAINS, AND FORCE MAINS OUTSIDE OF ROW AND OUTSIDE OF PAVED AREAS AND ARE REQUIRED FOR ALL FORCE MAINS.

ALL OTHER ITEMS:

1. DIP WILL NOT BE ALLOWED IN GRAVITY SEWER MAINS.
2. IN ACCORDANCE WITH MAG SPECIFICATIONS
3. WHERE CITY STANDARDS ARE SPECIFIED, THOSE STANDARDS SUPERSEDE MAG STANDARDS REGARDLESS OF PROJECT LOCATION.
4. ALL DIP SECTIONS SHALL BE CONSTRUCTED OF RESTRAINED DUCTILE IRON PIPE (DIP) PER THE CITY'S STD. DET. 370-1. ALL DIP SECTIONS SHALL BE PROTECTO 401 LINED DUCTILE IRON PIPE, JOINT RESTRAINED DIP WITH POLYETHYLENE WRAP FOR THE ENTIRE LENGTH PER MAG SEC. 610.6. JOINT RESTRAINED LENGTHS WILL FOLLOW MAG STD. DET. 303-1 AND 303-2. ANCHOR BLOCKS/THRUST BLOCKS MUST BE INSTALLED FOR VERTICAL BENDS PER MAG STD. DET. 381. AIR/VACUUM RELEASE VALVES ARE REQUIRED AT ALL HIGHPOINTS AND AT VERTICAL REALIGNMENTS OF THE FORCE MAIN.
5. LOCATING BALLS SHALL BE PLACED EVERY 500 FEET AND ABOVE EVERY BEND ON ALL FORCE MAINS.
6. THE CONTRACTOR IS REQUIRED TO UNIFORM SLOPE TEST ALL SEWER LINES BY VIDEO AND VACUUM TEST ALL MANHOLES IN ACCORDANCE WITH AAC R18-9-E301. DEFLECTION TESTING SHALL BE PERFORMED PER MAG SEC. 615.11. TESTING DOCUMENTATION AND FLASH DRIVES SHALL BE SUBMITTED TO THE CITY INSPECTOR FOR APPROVAL PRIOR TO ACCEPTANCE. ALL REQUIRED REPAIRS ARE THE RESPONSIBILITY OF THE CONTRACTOR AND MUST BE COORDINATED WITH THE CITY INSPECTORS.
7. SEWER TESTING: ALL SEWER MAINS AND LATERALS SHALL BE PRESSURE TESTED AND ALL MAINS VIDEO TESTED. ALL SEWER MAINS SHALL ALSO BE MANDRILL TESTED ACCORDING TO MAG STD. 611.4C. THE MAXIMUM ALLOWABLE SEWER LINE SAG IS 0.5 INCHES.
8. WHEN USING MECHANICAL PLUGS TO TEST SEWER MAINS/MANHOLES CONTRACTOR MUST FOLLOW THE CITY STD. DET. 420.

Date:
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Bullhead City, AZ. 86442
(928) 763-9400

SEWER SYSTEM MATERIAL SPECIFICATION

Detail No.
100-4

RECLAIMED WATER SYSTEM MATERIAL SPECIFICATION

DISTRIBUTION PIPING:

1. C900 POLYVINYL CHLORIDE (PVC): MANUFACTURED IN ACCORDANCE WITH AMERICAN WATER WORKS ASSOCIATION (AWWA) STANDARD C900 FOR PIPE DIAMETERS UP TO 12"; DR=14, ELASTOMERIC-GASKET BELL-END.
2. C900 POLYVINYL CHLORIDE (PVC): MANUFACTURED IN ACCORDANCE AWWA STANDARD C900 FOR PIPE DIAMETERS GREATER 12"; DR=14, ELASTOMERIC-GASKET BELL END.
3. DUCTILE IRON PIPE (DIP): MANUFACTURED IN ACCORDANCE WITH AWWA STANDARDS C150 & C151. MORTAR LINING SHALL BE IN ACCORDANCE WITH AWWA C104. ALL DUCTILE IRON PIPE SHALL BE POLYETHYLENE WRAPPED FOR THE ENTIRE LENGTH IN ACCORDANCE WITH MAG SEC. 610.6. 6" THROUGH 14" DIAMETER MUST BE PRESSURE CLASS 350 MINIMUM; 16" THROUGH 24" MUST BE PRESSURE CLASS 250 MINIMUM, 30" AND LARGER WILL BE DETERMINED ON A CASE-BY-CASE BASIS.
4. ALL PIPES SHALL BE APPROPRIATELY IDENTIFIED THROUGH INTEGRAL COLORING AND WORDING OF THE PIPE, STENCILING OF THE PIPE, OR PIPE SLEEVING (PIPE SOCKS) IN ACCORDANCE WITH MAG SEC. 616.

FITTINGS:

1. PUSH-ON OR MECHANICAL JOINT IN ACCORDANCE WITH MAG SEC. 750. JOINT RESTRAINTS, WHERE REQUIRED, SHALL BE MECHANICAL RESTRAINT JOINT WITH PRODUCT APPROVED BY THE UTILITY FOR LENGTHS IN ACCORDANCE WITH MAG STD. DET. 303-2.

VALVES:

1. MUELLER, CLOW, WATEROUS, OR M&H RESILIENT WEDGE SEATED GATE VALVE IN ACCORDANCE WITH MAG SEC. 630.3 WITH VALVE BOX AND COVER IN ACCORDANCE WITH MAG DETAIL 391-1 TYPE "C" MINIMUM LID WEIGHT OF 16LBS.
2. VALVE RISER PIPES SHALL BE PAINTED PURPLE (SEYMOUR SAFETY PURPLE) INSIDE AND OUT. DEBRIS CAPS WITH IDENTIFICATION TAG SHALL BE INSTALLED IN ACCORDANCE WITH MAG STD. DET. 392, MAG SEC. 616, AND THE CITY'S STD. DET. 600-1.
3. AIR/VACUUM RELEASE VALVES ARE REQUIRED AT HIGHPOINTS AND AT VERTICAL REALIGNMENTS OF THE WATER LINE.

SERVICES:

1. TAPS, PIPE, AND FITTINGS FOR WATER SERVICES 2" SIZE SHALL BE IN ACCORDANCE WITH THE CITY'S STD. DET. 610-1. LARGER SIZES TO BE SUBMITTED FOR APPROVAL. NO SERVICES SMALLER THAN 2" WILL BE APPROVED BY THE CITY.

TAPPING SLEEVE & VALVE:

1. STAINLESS STEEL - APPROVED MANUFACTURERS ARE FORD, ROMAC, AND SMITH-BLAIR OR APPROVED EQUAL.
2. THE CITY MAY REQUIRE A BYPASS ON VALVES ON 12" OR LARGER PIPE. CONTACT THE CITY FOR APPROVAL ON A CASE-BY-CASE BASIS.

RECLAIMED WATER SERVICE:

1. FOR TAPS, PIPE, AND FITTINGS FOR WATER SERVICES THROUGH 2", THE SIZE SHALL BE IN ACCORDANCE WITH THE CITY'S STD. DET. 342-2. REQUESTS FOR LARGER SIZES MUST BE SUBMITTED FOR REVIEW AND APPROVAL.
2. APPROVED SADDLES, ALL IRON PIPE THREAD TAP AND BRONZE STRAP: FOR PVC, JONES J-995, JONES J-996, MUELLER H-13000 SERIES; FOR DUCTILE IRON PIPE, FORD 202B, JONES J-979, MUELLER BR2B SERIES, MUELLER BR2S SERIES.
3. ALL BRASS FITTINGS MUST BE MANUFACTURED BY FORD, MUELLER, OR JAMES JONES. ALL ANGLE METER STOPS MUST INCLUDE LOCKING WINGS.
4. ALL CORP STOPS AND ANGLE VALVES MUST BE BALL STYLE. ALL FITTINGS MUST BE "PAC-JOINT" TYPE.
5. ALL BRASS MUST BE LEAD FREE.

DIP SECTIONS:

1. ALL DIP SECTIONS SHALL BE CONSTRUCTED OF RESTRAINED DUCTILE IRON PIPE (DIP) PER THE CITY'S STD. DET. 370-1. ALL DIP SECTIONS SHALL BE JOINT RESTRAINED DIP WITH POLYETHYLENE WRAP FOR THE ENTIRE LENGTH PER MAG SEC. 610.6. JOINT RESTRAINED LENGTHS WILL FOLLOW MAG STD. DET. 303-1 AND 303-2 AND APPROPRIATELY IDENTIFIED IN ACCORDANCE WITH MAG SEC. 616. ANCHOR BLOCKS/THRUST BLOCKS MUST BE INSTALLED FOR VERTICAL BENDS PER MAG STD. DET. 381. AIR/VACUUM RELEASE VALVES ARE REQUIRED AT ALL HIGHPOINTS AND AT VERTICAL REALIGNMENTS OF THE WATER LINE.

LOCATION MARKERS:

1. SEE THE CITY'S STD. DET. 350-1. LOCATING BALLS MANUFACTURED BY OMNI, 3M OR APPROVED EQUAL MUST BE PLACED AT WATER MAIN AND ABOVE WATER SERVICE LINE.
2. LOCATING BALLS SHALL BE PLACED NO DEEPER THAN 4' BELOW GROUND SURFACE.
3. LOCATED EVERY 500' ON TRANSMISSION MAINS.
4. LOCATE ON EVERY JOINT ON CURVILINEAR ALIGNMENTS.

MARKING TAPE:

1. WORDING PER MAG SEC. 616 TO BE USED ON ALL RECLAIMED WATER MAINS. THE DETECTABLE MARKING TAPE SHALL BE PRINTED "CAUTION: RECLAIMED WATER LINE" ON PURPLE TAPE FOR RECLAIMED WATER LINES.

MARKING POSTS:

1. CARSONITE MARKING POSTS ARE REQUIRED FOR ALL WATER VALVES LOCATED OUTSIDE OF ROW AND OUTSIDE OF PAVED AREAS.

Date:
November 2022



2355 Trane Rd.
Bullhead City, AZ. 86442
(928) 763-9400

RECLAIMED WATER SYSTEM MATERIAL
SPECIFICATION

Detail No.
100-5

RECLAIMED WATER SYSTEM MATERIAL SPECIFICATION

(CONTINUED):

TRANSMISSION LINES:

1. TRANSMISSIONS LINES DEFINED AS FORCE MAIN, RECLAIMED LINE, RAW OR POTABLE WATER LINES THAT DO NOT HAVE SERVICES AND RUN FOR LONG LENGTHS.
2. ISOLATION VALVES MAY BE SPACED AT FURTHER THAN STANDARD DISTRIBUTION LINE INTERVALS AND ARE REQUIRED AT WASH CROSSINGS. ALL VALVES OUTSIDE ROW AND PAVEMENT SHALL HAVE CARSONITE MARKERS.
3. ALL CHECK VALVES SHALL BE PLACED IN A VAULT AND APPROVED BY CITY ENGINEER.
4. MARKER BALLS AND DETECTABLE TAPE OF THE APPROPRIATE COLOR SHALL BE PLACED EVERY 500' AND AT ANY BEND.
 - PURPLE: RECLAIMED

ALL OTHER ITEMS:

1. IN ACCORDANCE WITH MAG SPECIFICATIONS.
2. WHERE CITY STANDARDS ARE SPECIFIED, THOSE STANDARDS SUPERSEDED MAG STANDARDS REGARDLESS OF PROJECT LOCATION.
3. GATE VALVES SHALL BE RESILIENT SEATED IN ACCORDANCE WITH THE CITY'S "WATER MATERIAL SPECIFICATIONS" AND MAG SEC. 630.3.
4. WATER VALVE DEBRIS CAPS: DEBRIS CAPS ARE REQUIRED WHEN WATER VALVES ARE CONSTRUCTED WITHIN 2 FEET OF THE EDGE OF GUTTER, IN AREAS THAT ARE UNPAVED, AND AREAS PRONE TO FLOODING. VALVES SHOULD BE SET 2-TENTHS ABOVE FINISH GRADE IN ALL UNPAVED AREAS.
5. CONCRETE COLLAR AND CARSONITE MARKER IS REQUIRED ON ALL VALVE LOCATIONS OUTSIDE OF RIGHT-OF-WAY.
6. HYDRANT COATING: "PURPLE". COMPLETE HYDRANT PREPARATION PRIOR TO INSPECTION FOR PAINTING. INSPECTION IS ALSO REQUIRED AFTER PAINTING FOR CONTRACTOR TO RECEIVE FINAL ACCEPTANCE.
7. PUMPER NOZZLE SHALL BE ORIENTED TO PROVIDE BEST ACCESSIBILITY FOR FIRE TRUCK.
8. ALL HYDRANT PORTS MUST BE LUBRICATED WITH A FOOD-GRADE LUBRICANT
9. FIRE HYDRANTS SHALL BE IN ACCORDANCE WITH THE CITY STD. DET. 360-1.
10. RECLAIMED WATERLINES SHALL BE INSTALLED IN ACCORDANCE WITH MAG SEC. 601 AND 610.
11. RECLAIMED LINES SHALL BE PRESSURE TESTED IN ACCORDANCE WITH MAG SEC 610.
12. DEAD END WATER MAINS SHALL HAVE A FIRE HYDRANT OR BLOW OFF IN ACCORDANCE WITH THE CITY'S STD. DET. 390-1.

Date:
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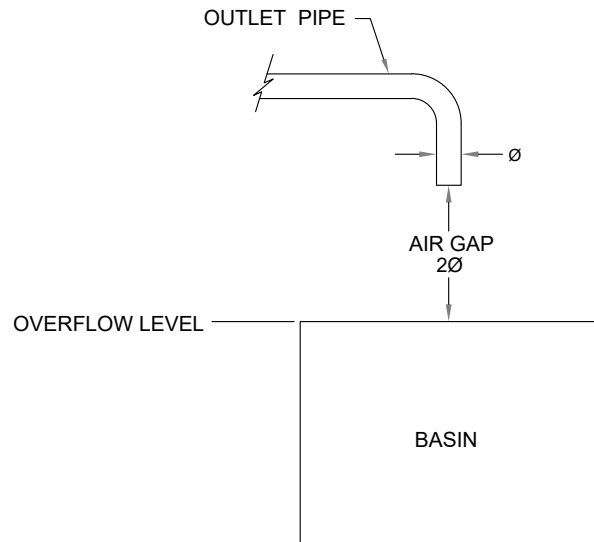


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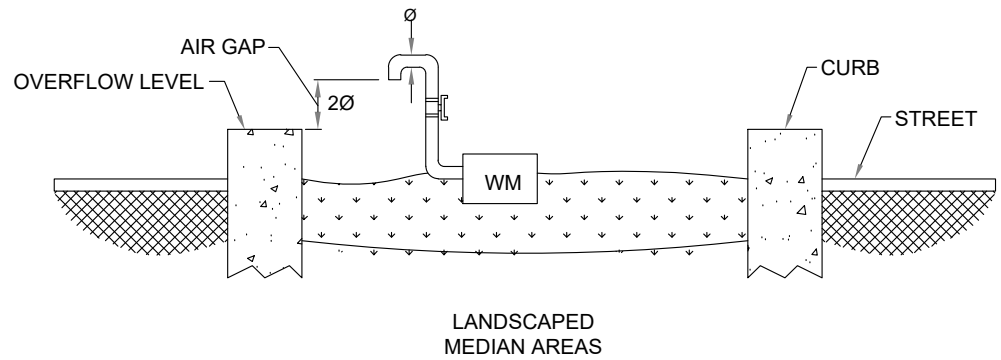
RECLAIMED WATER SYSTEM MATERIAL
SPECIFICATION

Detail No.
100-6

TYPICAL BASIN STYLE AIR GAP



TYPICAL FLOOD IRRIGATION STYLE AIR GAP



NOTES:

1. AN AIR GAP IS A PHYSICAL SEPARATION BETWEEN THE END OF A POSSIBLE WATER SUPPLY PIPE AND THE OVERFLOW LEVEL OF AN OPEN OR NON-PRESSURIZED BASIN.
2. AIR GAP DISTANCE TO BE MEASURED FROM BOTTOM OF PIPE TO OVERFLOW LEVEL
3. AIR GAP DISTANCE TO ALWAYS BE AT LEAST TWICE THE INLET PIPE DIAMETER, AND IN NO CASES LESS THAN 1".
4. CONTACT CITY WATER QUALITY SPECIALIST (BACKFLOW PREVENTION) @ 928-763-9400 FOR APPROVED ASSEMBLY LIST, INSPECTIONS AND TESTING.
5. SEE CITY STD. DET. 100-2 FOR MORE INFORMATION.

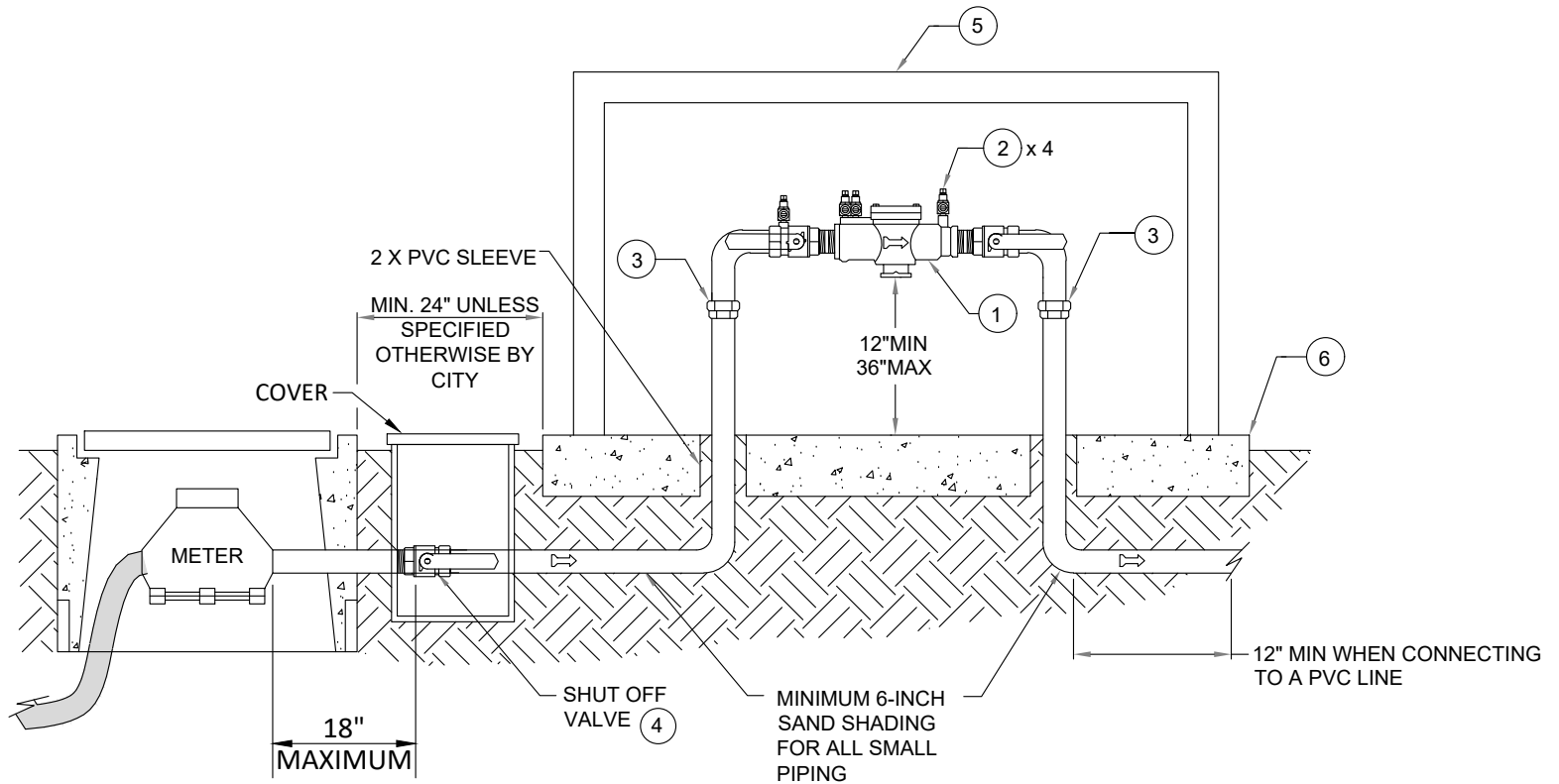
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AIR GAP

Detail No.
300-1



NOTES:

1. SEE CITY STD. DET. 100-2 FOR BACKFLOW PREVENTION GENERAL NOTES.
2. TO CONNECT TO GALVANIZED LINES, USE A BRASS FITTING. FOR PVC LINES USE A COPPER FEMALE ADAPTER X PVC MALE ADAPTER FITTING (OR A SCH 80 PVC NIPPLE).

