

SPECIFICATIONS FOR WATER MAINS

WATERLINE SHALL BE INSTALLED, TESTED AND STERILIZED UNDER THE DIRECT SUPERVISION OF THE CITY OF OREGON DIVISION OF WATER. NO DEVIATION FROM THESE SPECIFICATIONS WILL BE PERMITTED.

EXCEPT AS MODIFIED BY THESE PLANS AND BY THE DETAILED SPECIFICATIONS PERTAINING THERETO, ALL WORK ON THIS PROJECT SHALL BE GOVERNED BY THE STATE OF OHIO, DEPARTMENT OF TRANSPORTATION. CONSTRUCTION AND MATERIAL SPECIFICATIONS DATED JANUARY 1, 2013 AND BY SUCH SUPPLEMENTAL STATE SPECIFICATIONS AS MAY BE IN EFFECT 14 CALENDAR DAYS PRIOR TO THE AWARD OF THIS PROJECT. IN THE AFORESAID SPECIFICATIONS, THE WORDS "STATE", "DIRECTOR", AND "ENGINEER" SHALL BE HELD TO MEAN COMMISSIONER OF WATER OR HIS REPRESENTATIVE. THE SPECIFICATIONS OF THE AMERICAN NATIONAL STANDARDS INSTITUTE (AMERICAN WATER WORKS ASSOCIATION) AND THE AMERICAN SOCIETY OF TESTING AND MATERIALS HEREIN REFERRED TO, UNLESS OTHERWISE NOTED, SHALL BE THE LATEST SPECIFICATIONS OF THE RESPECTIVE ORGANIZATIONS.

ALL MATERIAL SHALL BE MANUFACTURED IN THE UNITED STATES OF AMERICA. COPIES OF SUPPLIERS' INVOICES SHALL BE SUBMITTED TO ENGINEER.

THE MANUFACTURER SHALL FURNISH AN AFFIDAVIT INDICATING THAT THE PIPE, FITTINGS AND APPURTENANCES HAVE BEEN MANUFACTURED AND TESTED IN ACCORDANCE WITH ALL REQUIREMENTS OF THE APPLICABLE REFERENCED STANDARDS. A COPY OF THE AFFIDAVIT, INDICATING THE PROJECT ON WHICH THE MATERIAL IS TO BE USED, SHALL BE FORWARDED TO THE CITY OR THEIR ENGINEER.

SPECIAL NOTICE

THE CITY OF OREGON HAS APPROXIMATELY 26 MILES OF EXISTING PRESTRESSED REINFORCED CONCRETE TRUNK WATER MAINS THAT CIRCUMVENT THE CITY. BY THEIR VERY NATURE, EMERGENCY REPAIRS ARE EXPENSIVE AND TIME CONSUMING. THESE CONCRETE MAINS ARE LOCATED ON OR CROSS THE FOLLOWING ROADS; NORTH CURTICE - CEDAR POINT - LALLENDRORF - SEAMAN - COY - NAVARRE - WHEELING - STARR - BROWN. TRUNK ELEVATION VARIES FROM FOUR TO TEN FEET.

NO EXCAVATION WILL BE PERMITTED OVER, UNDER, OR IN THE IMMEDIATE VICINITY OF THE TRUNK MAINS WITHOUT PRIOR PERMISSION FROM THE DIRECTOR OF PUBLIC SERVICE OR HIS AUTHORIZED REPRESENTATIVE.

CONTACT THE OREGON DIVISION OF WATER (419-698-7039) TO HAVE THE WATER LINES MARKED. WITH REGARD TO THE VARIOUS OTHER UTILITIES, THEY CAN BE CONTACTED THROUGH OHIO UTILITIES PROTECTION SERVICE AT 800-362-2764.

WATER SUPPLY PIPE

DUCTILE CAST IRON PIPE

DUCTILE CAST IRON PIPE SHALL BE DESIGNED IN ACCORDANCE WITH AWWA C150 AND MANUFACTURED IN ACCORDANCE WITH AWWA C151. THE PIPE SHALL BE WITH PUSH TYPE JOINTS MEETING THE REQUIREMENTS OF AWWA C-151 AND ANSI THICKNESS CLASS 52. THE PIPE SHALL BE FIELD WRAPPED WITH A MINIMUM 8-MILL THICK POLYETHYLENE TUBE MEETING THE REQUIREMENTS OF AWWA 105. ALL PIPE SHALL BE COATED WITH A BITUMINOUS MATERIAL ON THE OUTSIDE AND SHALL BE CEMENT MORTAR LINED IN ACCORDANCE WITH AWWA C104.

FITTINGS SHALL BE OF DUCTILE IRON, SHALL CONFORM TO AWWA C110 AND/OR C153 LATEST REVISION AND SHALL BE COATED AND LINED AS SPECIFIED FOR THE PIPE. FITTINGS SHALL BE OF THE MECHANICAL JOINT OR PUSH-ON JOINT TYPE IN ACCORDANCE WITH AWWA C111, INCORPORATING RUBBER GASKETS. FITTINGS THAT REQUIRE CONCRETE THRUST BLOCKS SHALL BE COMPLETELY WRAPPED PRIOR TO PLACING THE BLOCKING. ALL VALVE, FIRE HYDRANTS AND OTHER APPURTENANCES SHALL ALSO BE PROPERLY WRAPPED TO EITHER THE GROUND LINE OR THE UNDER SIDE OF THE OPERATING NUT OR VALVE.