MATERIAL LIST:

- ① USC APPROVED ASSEMBLY, (SUBMIT TO CITY FOR APPROVAL).
- ② TEST COCKS WITH BRASS PLUGS (4).
- ③ 3 PC BRASS UNION 12" MAX FROM ASSEMBLY
- ④ CUSTOMER SHUT OFF VALVE TO BE INSTALLED A MAXIMUM OF 18" FROM METER.
- ⑤ VANDALISM AND/OR FREEZE PROTECTION ENCLOSURE (OPTIONAL)
- ⑥ 4" CONCRETE SLAB W/PVC SLEEVES FOR ENCLOSURE (OPTIONAL)

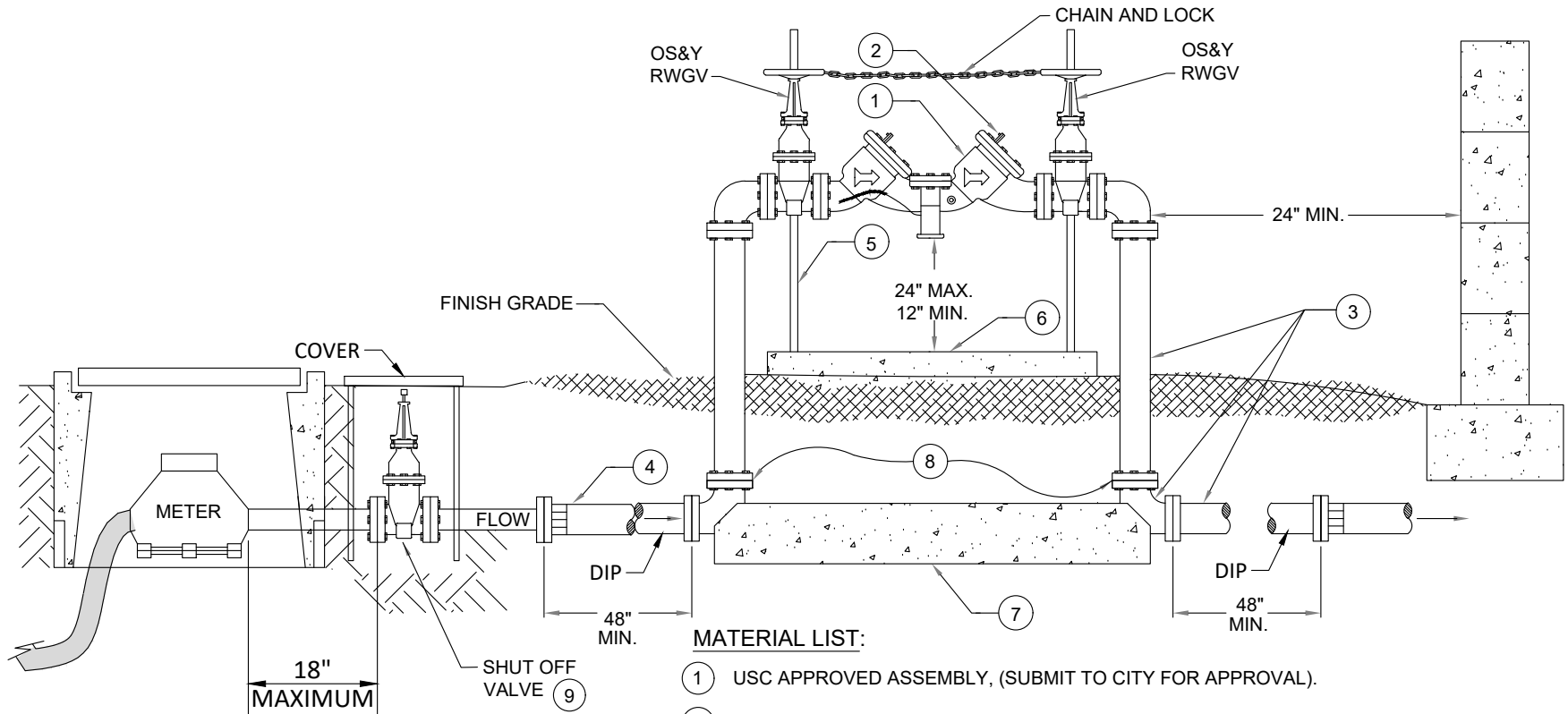
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1/2" - 2" REDUCED PRESSURE PRINCIPLE ASSEMBLY

Detail No.
310-1



NOTES:

1. SEE CITY STD. DET. 100-2 FOR BACKFLOW PREVENTION GENERAL NOTES.
2. BACKFILL UNDER ASSEMBLY SHALL BE 95% COMPACTION.
3. NO FLANGES SHALL BE PLACED UNDER BUILDING OR BLOCK WALLS.

MATERIAL LIST:

- ① USC APPROVED ASSEMBLY, (SUBMIT TO CITY FOR APPROVAL).
- ② TEST COCKS WITH BRASS PLUGS (4).
- ③ USE FLANGED DUCTILE IRON FOR ABOVE GROUND PIPE & FITTINGS. RESTRAINED JOINTS SHALL BE USED BELOW GROUND.
- ④ MEGALUG M.J. FITTING-FOR AC PIPE USE FCA COUPLING
- ⑤ ADJUSTABLE PIPE SUPPORTS (2)
- ⑥ CONCRETE SLAB MINIMUM 6" THICK X 24" WIDE
- ⑦ 3250 PSI CONCRETE THRUST BLOCK-12" WIDE X 12" THICK MINIMUM TO UNDISTURBED EARTH. USE 2-3/4" ZINC COATED, THREADED RODS, BOLTED TO FLANGES, BOTH SIDES TYPICAL; (4 TOTAL). NOTE: IN LIEU OF CONCRETE THRUST BLOCK, A 3"x3"x1/4" STEEL ANGLE, AS SHOWN IN CITY STD. DET. 345-2, MAY BE USED.
- ⑧ JOINT RESTRAINTS PER M.A.G. STD. DET. 303-1 AND 303-2
- ⑨ CUSTOMER SHUT OFF VALVE TO BE INSTALLED A MAXIMUM OF 18" FROM THE METER.
- ⑩ DIP TO BE USED ON APPLICATION 4" AND LARGER. IN APPLICATIONS SMALLER THAN 4" SCHEDULE 80 PVC MUST BE USED.

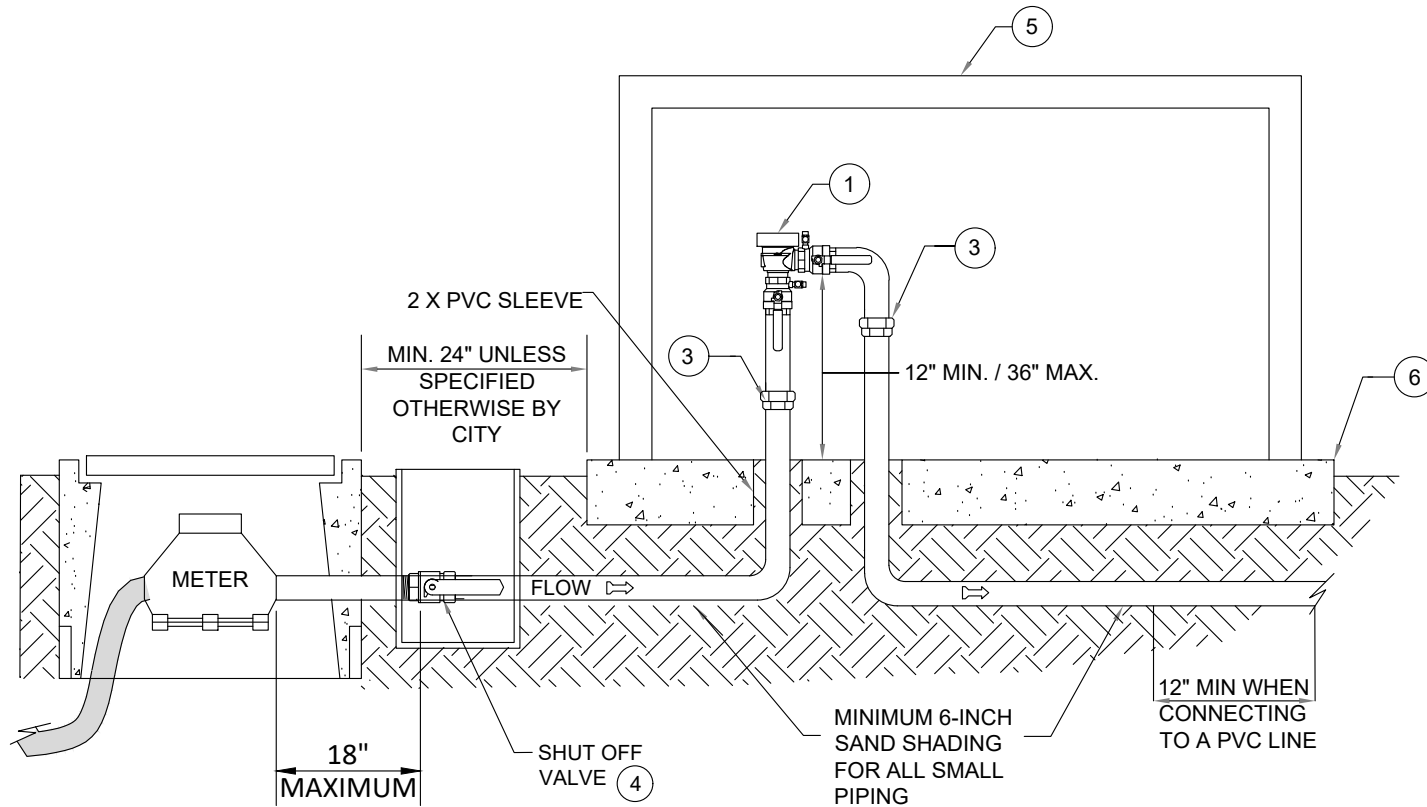
Date:
AUGUST 2022



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3" - 10" REDUCED PRESSURE PRINCIPLE ASSEMBLY
REDUCED PRESSURE PRINCIPLE EXCEPT FIRE LINE

Detail No.
310-2



MATERIAL LIST:

NOTES:

1. SEE CITY STD. DET. 100-2 FOR BACKFLOW PREVENTION GENERAL NOTES.
2. WHEN CONNECTING TO GALVANIZED WATER LINES, USE A BRASS FITTING. WHEN CONNECTING TO PVC WATER LINES USE A FEMALE ADAPTER x PVC MALE ADAPTER FITTING (OR A SCH 80 PVC NIPPLE)

- ① USC APPROVED ASSEMBLY, (SUBMIT TO CITY FOR APPROVAL).
- ② TEST COCKS WITH BRASS PLUGS (4).
- ③ 3 PC BRASS UNION 12" MAX FROM ASSEMBLY
- ④ CUSTOMER SHUT OFF VALVE TO BE INSTALLED A MAXIMUM OF 18" FROM METER
- ⑤ VANDALISM AND/OR FREEZE PROTECTION ENCLOSURE (OPTIONAL)
- ⑥ 4" CONCRETE SLAB W/PVC SLEEVES FOR ENCLOSURE (OPTIONAL)

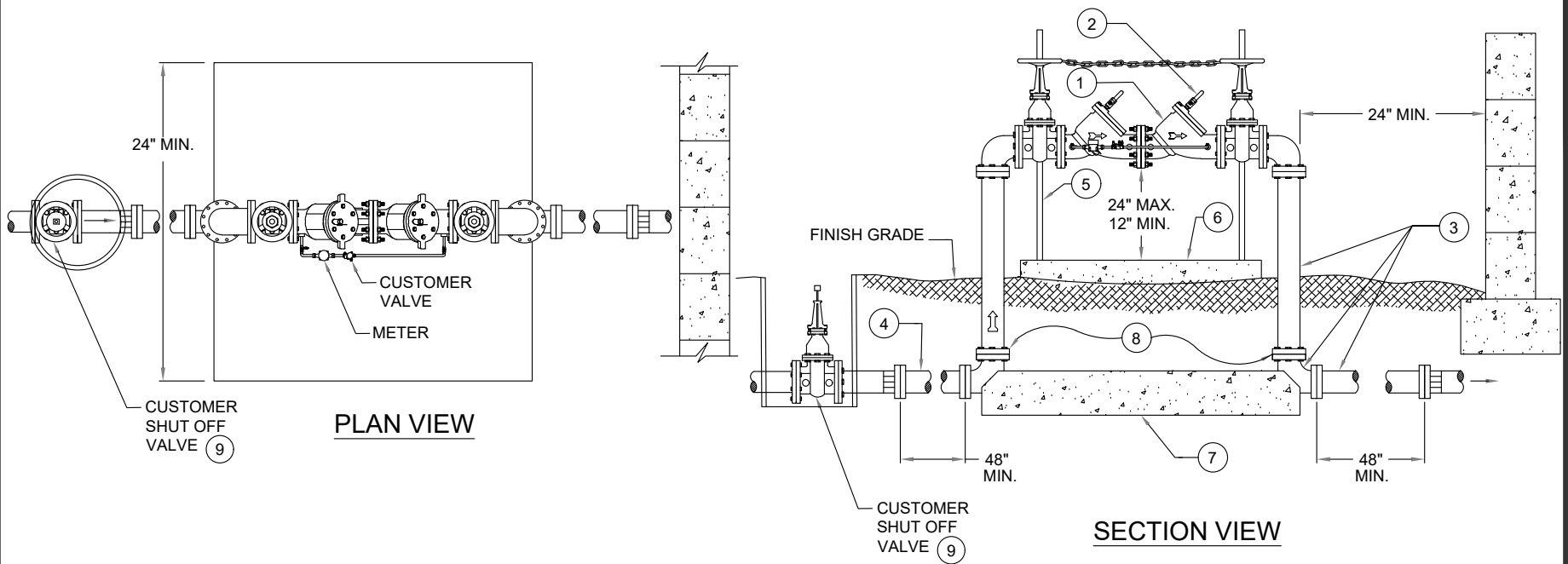
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1/2" - 2" PESSURE VACUUM BREAKER ASSEMBLY

Detail No.
310-3



PLAN VIEW

SECTION VIEW

NOTES:

1. SEE THE CITY STD DET 100-2 FOR BACKFLOW PREVENTION GENERAL APPROVAL NOTES.
2. BACKFILL UNDER ASSEMBLY SHALL BE 95% COMPACTION.
3. FOR FIRE LINE USAFE - TAMPER SWITCHES & WIRING MAY BE NEEDED BY FIRE DEPARTMENT OR DISTRICT.
4. FOR FIRE LINES, A REDUCED PRESSURE DETECTOR ASSEMBLY WITH METER IS REQUIRED. METER SHALL HAVE AN AMR REGISTER.
5. 2" BYPASS WITH METER REQUIRED.

MATERIAL LIST:

- ① USC APPROVED ASSEMBLY (SUBMIT TO THE CITY FOR APPROVAL)
- ② TEST COCKS WITH BRASS PLUGS (4)
- ③ USE FLANGED DUCTILE IRON FOR ABOVE GROUND PIPE & FITTINGS. RESTRAINED JOINTS SHALL BE USED BELOW GROUND.
- ④ MEGALUG M.J. FITTING - FOR AC PIPE USE FCA COUPLING
- ⑤ ADJUSTABLE PIPE SUPPORTS (2)
- ⑥ CONCRETE SLAB MINIMUM 6" THICK X 24" WIDE
- ⑦ CONCRETE THRUST BLOCK - 12" WIDE X 12" THICK MINIMUM TO UNDISTURBED EARTH. USE 2-3/4" ZINC COATED, THREADED RODS, BOLTED TO FLANGES, BOTH SIDES TYPICAL; (4 TOTAL). NOTE: IN LIEU OF CONCRETE THRUST BLOCK, A 3'X3'X1/4" STEEL ANGLE, AS SHOWN IN THE CITY STD 345-2, MAY BE USED.
- ⑧ JOINT RESTRAINTS PER MAG STD DET 303-1 AND 303-2
- ⑨ CUSTOMER SHUT OFF VALVE TO BE INCLUDED ON CUSTOMER'S PROPERTY

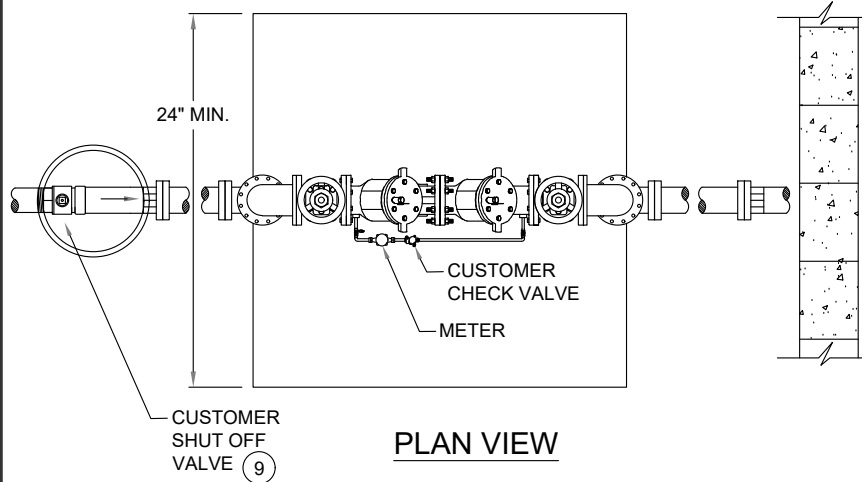
Date:
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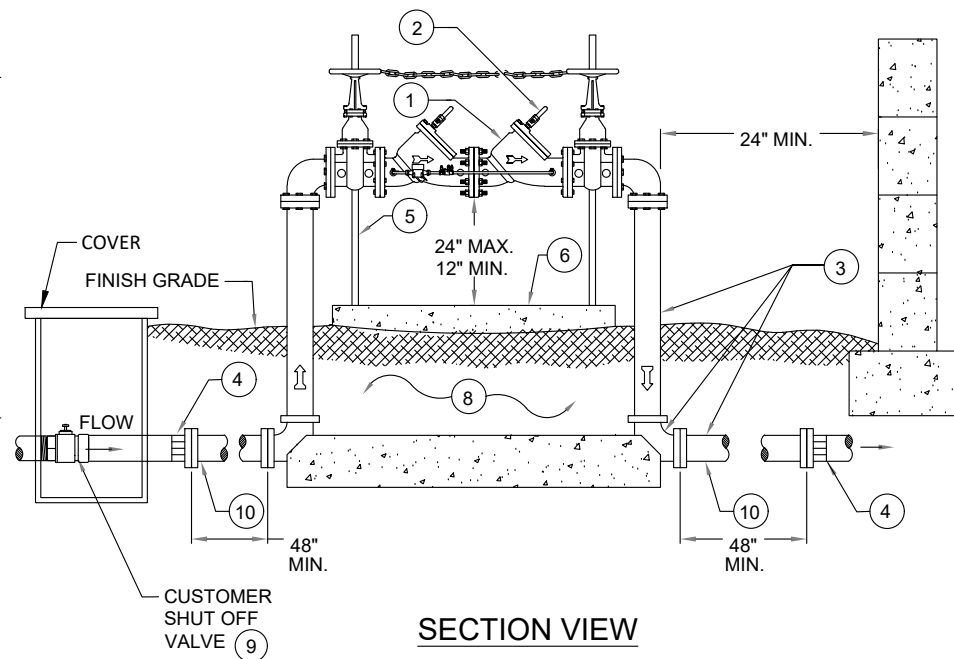
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3" - 10" REDUCED PRESSURE
PRINCIPLE ASSEMBLY RP2 FOR FIRE
LINE

Detail No.
310-4



PLAN VIEW



SECTION VIEW

NOTES:

1. SEE THE CITY STD DET 100-2 FOR BACKFLOW PREVENTION GENERAL APPROVAL NOTES.
2. BACKFILL UNDER ASSEMBLY SHALL BE 95% COMPACTION.
3. 2" BYPASS WITH METER REQUIRED.
4. IN LIEU OF CONCRETE THRUST BLOCK, A 3'X3'X1/4" STEEL ANGLE, AS SHOWN IN THE CITY STD 345-2, MAY BE USED.

MATERIAL LIST:

- 1 USC APPROVED ASSEMBLY (SUBMIT TO THE CITY FOR APPROVAL)
- 2 TEST COCKS WITH BRASS PLUGS (4)
- 3 USE FLANGED DUCTILE IRON FOR ABOVE GROUND PIPE & FITTINGS. RESTRAINED JOINTS SHALL BE USED BELOW GROUND.
- 4 MEGALUG M.J. FITTING - FOR AC PIPE USE FCA COUPLING
- 5 ADJUSTABLE PIPE SUPPORTS (2)
- 6 CONCRETE SLAB MINIMUM 6" THICK X 24" WIDE
- 7 3250 PSI CONCRETE THRUST BLOCK - 12" WIDE X 12" THICK MINIMUM TO UNDISTURBED EARTH. USE 2-3/4" ZINC COATED, THREADED RODS, BOLTED TO FLANGES, BOTH SIDES TYPICAL; (4 TOTAL).
- 8 JOINT RESTRAINTS PER MAG STD DET 303-1 AND 303-2
- 9 CUSTOMER SHUT OFF VALVE TO BE INCLUDED ON CUSTOMER'S PROPERTY
- 10 DIP TO BE USED ON APPLICATION 4" AND LARGER. IN APPLICATIONS SMALLER THAN 4" SCHEDULE 80 PVC MUST BE USED.

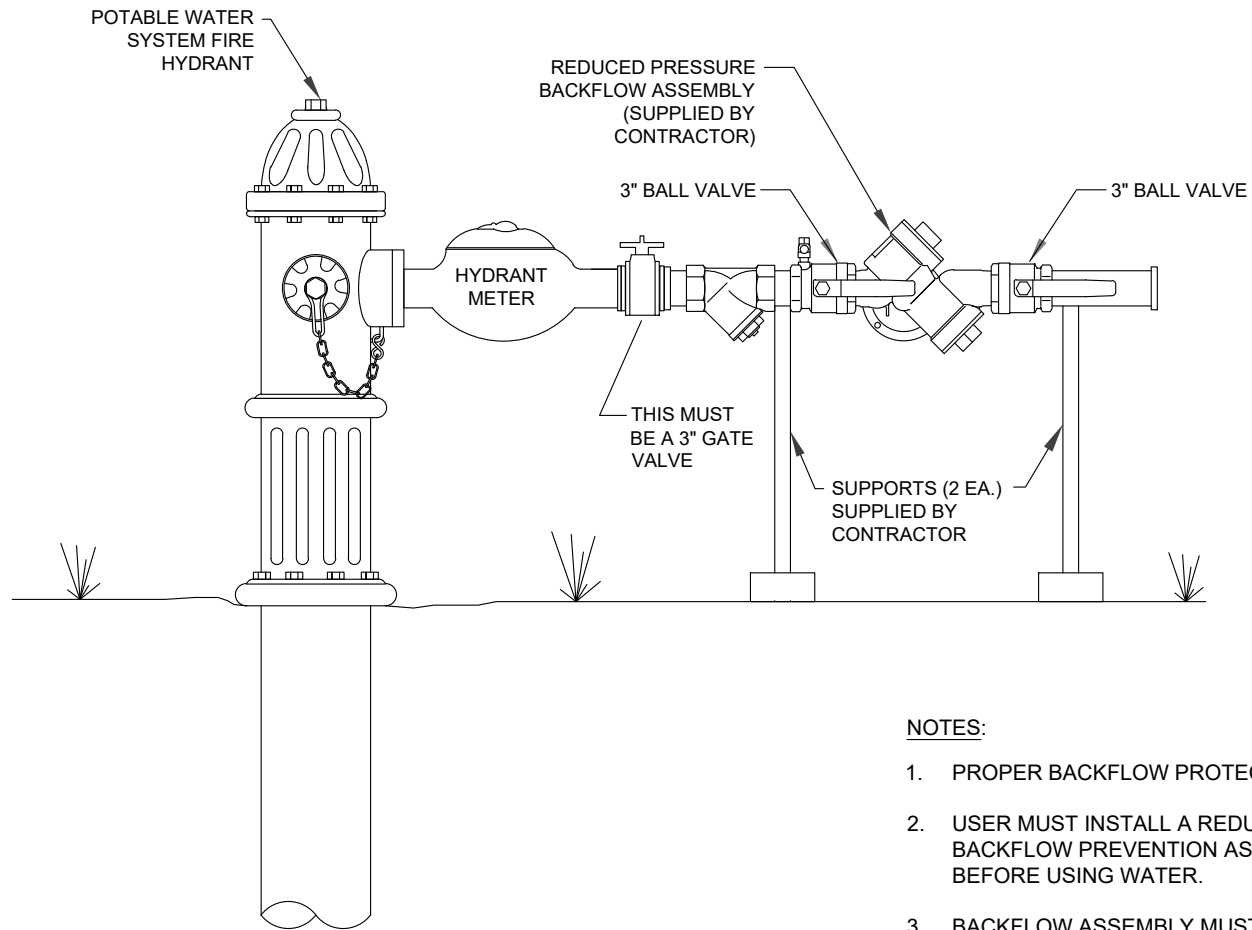
Date:
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1" - 10" DOUBLE CHECK DETECTOR ASSEMBLY
FOR FIRE ASSEMBLY

Detail No.
320-1



NOTES:

1. PROPER BACKFLOW PROTECTION REQUIRED BY CITY.
2. USER MUST INSTALL A REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTION ASSEMBLY ON EACH HYDRANT METER BEFORE USING WATER.
3. BACKFLOW ASSEMBLY MUST BE TESTED BY A, CERTIFIED BACKFLOW ASSEMBLY TESTER BEFORE USING AND ALSO EACH TIME METER IS MOVED.
4. USER MUST REMOVE BACKFLOW ASSEMBLY WHEN HYDRANT METER IS REMOVED OR RELOCATED.
5. USER IS LIABLE FOR ANY DAMAGE TO HYDRANT METER AND FITTINGS.
6. GATE VALVE REQUIRED TO CONTROL FLOW OF WATER.

Date:
November 2022

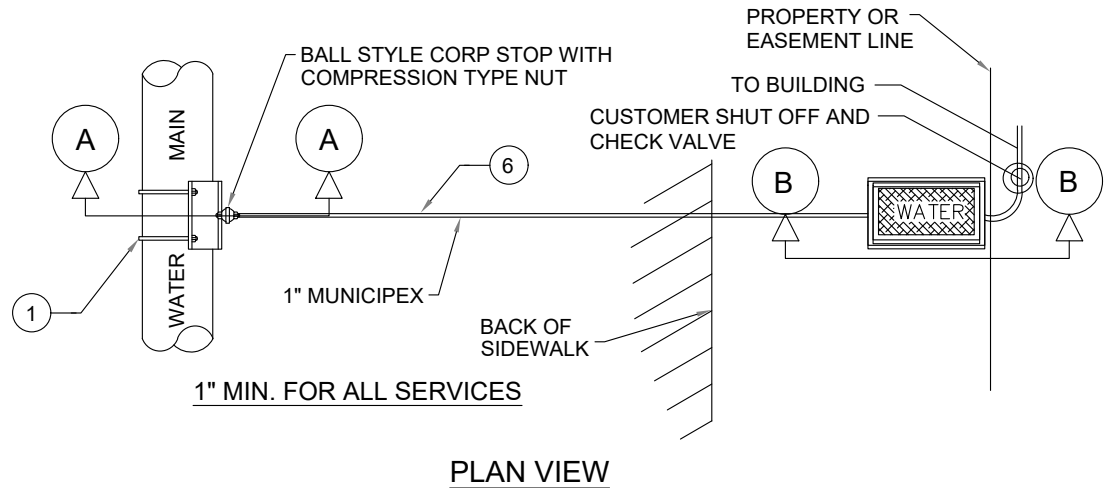
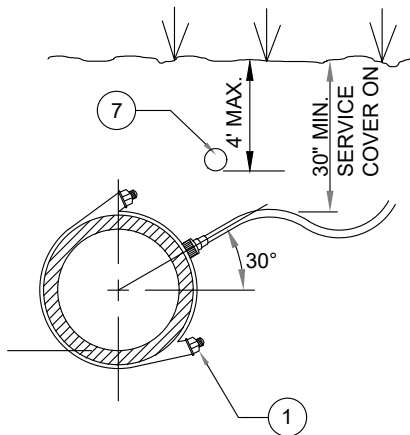


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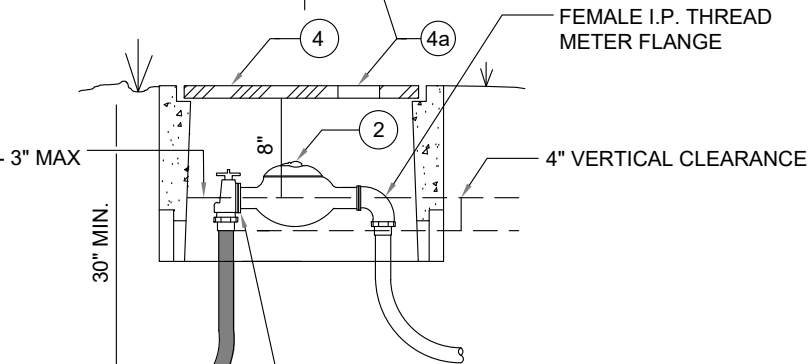
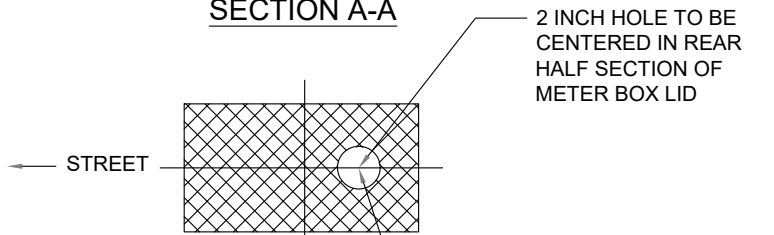
REDUCED PRESSURE PRINCIPLE BACKFLOW
PREVENTION ASSEMBLY (FOR TEMPORARY USE ON
HYDRANT METERS)

Detail No.
330

ALL SERVICES



SECTION A-A



SECTION B-B

NOTES:

1. SEE CITY'S WATER SYSTEM MATERIAL SPECIFICATIONS FOR APPROVED SADDLES.
2. AMR METER (ONLY) TO BE SET BY CITY UPON PAYMENT OF FEES.
3. MINIMUM #4 BOX ON 1-1/2 INCH OR LARGER - #2 BOX FOR ALL SERVICES UP TO 1 INCH.
4. DFW CONCRETE METER BOX PER M.A.G. STD. DET. 320 BOX NO. 2 OR 4 W/ MATCHING DFW POLYMER LID TO BE SET PERPENDICULAR TO BACK OF WALK OR CURB. BOX TO MATCH SLOPE OF FINISH GRADE AND SET 1" ABOVE FINISH GRADE OR BACK OF WALK OR CURB.
- 4a. 2 INCH DIAMETER OPENING.
5. NO BOXES IN DRIVEWAYS OR SIDEWALKS.
6. 6 INCH SAND SHADING AND BEDDING ON SERVICE.
7. LOCATABLE MARKER BALLS ABOVE SERVICE LINE CONNECTION. AT MAIN NO MORE THAN 4' DEEP'
 - a.) DETECTABLE MARKING TAPE LAID ABOVE
8. SERVICES SHALL HAVE NO SPLICES BETWEEN MAIN AND METER.
9. AAC R14-2-405.B.3 STATES, "WHERE SERVICE IS BEING PROVIDED FOR THE FIRST TIME, THE CUSTOMER SHALL PROVIDE AND MAINTAIN A PRIVATE CUTOFF VALVE WITHIN 18 INCHES OF THE METER ON THE CUSTOMER'S SIDE OF THE METER."

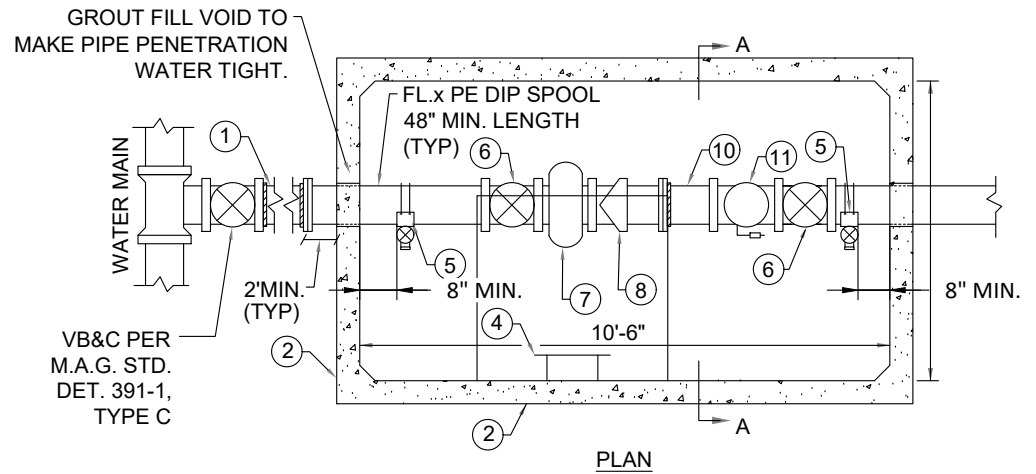
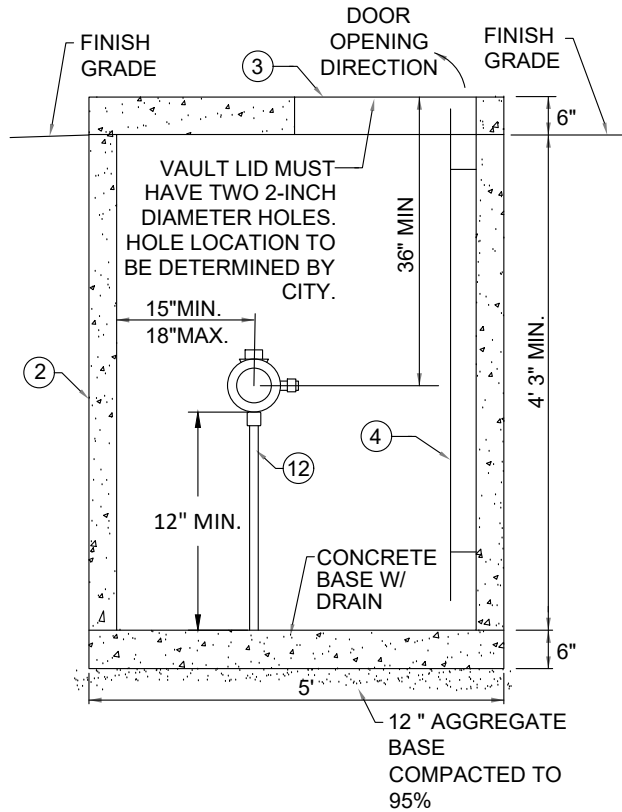
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POTABLE WATER SERVICE CONNECTION 1" THRU 2"
SERVICE W/ CORRESPONDING METER

Detail No.
342



NOTES:

1. LARGER METER VAULTS REQUIRE SPECIAL DESIGN AND CITY APPROVAL.
2. VAULTS SHALL NOT BE LOCATED IN VEHICULAR PATH OF TRAFFIC.

MATERIALS LIST CONT:

5. 2" DOUBLE STRAP BRONZE SADDLES AND A 2" LOCKABLE BALL VALVE.
6. MUELLER OR CLOW RESILIENT SEATED FLANGED NRS GATE VALVE WITH HAND WHEEL IN ACCORDANCE WITH M.A.G. SECTION 630.3.
7. STRAINER REQUIRED WITH INSTALLATION OF METER.
8. ALL METERS THAT ARE 3 INCHES OR LARGER MUST BE COMPOUND METERS. CITY WILL PROVIDE ALL COMPOUND METERS.
9. CONTRACTOR WILL NEED TO COORDINATE PICK-UP AND INSTALLATION WITH CITY STAFF.
10. FLANGED X FCA DIP SPOOL, MINIMUM 3 PIPE DIAMETERS LENGTH.
11. CITY APPROVED CHECK VALVE.
12. ADJUSTABLE PIPE SUPPORTS (2)

MATERIALS LIST: SECTION A-A

1. ALL PIPING TO BE JOINT RESTRAINED, MIN. PRESSURE CLASS 150, DIP. JOINT RESTRAINTS TO BE FLANGED OR MEGALUG.
2. PRE-CAST VAULT, OLD CASTLE 5106-WA OR CITY APPROVED EQUAL.
3. 6' x 4' ALUMINUM ACCESS DOOR WITH SPRING ASSIST RATED FOR H-20 LOADING. HALLIDAY PRODUCTS H2R7248 OR CITY APPROVED EQUAL. VAULT DOOR SYSTEM WILL HAVE 2" DIAMETER HOLE TO ALLOW FOR ANTENNAE. THE HOLE SHOULD BE IN A LOCATION THAT ALLOWS EASE OF INSTALLATION, ALLOW VAULT DOORS TO OPEN FULLY, AND HAVE ENOUGH CABLE TO NOT BIND.
4. ALUMINUM BOLT ON LADDER WITH SAFETY EXTENSION, HALLIDAY PRODUCTS L1B AND L1E OR CITY APPROVED EQUAL. LADDER SHALL COMPLY WITH ALL APPLICABLE LOCAL, STATE AND FEDERAL REGULATIONS INCLUDING OSHA.

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November 2022



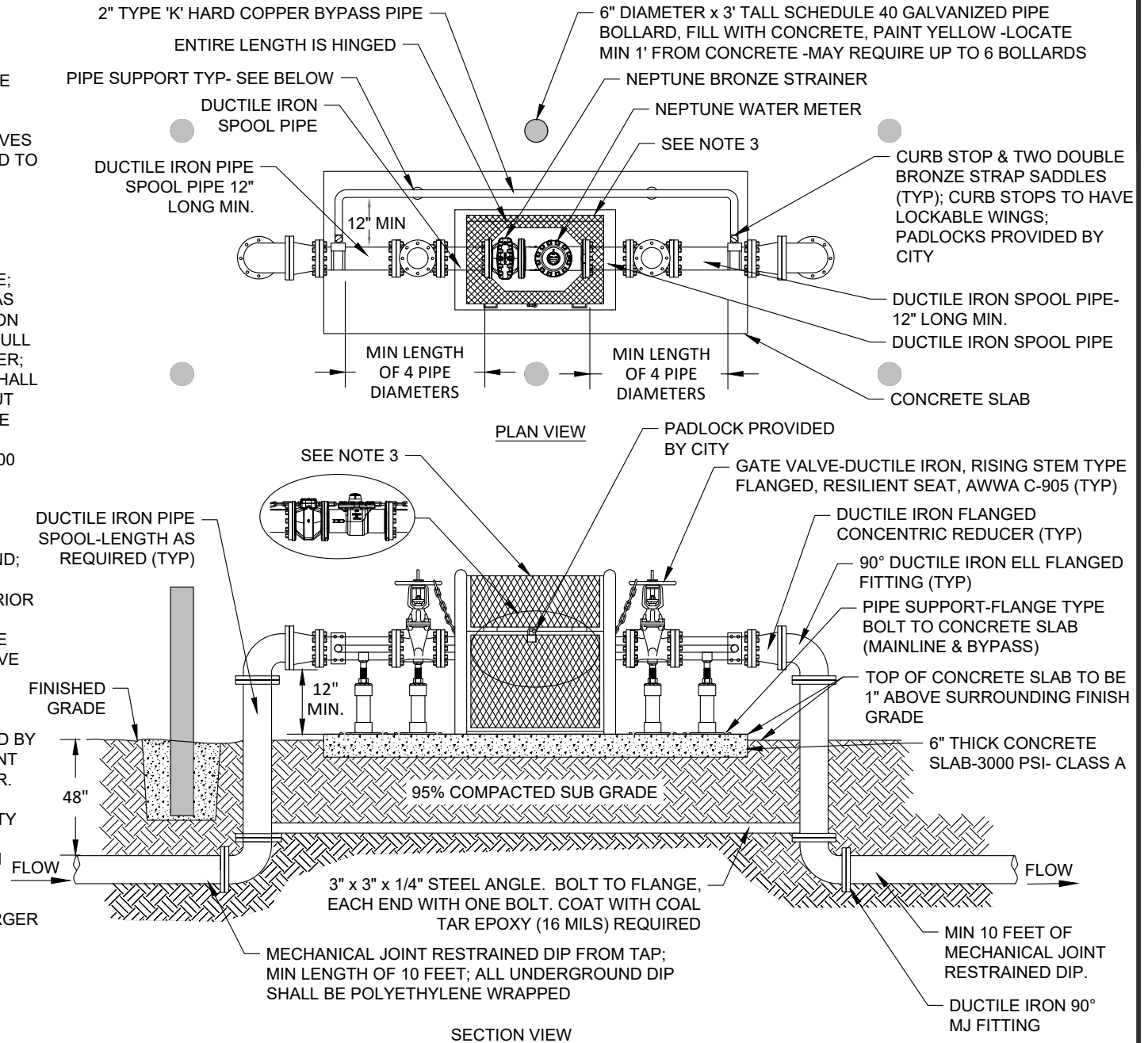
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3", 4", & 6" POTABLE WATER METER VAULT

Detail No.
345-1

NOTES :

1. CITY APPROVED BACKFLOW PREVENTION ASSEMBLY IS REQUIRED DOWNSTREAM OF THE METER.
2. ALL ABOVE GROUND PIPING/VALVES SHALL BE PAINTED DESERT SAND TO MATCH COLOR OF CAGE ENCLOSURE.
3. METER & STRAINER TO BE PROTECTED WITH A LOCKABLE HINGED CLAMSHELL ENCLOSURE; TOP PORTION IS HINGED AND HAS HANDLES TO ALLOW TOP PORTION TO BE LIFTED OPEN TO ALLOW FULL ACCESS TO METER AND STRAINER; WHEN OPENED, TOP PORTION SHALL STAY IN OPEN POSITION WITHOUT ASSISTANCE; METAL ENCLOSURE SHALL BE CAPABLE OF WITHSTANDING A MINIMUM OF 200 POUNDS PER SQUARE FOOT WITHOUT ANY PERMANENT DEFLECTION OR DISTORTION; POWDERCOATED WITH CITY APPROVED COLOR, DESERT SAND; MAKE & MODEL OF ENCLOSURE SHALL BE APPROVED BY CITY PRIOR TO INSTALLATION; ENCLOSURE SHALL BE BOLTED TO CONCRETE SLAB; SIDE OF ENCLOSURE ABOVE PIPE SHALL BE ENCLOSED AND BELOW PIPE MAY BE OPEN
4. STRAINER AND METER PROVIDED BY CITY AFTER RECEIPT OF PAYMENT FROM CONTRACTOR/DEVELOPER.
5. CONTRACTOR MAY CONTACT CITY PROJECT MANAGER TO OBTAIN MAKE AND MODEL INFORMATION FOR METER
6. *METER ASSEMBLIES 8" AND LARGER ARE TO BE DESIGNED BY DEVELOPER'S ENGINEER AND APPROVED BY CITY



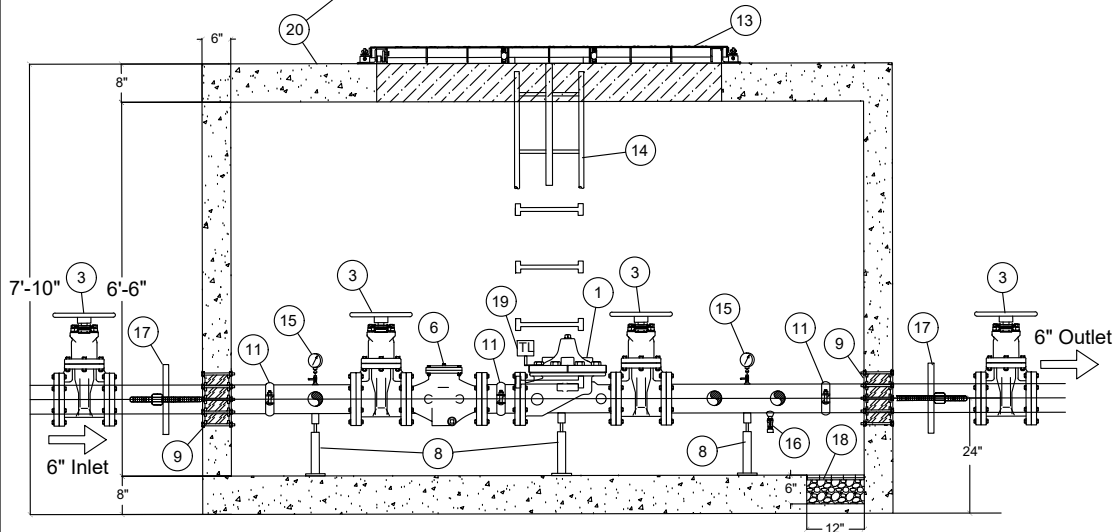
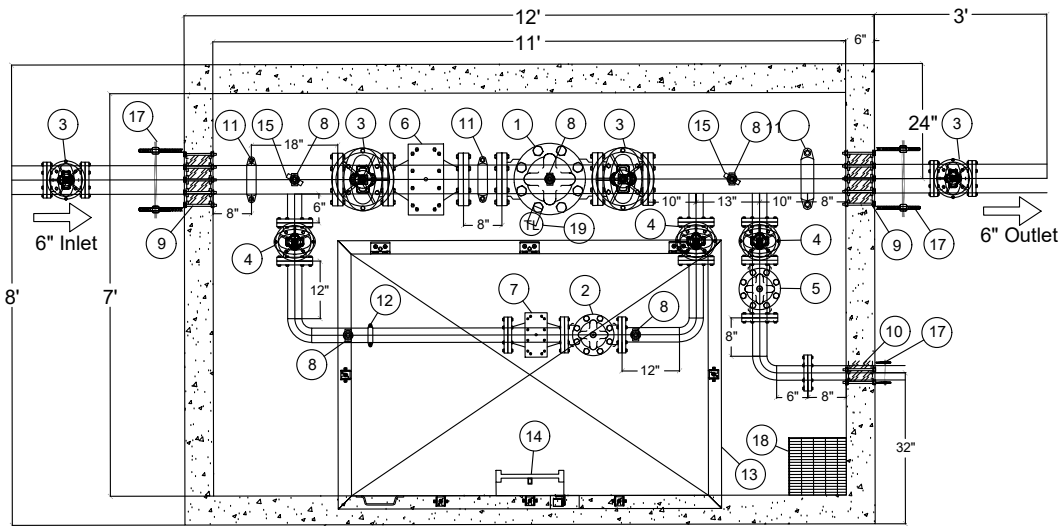
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ABOVE GROUND POTABLE WATER METER (3", 4", & 6")

Detail No.
345-2



A SECTION
3" BYPASS AND RELIEF
REMOVED FOR CLARITY

BILL OF MATERIALS		
ITEM	QTY	DESCRIPTION
1	1	6" CLA-VAL 90G-01YBCSVKC PSI REDUCING VALVE D.I. SST. TRIM 150 FLG EPOXY COATED W/ X101 INDICATOR SST. FITTINGS POLY TUBING
2	1	3" CAL-VAL 90G-01YBCSVKC PSI REDUCING VALVE D.I.SST. TRIM 150 FLG EPOXY COATED W/ X101 INDICATOR SST. FITTINGS POLY TUBING
3	2	6" Mueller 350 psi Resilient Wedge A-2361 Gate Valve 150 FLXFL NRS W/ HAND WHEEL
4	3	3" Mueller 350 psi Resilient Wedge A-2361 Gate Valve 150 FLXFL NRS W/ HAND WHEEL
5	1	3" CLA-VAL 50G-01BV PSI RELIEF D.I.SST TRIM EPOXY COATED POSITION INDICATOR 150LB FLANGES SST. FITTINGS POLY TUBING
6	1	6" CLA-VAL X43H H-STYLE STRAINER 150 NSF/ANSI 61 FUSION BONDED EPOXY COATING
7	1	3" CLA-VAL X43H H-STYLE STRAINER 150 NSF/ANSI 61 FUSION BONDED EPOXY COATING
8	5	STANDON ADJUSTABLE PIPE SUPPORTS
9	2	6" LINK-SEAL LS475 ASSEMBLY
10	1	3" LINK-SEAL LS340 ASSEMBLY
11	3	6" VICTAULIC STYLE 107V QUICKVIC RIGID COUPLING
12	1	3" VICTAULIC STYLE 107V QUICKVIC RIGID COUPLING
13	1	48" X 72" EAST JORDAN FLOOD TIGHT ALUMINUM HATCH PRODUCT # - H48722601
14	1	HALLIDAY PRODUCTS ALUMINUM LADDER L1B OR L1D W/ L1E LADDER EXTENSION OR APPROVED EQUAL
15	2	2 1/2" 0-300 PSI GAUGE LIQUID FILLED W/4 SST. ISOLATION VALVE
16	1	SST. BALL VALVE FOR WATER SUPPLY
17	3	ROMAC 600 SERIES SPLIT PIPE RESTRAINT
18	1	12"L X 12"W X 6"D SUMP W/ GRATE
19	1	TECHNOLOG CELLO 4S MONITORING: DUAL PRESSURE
20	1	PRESTIGE WW7 6" WALLED H2O RATED PRV VAULT. SHERMAN WILLIAMS TARLOCK ON OUTSIDE OF VAULT. UGL DRY LOCK SEALANT ON INSIDE OF VAULT. OD: 12' L x 8' W x 7'10" T ID: 11' L x 7' W x 6'6" T

NOTES:

1. ALL PIPING AND EQUIPMENT SUPPLIED BY PRESTIGE WORLDWIDE TECHNOLOGIES. ALL PIPING IS SCHEDULE 40 304 SST.
2. THIS IS AN EXAMPLE OF A 6" PRV WITH A 3" BYPASS, OTHER SIZES ARE AVAILABLE.

Date:
November 2022



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(928) 763-9400

PRESSURE REDUCING VALVE (PRV) VAULT

Detail No.
346

BACKFILL

- IN NON-SAW CUT AREAS TO BE NATIVE MATERIAL SCREENED AT 4" OR LESS.
- IN SAW CUT AREAS TO BE ONE SACK ABC SLURRY OR AS SPECIFIED BY CITY.
- COMPACTION TESTING REQUIRED TO 95%

DETECTABLE LOCATING BALLS

1. SEE THE CITY'S STD. DET. 350-1. LOCATING BALLS MANUFACTURED BY OMNI, 3M OR APPROVED EQUAL MUST BE PLACED AT WATER MAIN ABOVE WATER SERVICE LINE.
2. LOCATING BALLS SHOULD BE PLACED NO DEEPER THAN 4' BELOW GROUND SURFACE.

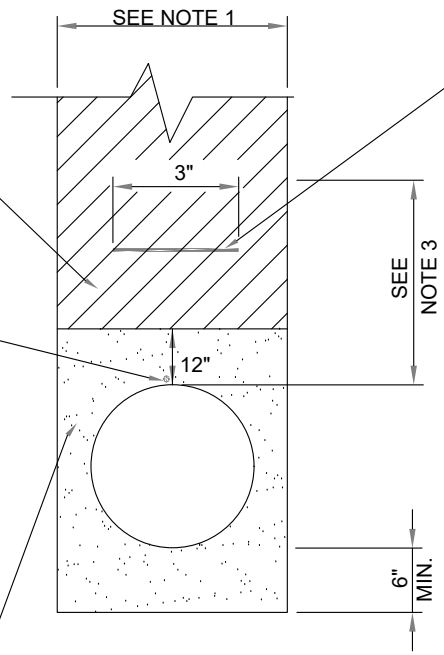
PIPE ZONE

FROM MIN. 6" BELOW BOTTOM OF PIPE TO MIN. 12" ABOVE TOP OF PIPE BACKFILL WITH THE FOLLOWING PER NOTE 4:

- FROM MIN. 6" BELOW BOTTOM OF PIPE TO MIN. 12" ABOVE TOP OF PIPE BACKFILL WITH THE FOLLOWING PER NOTE 4:
- A. WATER LINES
 - SAND PER MAG 701.3
 - B. RECLAIMED WATER LINES
 - SAND PER MAG 701.3
 - C. SEWER FORCE MAIN
 - SAND PER MAG 701.3
 - D. GRAVITY SEWER LINES
 - ALL SERVICE AREAS - 3/4" MINUS ABC CRUSHED ROCK (NO REJECTS)

**WATER AND SEWER SERVICES
(ALL UTILITY SERVICE AREAS)**

MINIMUM 6" SAND BEDDING AND 6" SAND SHADING. BACKFILL AS PER DETAIL.

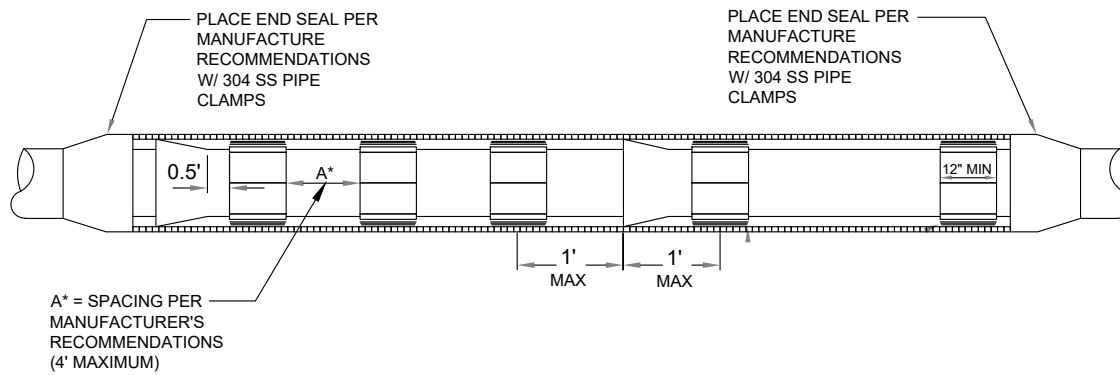


PIPE MARKING TAPE

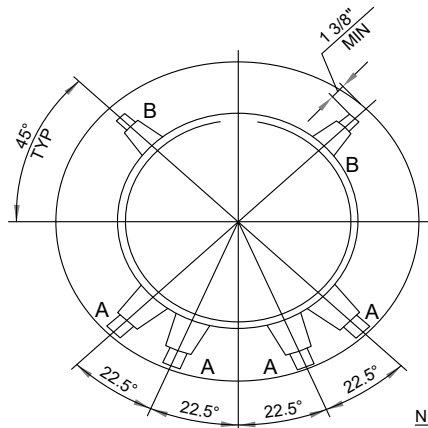
- DETECTIBLE MARKING TAPE SHALL BE LOCATED 18 INCHES BELOW GROUND SURFACE.
- WORDING PER M.A.G. SEC. 616 TO BE USED FOR ALL WATER, & RECLAIMED WATER LINES, AND SERVICES. THE MARKING TAPE SHALL BE PRINTED ON STANDARD COLORED DETECTABLE TAPE. LETTERING SHALL BE BLACK, 1-1/2" HEIGHT MINIMUM.
- RECLAIMED WATER LINES SHALL USE PURPLE TAPE & SHALL READ "CAUTION: RECLAIMED WATER LINE"
- POTABLE WATER LINES SHALL USE BLUE TAPE & SHALL READ "CAUTION: POTABLE WATER LINE"
- RAW & NON-POTABLE WATER LINES SHALL USE YELLOW TAPE & SHALL READ "RAW WATER MAINS" AND/OR "NON-POTABLE WATER MAINS".
- SEWER AND SERVICE LINES SHALL USE GREEN TAPE & SHALL READ "CAUTION: SEWER LINE".

NOTES:

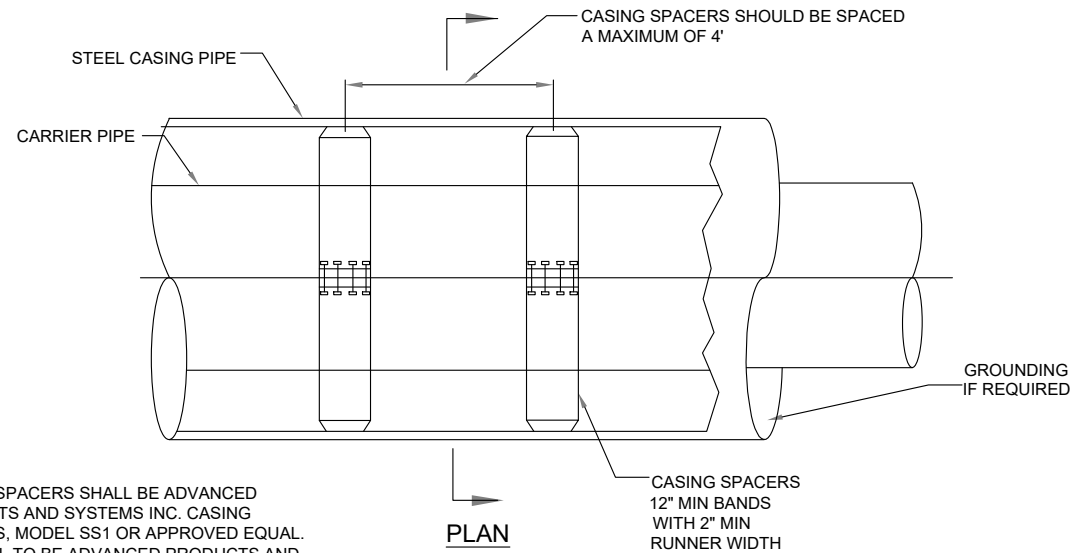
1. TRENCH WILL BE IN ACCORDANCE WITH MAG SECTION 601.
2. ONE SACK ABC SLURRY (CLSM) TO BE IN ACCORDANCE WITH MAG SECTION 728.
3. DEPTH OF BURY TO BE MIN. 48" IN ALL STREETS. DEPTH OF BURY FOR WATER LINES IN OTHER AREAS TO BE AS FOLLOWS:
 - a. 36" MIN. FOR MAINS 8" DIAMETER AND SMALLER
 - b. 48" MIN. FOR MAINS 10" DIAMETER AND LARGER
4. WASHED, CRUSHED ROCK TO BE IN ACCORDANCE WITH MAG SECTION 716.2 AND TABLE 716-2.
 - a. SAND TO BE IN ACCORDANCE WITH MAG SECTION 701.3.
 - b. ABC TO BE IN ACCORDANCE WITH MAG SECTION 702.2 AND TABLE 702-1.
5. SEE THE CITY'S STD. DET. 350-1. LOCATING BALLS MANUFACTURED BY OMNI, 3M OR APPROVED EQUAL MUST BE PLACED AT WATER MAIN ABOVE WATER SERVICE LINE.
6. LOCATING BALLS SHOULD BE PLACED NO DEEPER THAN 4' BELOW GROUND SURFACE.



SLEEVE DETAIL



SECTION



NOTES:

1. CASING SPACERS SHALL BE ADVANCED PRODUCTS AND SYSTEMS INC. CASING SPACERS, MODEL SS1 OR APPROVED EQUAL.
2. END SEAL TO BE ADVANCED PRODUCTS AND SYSTEMS, INC. MODEL AC PULL-ON TYPE OR APPROVED EQUAL.
3. FILL IN ANNULAR SPACE WITH SAND
4. MINIMUM CASING SIZE SHALL BE 12 INCHES LARGER OUTSIDE DIAMETER OF CARRIER PIPE
5. A CASING SPACER MUST BE PLACED WITHIN 2 FEET OF EACH END OF THE CASING PIPE.
6. RISER/ RUNNER HEIGHT SHALL BE 4" MIN.

Date:
November 2022



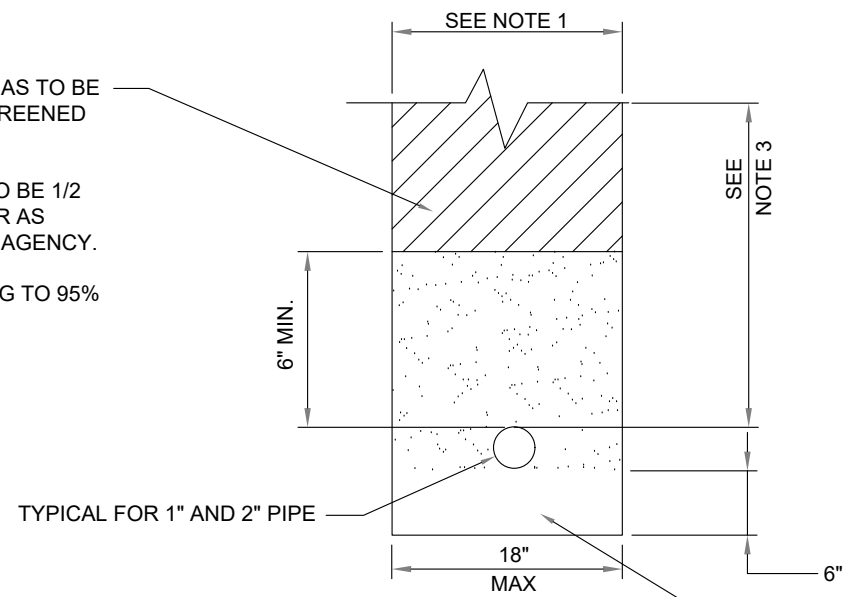
2355 Trane Rd.
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STEEL CASING

Detail No.
350-2

BACKFILL

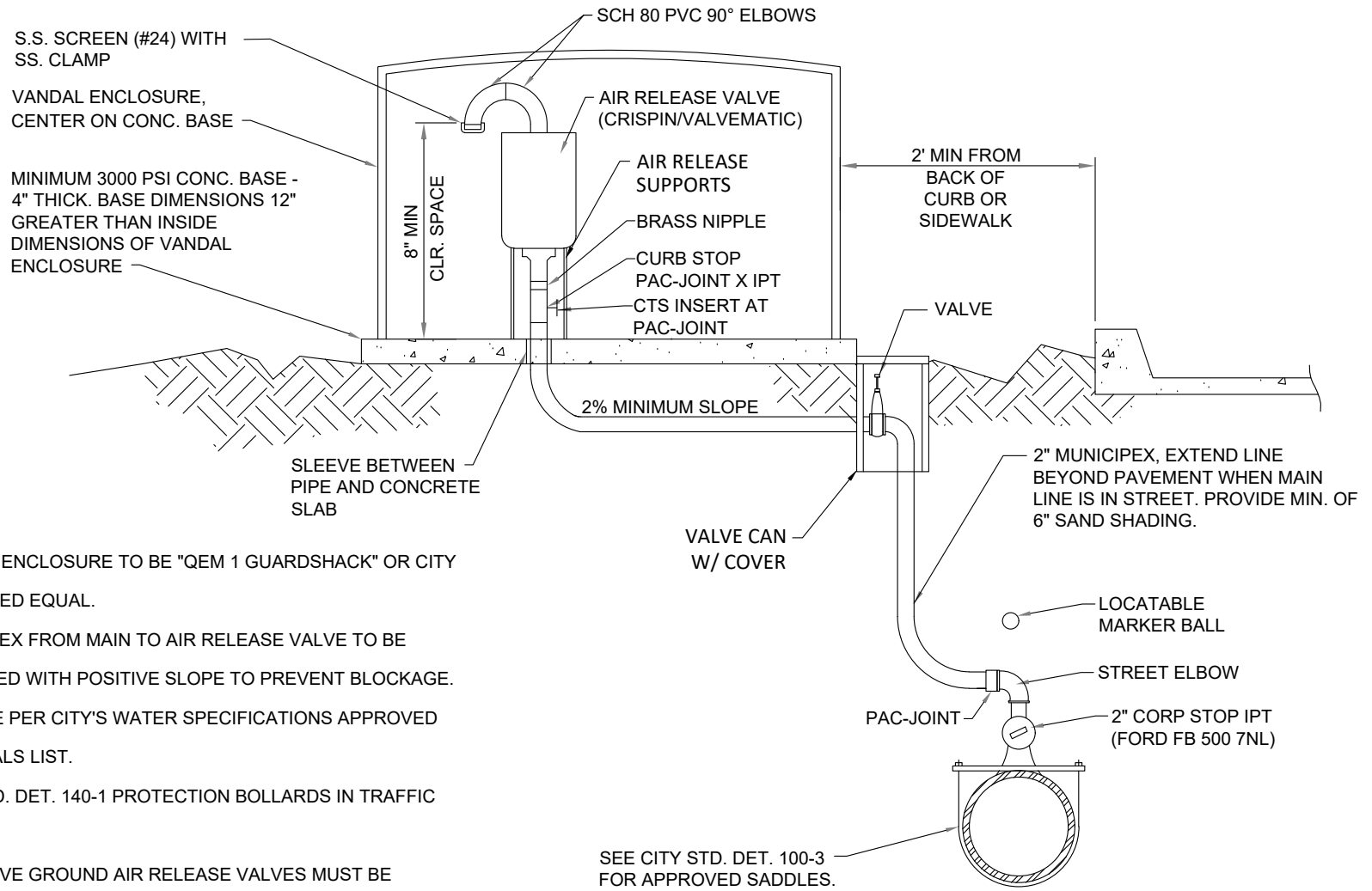
- IN NON-SAW CUT AREAS TO BE NATIVE MATERIAL SCREENED AT 4" OR LESS.
- IN SAW CUT AREAS TO BE 1/2 SACK ABC SLURRY OR AS SPECIFIED BY R.O.W. AGENCY.
- COMPACTION TESTING TO 95%



BEDDING WATER AND SEWER SERVICES
 MINIMUM 6" SAND BEDDING AND 6" SAND SHADING.
 BACKFILL AS PER ABOVE.

NOTES:

1. TRENCH WILL BE IN ACCORDANCE WITH M.A.G. SECTION 601.
2. ONE-HALF SACK ABC SLURRY (CLSM) TO BE IN ACCORDANCE WITH M.A.G. SECTION 728.
3. DEPTH OF BURY TO BE MIN. 36" IN STREETS.
4. SAND TO BE IN ACCORDANCE WITH M.A.G. SECTION 701.3.



NOTES:

1. VANDAL ENCLOSURE TO BE "QEM 1 GUARDSHACK" OR CITY APPROVED EQUAL.
2. MUNICIPEX FROM MAIN TO AIR RELEASE VALVE TO BE INSTALLED WITH POSITIVE SLOPE TO PREVENT BLOCKAGE.
3. PROVIDE PER CITY'S WATER SPECIFICATIONS APPROVED MATERIALS LIST.
4. MAG STD. DET. 140-1 PROTECTION BOLLARDS IN TRAFFIC AREAS.
5. ALL ABOVE GROUND AIR RELEASE VALVES MUST BE PRE-APPROVED BY CITY. UNDERGROUND AIR RELEASE VALVES PER CITY'S STD. DET. 351-3.
6. CONCRETE METER BOX PER MAG STD DET 320 BOX NO. 2 W/ STEEL LID.
7. PIPE FITTINGS AND APPURTENANCES TO MATCH AIR RELEASE SIZE.

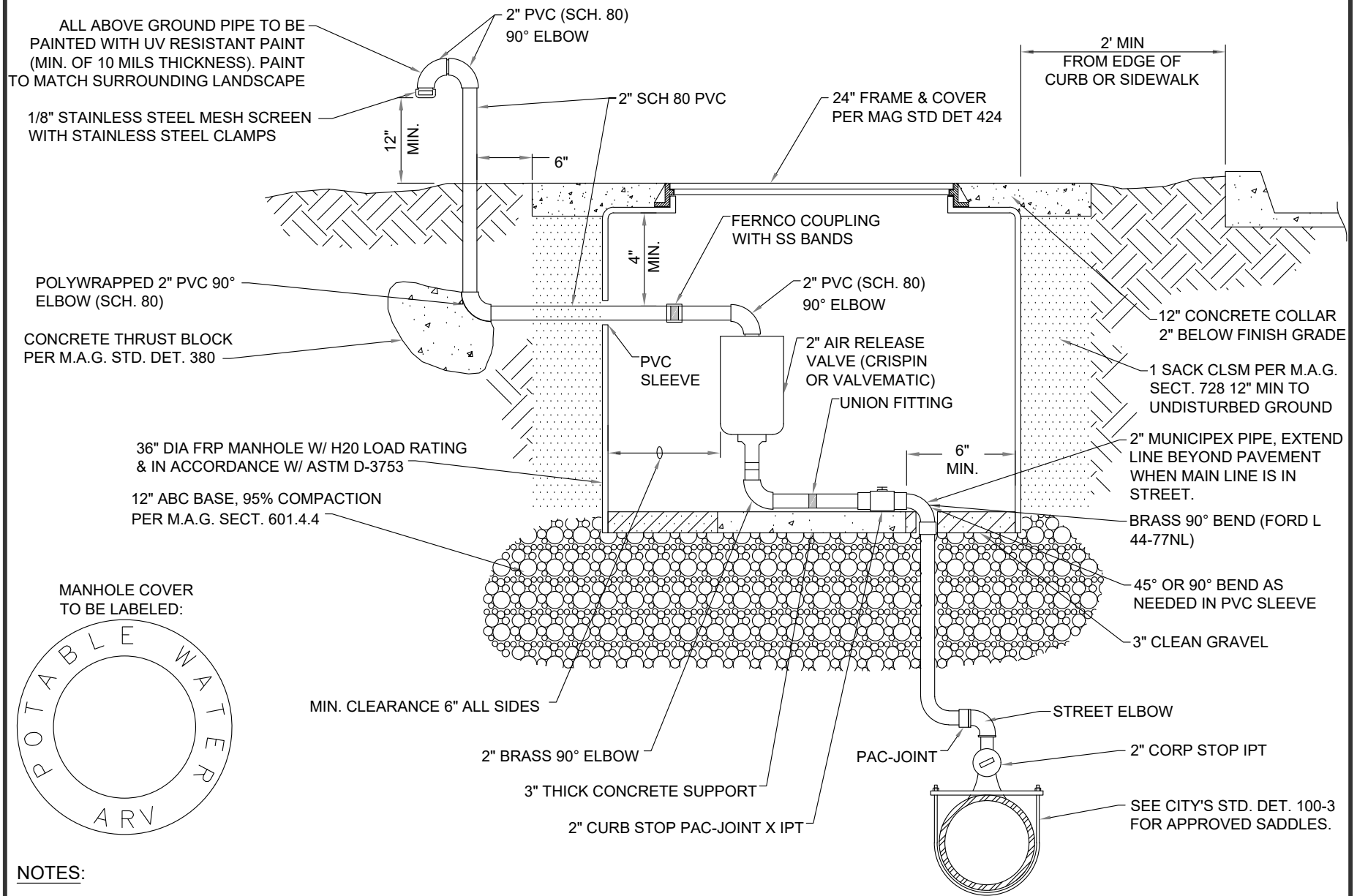
Date:
November 2022



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POTABLE AIR RELEASE VALVE

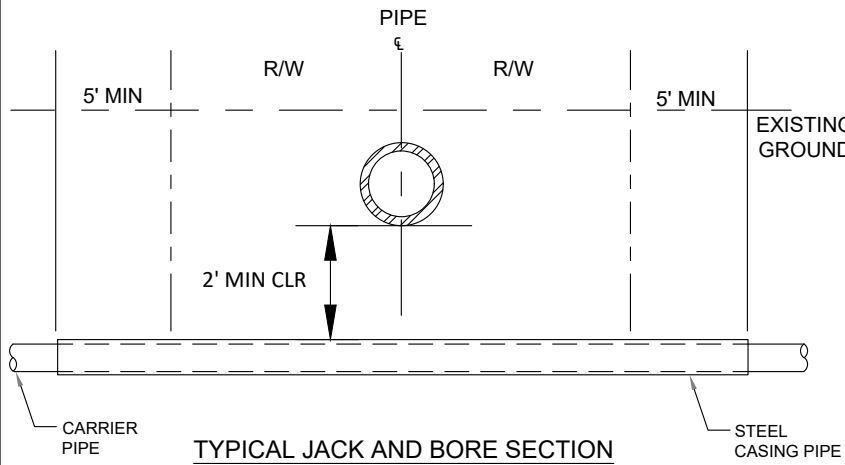
Detail No.
351-1



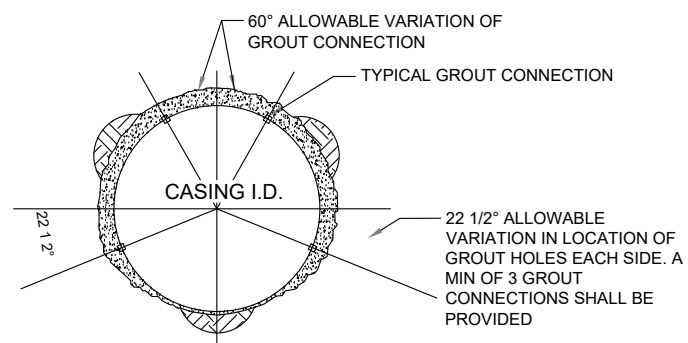
NOTES:

1. IF MULTIPLE ARV's ARE INSTALLED, EACH BOX MUST BE SEPARATED BY 3' MINIMUM.
2. PROVIDE PER CITY'S WATER SPECIFICATIONS APPROVED MATERIALS LIST.

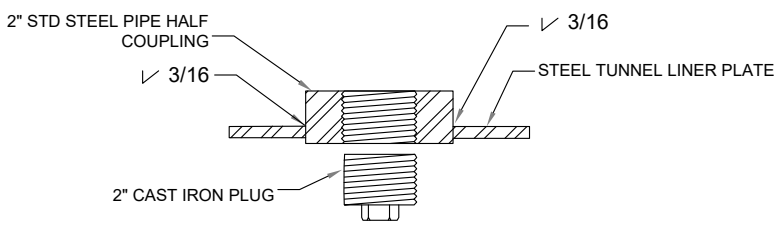
Date: November 2022	 Bullhead City UTILITIES <small>WATER • WASTEWATER • REUSE</small>	2355 Trane Rd. Bullhead City, AZ. 86442 (928) 763-9400	POTABLE UNDERGROUND AIR RELEASE VALVE	Detail No. 351-3
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TYPICAL JACK AND BORE SECTION



CASING PIPE GROUTING DETAIL



TYPICAL GROUT CONNECTION DETAIL

NOTES:

1. ALL WORK ON JACK AND BORE SHALL CONFORM TO MAG STANDARD SPECIFICATIONS SECTION 602 UNLESS OTHERWISE NOTED.
2. CASING SHALL EXTEND A MINIMUM OF FIVE FEET BEYOND THE RIGHT-OF-WAY.
3. FOR CASING PIPE 36 INCHES OR LARGER, GROUT CONNECTIONS SHALL BE INSTALLED. GROUT CONNECTIONS SHALL BE PROVIDED AT A MAXIMUM SPACING OF 10 FEET.
4. CARRIER PIPE SHALL BE PLACED IN ACCORDANCE WITH MAG STANDARD SPECIFICATIONS. JOINT RESTRAINTS SHALL BE INSTALLED FOR THE SECTION OF CARRIER PIPE INSIDE THE CASING PIPE.
5. THE REQUIREMENTS FOR THE TYPE OF SOIL AND LEVEL OF COMPACTION OF THE PIPE EMBEDMENT MUST BE FOLLOWED UP TO THE ENDS OF THE PIPE CASING.
6. IF THERE IS WATER IN THE PIPE AT THE TIME OF INSTALLATION, SEEPAGE OF WATER IS POSSIBLE AND RUNNING GROUNDS CONDITIONS MAY BE ANTICIPATED. WHERE THESE CONDITIONS EXIST, THE CUTTING HEAD SHALL BE SHIELDED TO AVOID LOSS OF SUPPORT FOR THE PIPE.
7. DURING ANY DIRECTIONAL BORING OPERATIONS, PRECAUTIONS SHALL BE TAKEN TO ENSURE STORM WATER RUNOFF WILL NOT FLOW INTO THE JACKING PITS.
8. TRENCHLESS CONSTRUCTION DRIVING AND RECEIVING PITS FOR CONSTRUCTIONAL SAFETY SHALL BE IN ACCORDANCE WITH OSHA REQUIREMENTS.
9. CONTRACTOR TO NOTIFY INSPECTOR 48 HOURS IN ADVANCE PRIOR TO BORING.
10. CASING PIPE SHALL BE WELDED STEEL ASTM A-252 GRADE B.
11. CARRIER PIPE SHALL BE DUCTILE IRON WITH MEGA-LUG JOINT RESTRAINTS, SERIES 1100.
12. FOR RAILROAD CROSSINGS, REFER TO RAILROAD OWNER REQUIREMENTS.

CARRIER PIPE DIAMETER (INCHES)	WATER		SEWER	
	MINIMUM CASING PIPE DIAMETER (INCHES)	MINIMUM CASING PIPE WALL THICKNESS (INCHES)	MINIMUM CASING PIPE DIAMETER (INCHES)	MINIMUM CASING PIPE WALL THICKNESS (INCHES)
4	24	3/8	30	3/8
6	24	3/8	30	3/8
8	30	3/8	36	3/8
10	30	3/8	36	3/8
12	36	3/8	42	1/2
14	36	3/8	42	1/2
15	36	3/8	42	1/2
16	36	3/8	42	1/2
18	42	1/2	48	1/2
20	42	1/2	48	1/2
21	42	1/2	48	1/2
24	48	1/2	54	5/8
27	48	1/2	54	5/8
30	60	5/8	66	3/4
36	60	5/8	66	3/4
42	72	3/4	78	3/4
48	80	1	86	1

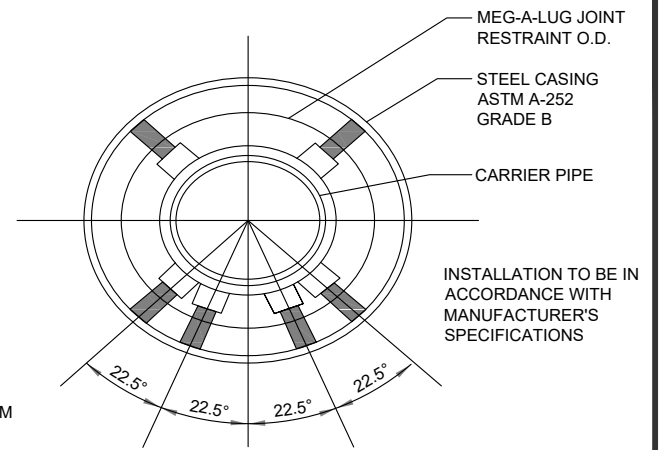
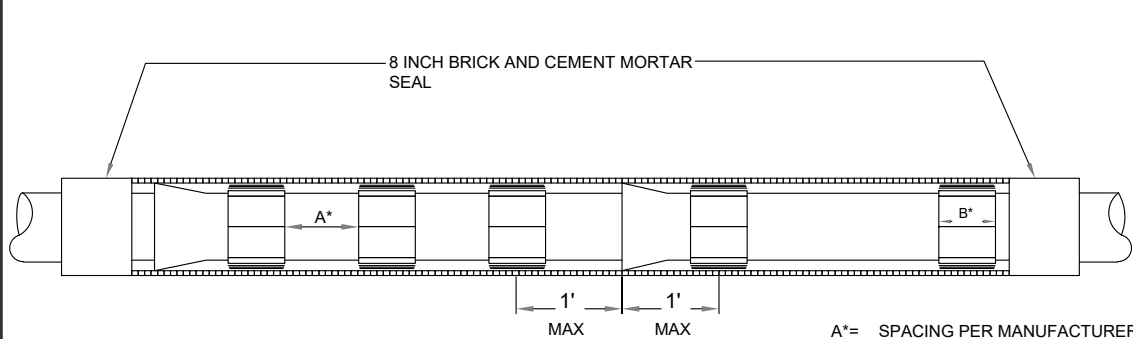
Date:
November 2022



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CASING JACK-AND-BORE DETAIL

Detail No.
352-1



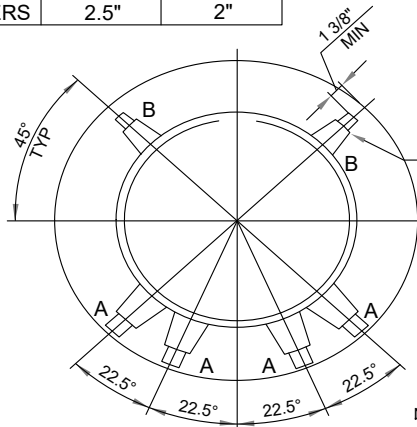
A*= SPACING PER MANUFACTURER'S RECOMMENDATIONS (6' MAXIMUM)

B*= 8" MINIMUM ON 36" AND SMALLER DIAMETER CARRIER PIPE 12" MINIMUM FOR GREATER THAN 36" DIAMETER CARRIER PIPE.

INSTALLATION TO BE IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS

CASING PIPE DETAIL

	A	B
RISER	5"	4"
RUNNERS	2.5"	2"



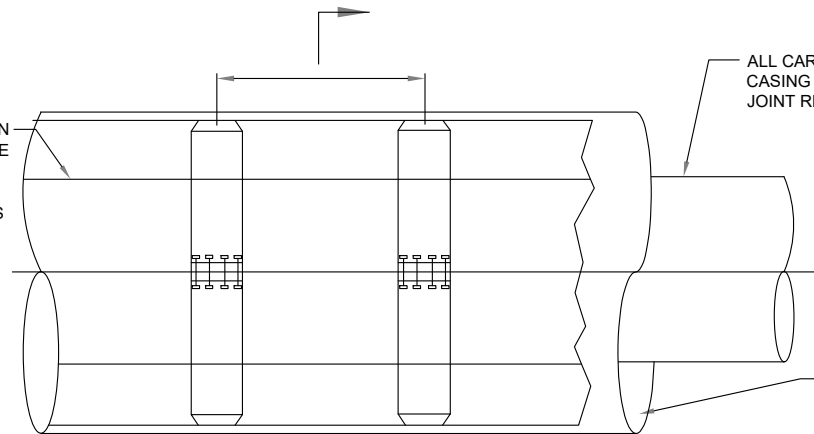
SECTION

NOTES:

1. NO FILL IN ANNULAR SPACE
2. A CASING SPACER MUST BE PLACED WITHIN 2 FEET OF EACH END OF THE CASING PIPE
3. CASING SPACERS SHALL BE APS (SSI) OR CASCADE TYPE (CCS)

8" WIDE CASING SPACERS PLACED AT 6 FOOT INTERVALS ON 36" AND SMALLER DIAMETER CARRIER PIPE

DUCTILE IRON CARRIER PIPE



ALL CARRIER PIPE INSIDE CASING PIPE WILL BE MEG-A-LUG JOINT RESTRAINED, SERIES 1100

GROUNDING IF REQUIRED

PLAN

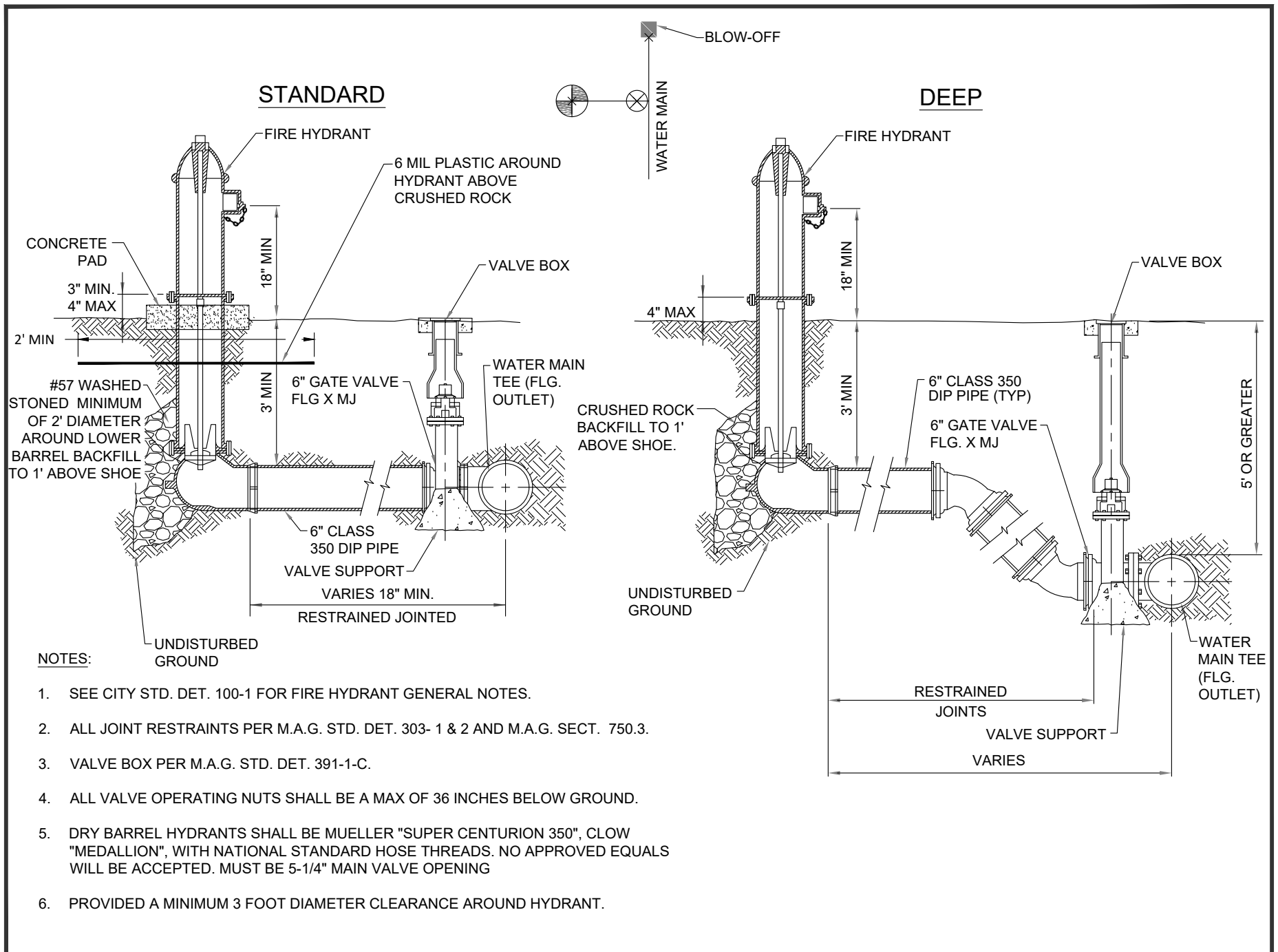
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November 2022



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CASING SPACER DETAIL

Detail No.
352-2



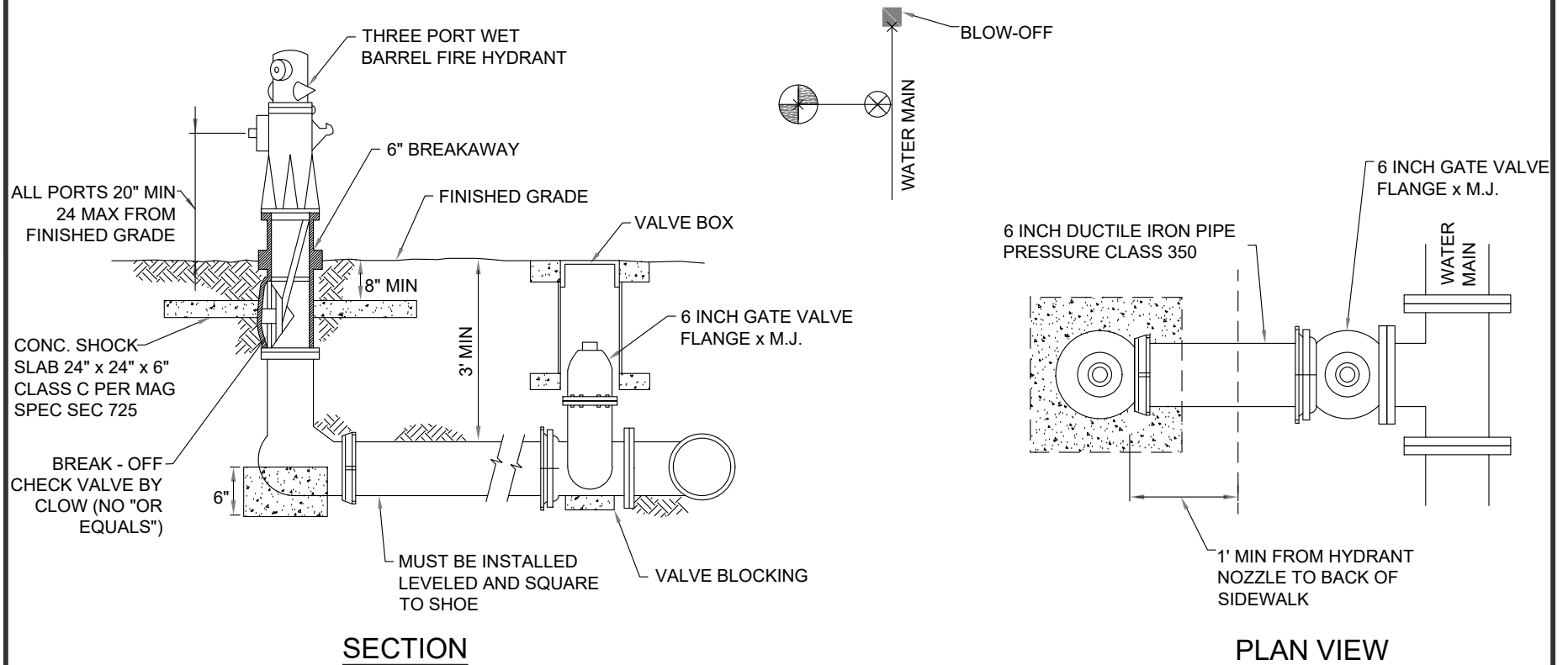
Date:
November 2022



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DRY BARREL FIRE HYDRANT INSTALLATION

Detail No.
360-1



NOTES:

1. SEE CITY STD. DET. 100-1 FOR FIRE HYDRANT GENERAL NOTES.
2. ALL JOINT RESTRAINTS PER M.A.G. STD. DET. 303- 1 & 2 AND M.A.G. SECT. 750.3.
3. ALL JOINTS SHALL BE RESTRAINED, INCLUDING MAIN AT TEE ENDS.
4. APPROVED HYDRANTS INCLUDE: CLOW* AND JONES (*CLOW HYDRANTS SHALL BE MODEL 860 WITH 2 1/2" FEMALE NPT ON TOP OF HYDRANT TO ALLOW FOR PRESSURE MONITORING).
5. THE 6 INCH GATE VALVE SHALL BE FLANGED BY MECHANICAL JOINT.
6. PROVIDE A MINIMUM 3 FOOT DIAMETER CLEARANCE AROUND HYDRANT.
7. THE HYDRANT SHALL HAVE (2) - 2 1/2" PORTS, AND (1) - 4 1/4" PORT.
8. ALL HYDRANTS SHALL HAVE NATIONAL STANDARD HOSE THREADS.
9. VALVE BOX PER M.A.G. STD. DET. 391-1-C.

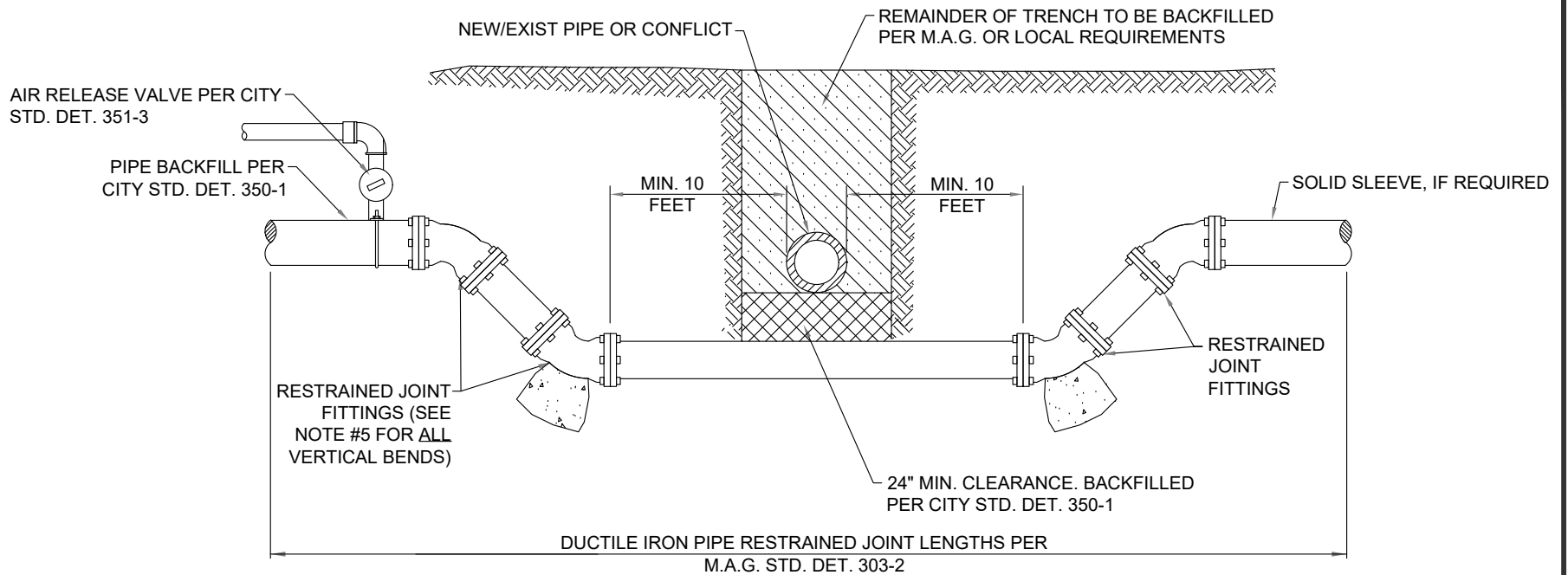
Date:
November 2022



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WET BARREL FIRE HYDRANT INSTALLATION

Detail No.
360-2



NOTES:

1. ALL JOINT RESTRAINTS ARE TO BE MEG-A-LUG, SIGMA, EEBA OR STAR, NO FIELD LOCS OR UNIFLANGE, FOR LENGTHS IN ACCORDANCE WITH M.A.G. STD. DET. 303-2
2. PIPE SHALL BE DUCTILE IRON, MINIMUM PRESSURE CLASS 150.
3. ALL DUCTILE IRON PIPE SHALL BE POLYETHYLENE WRAPPED FOR THE ENTIRE LENGTH IN ACCORDANCE WITH M.A.G. SECT. 610.6
4. BEGIN/END RESTRAINED JOINT STATIONING TO BE SHOWN ON THE APPROVED CONSTRUCTION DRAWINGS. ALL BENDS & FITTINGS SHALL HAVE STATIONING AND ELEVATION SHOWN ON THE APPROVED CONSTRUCTION DRAWINGS. THE BOTTOM ELEVATION OF THE CONFLICT AND THE TOP ELEVATION OF THE DUCTILE IRON PIPE AT THE CENTERLINE OF THE CONFLICT SHALL BE SHOWN ON THE APPROVED CONSTRUCTION DRAWINGS
5. INSTALL ANCHOR BLOCKS/THRUST BLOCKS AT ALL VERTICAL BENDS PER M.A.G. STD. DET. 381.
6. AIR RELEASE VALVES ARE REQUIRED ON THE HIGH POINT OF VERTICAL REALIGNMENT.

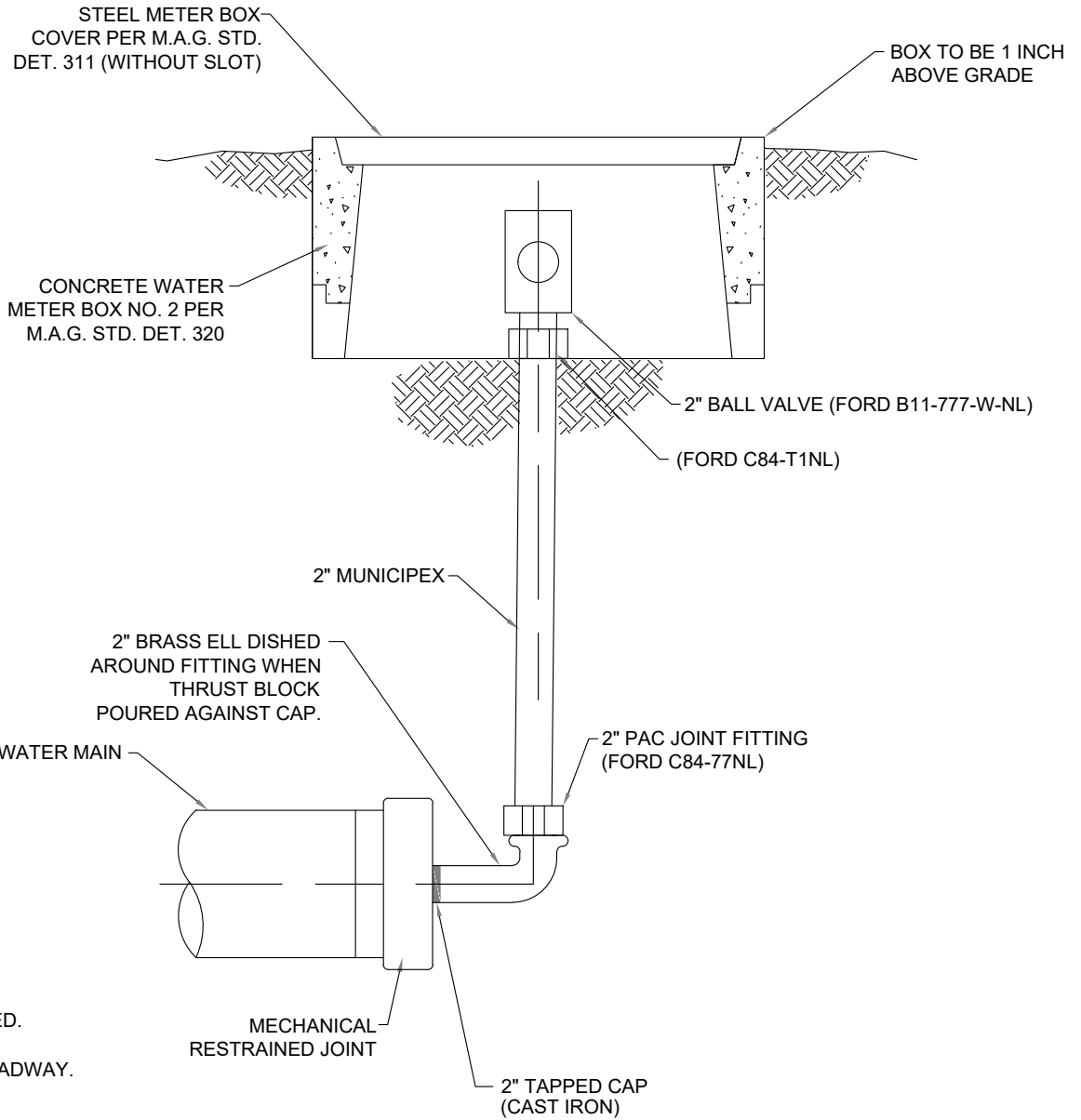
Date:
November 2022



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VERTICAL RE-ALIGNMENT OF WATER MAINS

Detail No.
370-1



NOTES:

1. NO SOLDERED JOINTS
2. CARSONITE MARKER REQUIRED.
3. MUNICIPEX TO BE USED IN ROADWAY.

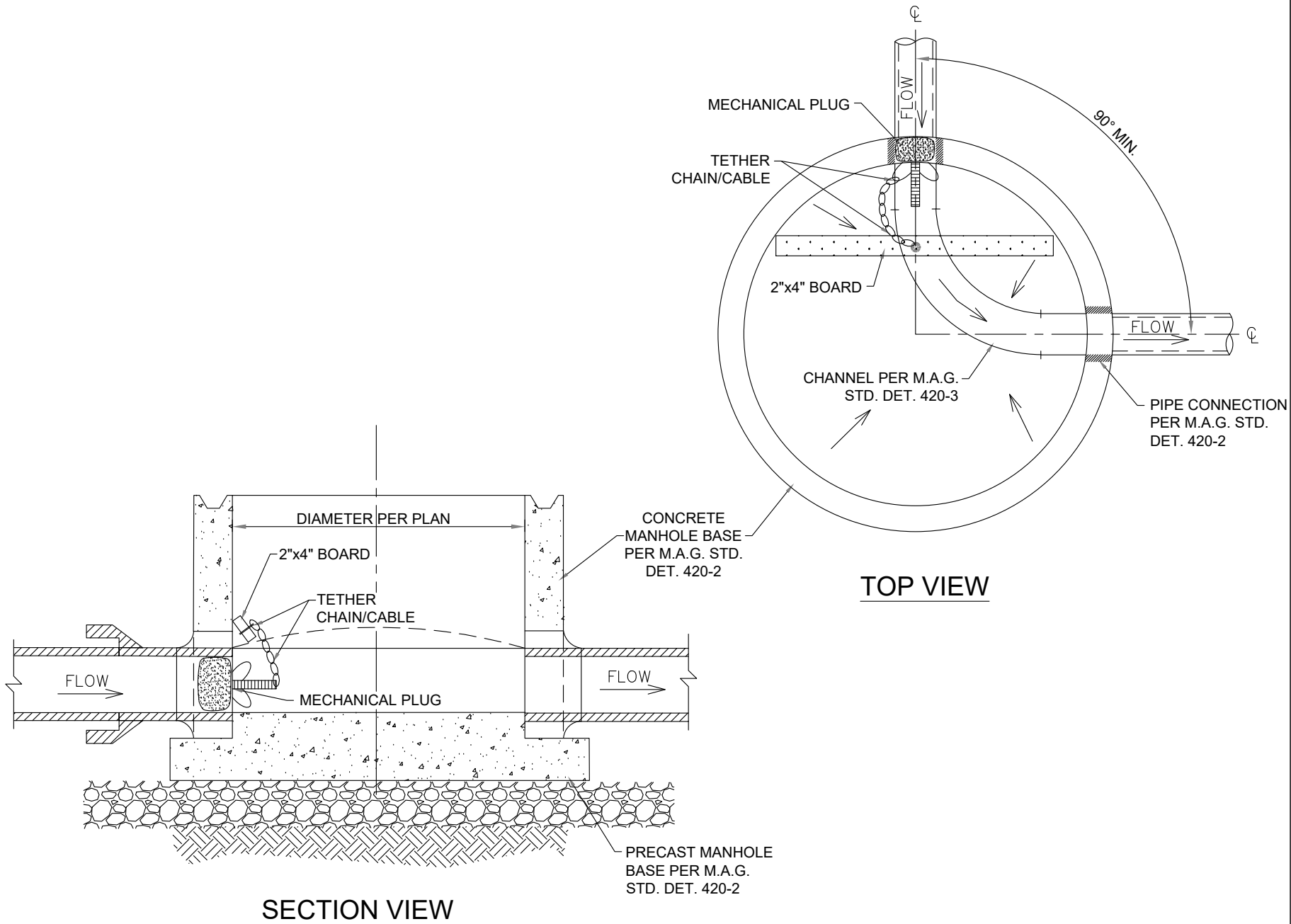
Date:
November 2022



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POTABLE CURB STOP (BLOW OFF) WITH FLUSHING PIPE

Detail No.
390-1



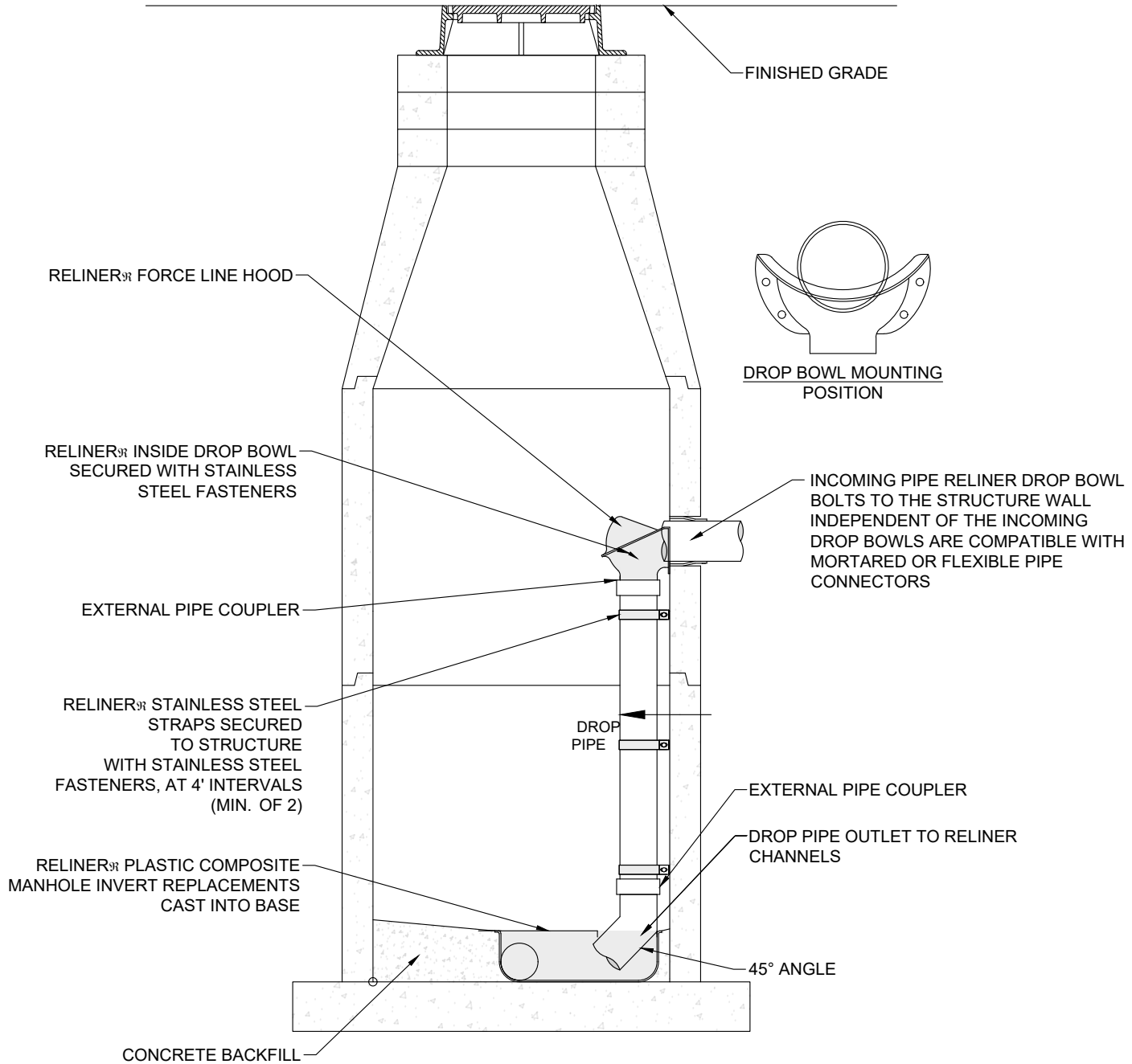
Date:
November 2022



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TEMPORARY MANHOLE PLUG

Detail No.
420



Date:
November 2022



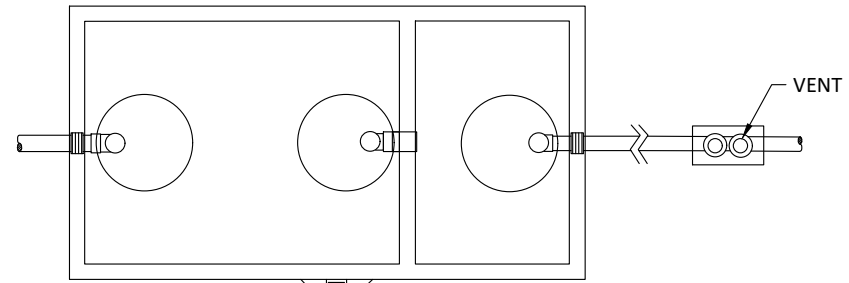
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INSIDE MANHOLE PIPE DROP

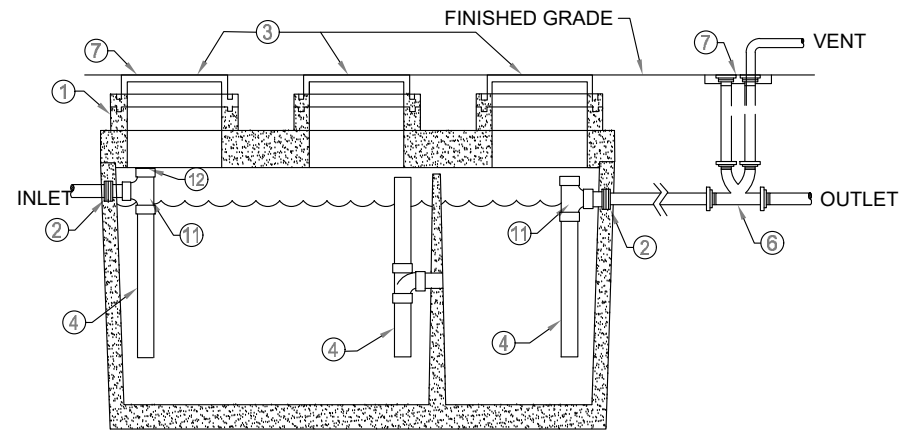
Detail No.
426

NOTES :

1. ALL GRADIENT RISERS, INCLUDING THE MANHOLE FRAME WILL HAVE THE INTERIOR SEALED WITH NON-SHRINK GROUT.
2. PIPE CONNECTIONS SHALL BE FLEXIBLE CONNECTIONS AND COMPLY WITH ASTM C923 OR ASTM C1644 FOR PRECAST INTERCEPTORS; OR SECTION 7 OF C923 OR ASTM C1644 FOR MATERIALS OTHER THAN PRECAST CONCRETE.
3. MANHOLE, FRAME, COVER, AND COLLAR MUST BE WATERTIGHT (GASKETED), ANCHORED, DOES NOT SLIDE, AND SUPPORTS ANTICIPATED LOADS. REFERENCE M.A.G. DETAILS 422 AND 424-1.
4. OUTLET AND BAFFLE PLUMBING: MUST BE OPEN TOPPED, 12" DISTANCE FROM INTERNAL FLOOR TO END OF PIPE AND EXTEND 5" ABOVE THE LIQUID LEVEL. INTERNAL PIPING SHALL BE 4" DIAMETER.
5. CONSTRUCTION & SPECIFICATIONS TO MOST CURRENT REVISIONS OF ASTM C1613/ ASTM F2649/IAPMO/ANSI Z1001
6. 2-WAY CLEANOUT ON THE OUTLET LINE. VENT INTERCEPTOR TO ROOF.
7. WATER TEST AND REPAIR: INSPECTED BY CITY PRETREATMENT COORDINATOR PER ASTM C1613; IAPMO Z1001 OR NPCA BEST PRACTICES GUIDELINES.
8. ACCESS: MINIMUM 2: ON LARGER SIZES EACH PLUMBING FITTING (INLET, BAFFLE AND OUTLET) SHALL HAVE THE REQUIRED AND STIPULATED ACCESS OPENING, RISERS AND COVERS.
9. SUITABLE SUB-BASE BEDDING WITH GRANULAR MATERIAL SHALL BE PREPARED TO HANDLE ANTICIPATED LOADS.
10. CONTACT THE CITY WATER FOR INSPECTION/ TESTING. WATERQUALITYSPECIALIST@BULLHEADCITYAZ.GOV
11. INLET AND OUTLET PLUMBING MUST HAVE TEE'S.
12. INLET TEE MUST HAVE CAP.



TOP VIEW
(COVERS & RINGS REMOVED)



SIDE SECTION VIEW

Date:
November 2022



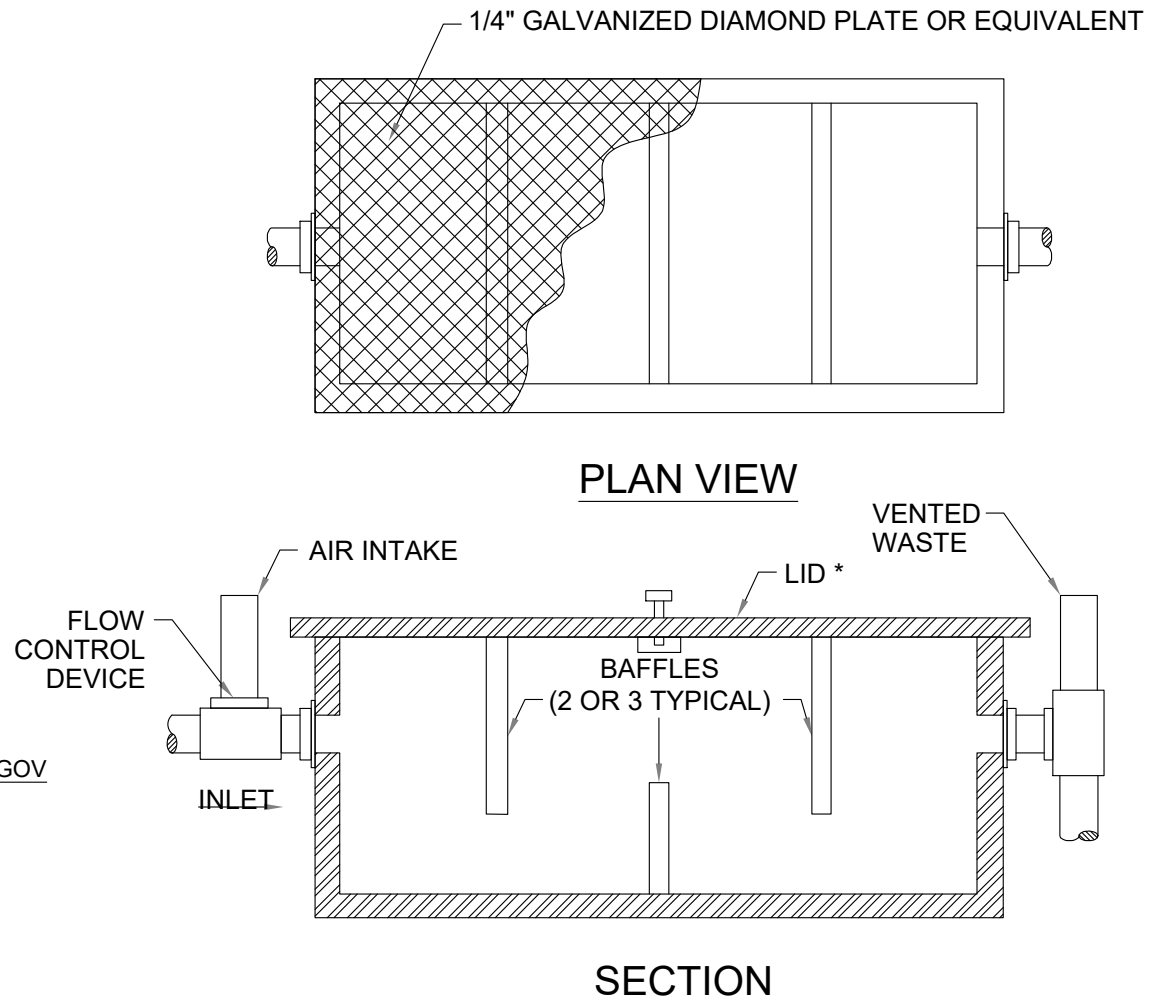
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TYPICAL GRAVITY / SOLIDS INTERCEPTOR

Detail No.
450-1

NOTES:

1. PERFORMANCE STANDARDS: MUST BE CERTIFIED PER (PDI) G-101/ASME A112.14.3/CSA B481 OR MOST CURRENT REVISIONS.
2. A FLOW CONTROL DEVICE MUST BE INSTALLED TO MANUFACTURE'S SPECIFICATION ON THE INLET PIPE PRIOR TO ENTERING THE HYDROMECHANICAL GREASE INTERCEPTOR (HGI). FLOW CONTROL MUST BE ACCESSIBLE FOR MAINTENANCE.
3. HGI SHALL BE INSTALLED BELOW FLOOR GRADE.
4. HGI MUST BE EASILY ACCESSIBLE FOR INSPECTION AND MAINTENANCE.
5. FILL WITH CLEAN WATER PRIOR TO START UP.
6. HGI MUST BE INSPECTED PRIOR TO BACKFILL BY CITY WATER QUALITY SPECIALIST .
7. USE AND SIZE TO BE APPROVED BY CITY WATER QUALITY SPECIALIST: INSPECTED BY CITY WATER QUALITY SPECIALIST.
8. PROPER AIR CONTROL IS CRITICAL TO THE OPERATION OF AN HGI. AIR INTAKE ON THE INLET AND VENTED WASTE ON THE OUTLET.
9. CONTACT CITY WATERQUALITYSPECIALIST@BULLHEADCITYAZ.GOV



* LID MUST BE CAPABLE OF SUPPORTING ANTICIPATED LOADS

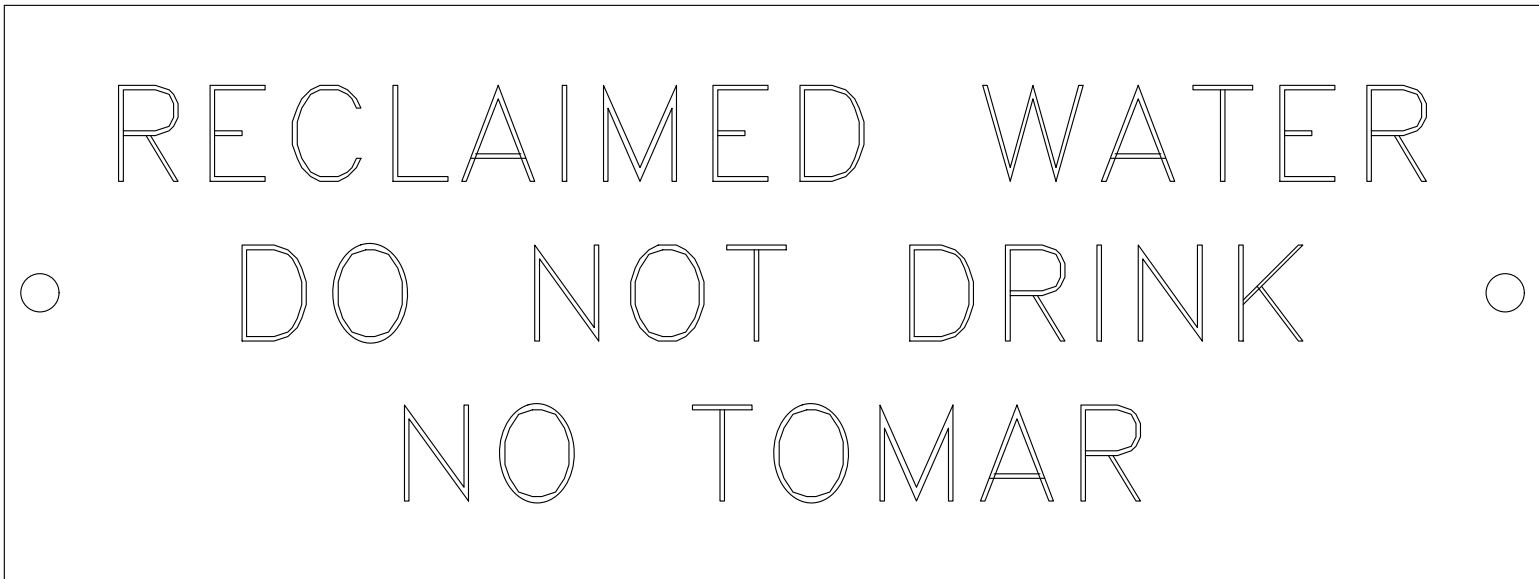
Date:
November 2022



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TYPICAL HYDROMECHANICAL GREASE INTERCEPTOR (HGI)

Detail No.
450-2



VALVE TAG:

3"x8"x3/16" PURPLE POLYETHYLENE PLASTIC WITH MINIMUM 1/2" HIGH BLACK LETTERING IN ACCORDANCE WITH M.A.G. SECTION 616. TAG TO BE ATTACHED WITH STAINLESS STEEL WIRE.

IDENTIFICATION DECAL:

5"x16"x3/16" PURPLE POLYETHYLENE PLASTIC WITH MINIMUM 1" HIGH BLACK LETTERING IN ACCORDANCE WITH M.A.G. SECTION 616. DECAL TO BE ATTACHED WITH AN EPOXY ADHESIVE.

Date:
November 2022

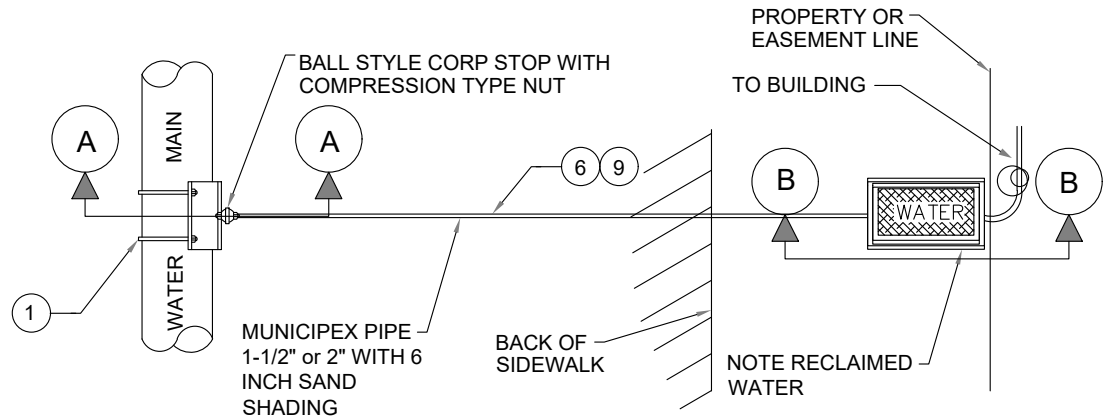
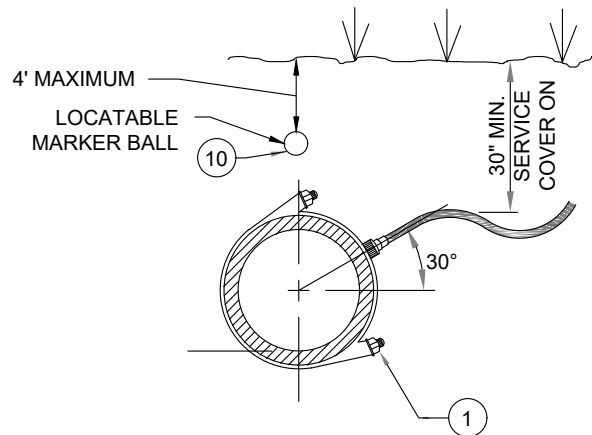


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WATER ID TAG AND DECALCEPTOR (HGI)

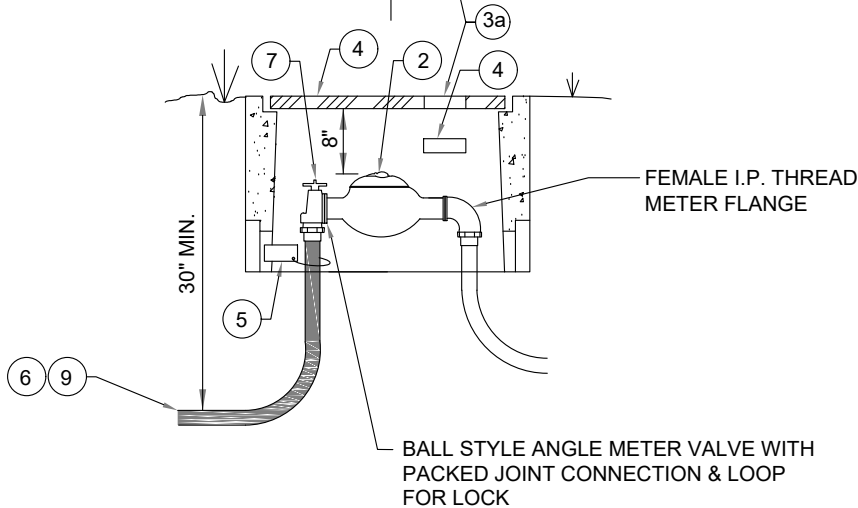
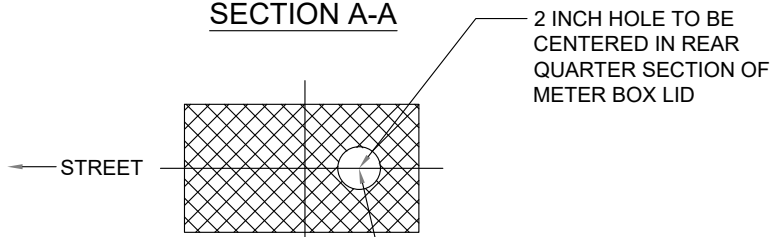
Detail No.
600-1

ALL SERVICES



PLAN VIEW

SECTION A-A



SECTION B-B

NOTES:

- 1 SEE CITY STD. DET. 100-5 FOR APPROVED SADDLES.
- 2 AMR METER ONLY TO BE SET BY CITY UPON PAYMENT OF FEES.
- 3 CONCRETE METER BOX PER M.A.G. STD. DET. 320 BOX NO. 2 OR 4 W/ STEEL LID W/ 2 INCH DIAM. OPENING TO BE SET PERPENDICULAR TO BACK OF WALK OR CURB. BOX TO MATCH SLOPE OF FINISH GRADE AND SET 1" ABOVE FINISH GRADE OR BACK OF WALK OR CURB.
3a 2 INCH DIAMETER OPENING.
- 4 IDENTIFICATION DECAL PER CITY STD. DET. 600-1.
- 5 VALVE TAG PER CITY STD. DET. 600-1.
- 6 RECLAIMED LINE MUNIPEX PIPE TO BE WRAPPED WITH PURPLE POLYETHYLENE TAPE.
- 7 ANGLE BALL METER VALVE TEE HEAD TO BE STAMPED "RECLAIMED WATER".
- 8 NO BOXES SHALL BE LOCATED IN DRIVEWAYS OR SIDEWALKS.
- 9 6 INCH SAND SHADING AND BEDDING ON SERVICES.
- 10 LOCATABLE MARKER BALLS SHALL BE PLACED ABOVE SERVICE CONNECTIONS AT TIE-IN LOCATION. NO MORE THAN 4' DEEP.
10a DETECTABLE MARKING TAPE SHALL BE PLACED ABOVE SERVICE LINE.

Date:
November 2022



2355 Trane Rd.
Bullhead City, AZ. 86442
(928) 763-9400

RECLAIMED WATER SERVICE CONNECTION

Detail No.
610-1

ALL ABOVE GROUND PIPE TO BE PAINTED WITH UV RESISTANT PAINT (10 MIL MIN. THICKNESS). COLOR TO MATCH SURROUNDING LANDSCAPE WITH "RECLAIMED WATER" STENCILED ON PIPE IN ACCORDANCE WITH M.A.G. SECT. 616.

#24 STAINLESS STEEL MESH SCREEN WITH STAINLESS STEEL CLAMPS

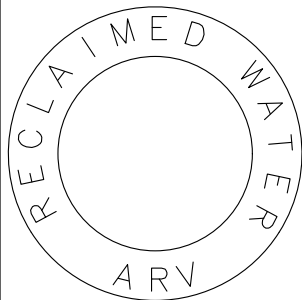
POLYWRAPPED 2" PVC 90° ELBOW (SCH. 80)

CONCRETE THRUST BLOCK PER M.A.G. STD. DET. 380

36" DIA CONNECTOR FRP MANHOLE W/ H20 LOAD RATING & IN ACCORDANCE W/ ASTM D-3753

12" ABC BASE, 95% COMPACTION PER M.A.G. SECT. 601.4.4

24" MANHOLE COVER TO BE LABELED:



MINIMUM CLEARANCE 6" ALL SIDES

VALVE TAG PER CITY STD. DET. 600-1

2" BRASS 90° ELBOW

3" THICK CONCRETE SUPPORT

2" CURB STOP PAC-JOINT X IPT

2" PVC 90° ELBOW

2" (SCH 80) 90° ELBOW

24" FRAME & COVER PER MAG STD DET 424

2' MIN FROM BACK EDGE OF CURB OR SIDEWALK

IDENTIFICATION DECAL PER CITY STD. DET. 600-1.

NSF APPROVED FLEXIBLE COUPLING W/ STAINLESS STEEL BANDS

2" GALVANIZED 90° ELBOW

AIR RELEASE VALVE (CRISPIN/VALVMATIC) STENCILED "RECLAIMED WATER" IN ACCORDANCE WITH M.A.G. SECT. 616.

UNION FITTING

6" MIN.

12" CONCRETE COLLAR 2" ABOVE GRADE PER MAG DETAIL 422

1 SACK CLSM PER M.A.G. SECT. 728 12" MIN TO UNDISTURBED GROUND

2" MUNICIPEX PIPE WRAPPED WITH PURPLE POLYETHYLENE TAPE. EXTEND LINE BEYOND PAVEMENT WHEN MAIN LINE IS IN STREET.

45° OR 90° BEND AS NEEDED

3" CLEAN GRAVEL

STREET ELBOW

2" CORP STOP IPT

SEE CITY'S STD. DET. 100-3 FOR APPROVED SADDLES.

NOTE:

1. IF MULTIPLE ARV's ARE INSTALLED, EACH BOX MUST BE SEPARATED BY 3' MINIMUM.
2. PRIOR TO CONSTRUCTION PROVED CITY WITH MATERIALS LIST FOR APPROVAL PER CITY RECLAIMED WATER SPECIFICATIONS.

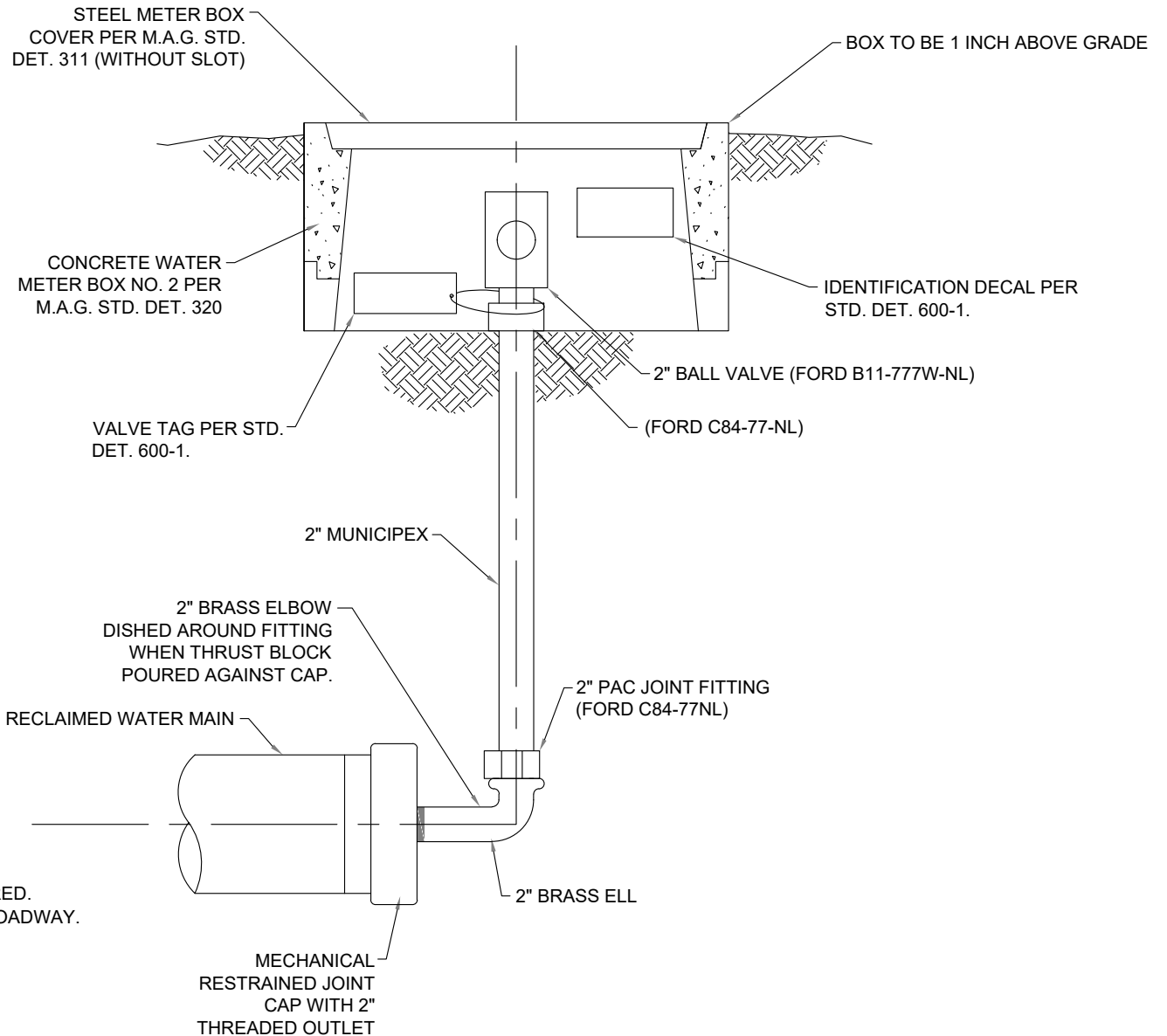
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RECLAIMED WATER UNDERGROUND
AIR RELEASE VALVE

Detail No.
620-1



NOTES:

1. CARSONITE MARKER REQUIRED.
2. MUNICIPEX TO BE USED IN ROADWAY.

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RECLAIMED WATER CURB STOP
(BLOW OFF) WITH FLUSHING PIPE

Detail No.
630-1