THE PIPE SHALL BE BEDDED WITH FINE EXCAVATED MATERIAL UNDER, AROUND AND OVER THE PIPE FOR A MINIMUM DISTANCE OF 6 INCHES ABOVE THE TOP OF THE PIPE BARREL. THE MATERIAL SHALL BE PLACED IN LAYERS NOT EXCEEDING 6-INCHES IN THICKNESS, LOOSE MEASUREMENT, AND SECURELY COMPACTED BY HAND OR MECHANICAL TAMPING TO SECURE A GOOD COMPACTION WHILE TAKING CARE NOT TO DISPLACE OR DAMAGE THE PIPE OR JOINTS.

PAYMENT FOR WATER MAIN SHALL BE MADE AT THE CONTRACT UNIT PRICE BID PER LINEAR FOOT FOR THE RESPECTIVE ITEMS ACCEPTED IN PLACE, WHICH PRICE SHALL CONSTITUTE FULL COMPENSATION FOR CLEARING, FURNISHING, HANDLING, PLACING AND LAYING OF PIPES, FITTINGS, POLYETHYLENE TUBE, CONCRETE THRUST BLOCK, RESTRAINING JOINTS, BEDDING MATERIALS, AND FOR ALL LABOR, MATERIAL, EQUIPMENT, TOOLS AND INCIDENTALS NECESSARY TO COMPLETE THE WORK INCLUDING ALL EXCAVATION, BACKFILL, PAVEMENT REMOVAL AND REPLACEMENT, SUPPORTING OTHER UTILITIES, RESTORATION OF LANDSCAPING, SHEETING, ETC. RESTRAINING JOINTS SHALL BE MEGA LUG OR APPROVED EQUAL.

PVC WATERLINE

THE SPECIFICATIONS OF THE AMERICAN NATIONAL STANDARDS INSTITUTE (AMERICAN WATER WORKS ASSOCIATION), NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) AND THE AMERICAN SOCIETY OF TESTING AND MATERIALS HEREIN REFERRED TO FOR WATER SERVICE MAIN PIPE GATE VALVES, FIRE HYDRANTS, AND OTHER APPURTENANCES, UNLESS OTHERWISE NOTED, SHALL BE THE LAST SPECIFICATIONS AND PIPE LAYING, PVC PIPE SHALL BE DR 18, PR 235.

ALL PIPE FITTINGS AND SPECIALS SHALL BE LAID IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS, AND WITH AWWA C600 AND NFPA.

PIPE INTERIORS SHALL BE THOROUGHLY CLEANED OF DIRT AND FOREIGN MATTER BEFORE LAYING, BY BRUSHING, SWABBING, PRESSURE WASHING OR OTHER METHOD APPROVED BY THE CITY ENGINEER, AND MEANS SHALL BE PROVIDED TO PREVENT ENTRY OF DIRT OR FOREIGN MATERIAL DURING THE PROGRESS OF INSTALLATION.

ALL FITTINGS SHALL BE DUCTILE IRON IN CONFORMANCE WITH AWWA C110 OR AWWA C153. ALL FITTINGS SHALL BE RATED FOR 350 PSI WORKING PRESSURE, HAVE MECHANICAL JOINTS AND BE COATED AND CEMENT-MORTAR LINED IN ACCORDANCE WITH THE DIP SPECIFICATIONS.

TRACER TAPE/WIRE

THE CONTRACTOR SHALL FURNISH AND INSTALL DURING BACKFILL OPERATION FOR THE WATERLINE, 2 INCH IN WIDTH PRINTED POLYETHYLENE BLUE (WATER) TAPE. THIS IS TO BE PLACED THREE (3) FEET ABOVE THE CROWN OF THE PIPE.

NO SEPARATE OR EXTRA PAYMENT WILL BE MADE FOR THE FURNISHING AND INSTALLATION OF THE MARKER TAPE AND ALL COSTS SHALL BE INCLUDED FOR PAYMENT UNDER THE APPLICABLE BID ITEM(S) TO WHICH IT IS RELATED.

ALL DETECTABLE TRACING WIRE SHALL BE INSTALLED WITH PVC WATER MAINS. THE WIRE SHALL BE INSULATED NO.12 COPPER ELECTRICAL WIRE (THW). SPLICES IN TRACKING WIRE SHALL BE MADE WITH SHRINK TYPE BUTT-END ELECTRICAL CONNECTORS. AFTER INSTALLATION, THE TRACER WIRE SHALL BE TESTED FOR CONTINUITY BETWEEN ALL ACCESS POINTS TO THE TRACER WIRE, SUCH AS FIRE HYDRANTS, VALVES BOXES, ETC. ANY DISCONTINUITIES SHALL BE REPAIRED AT CONTRACTOR'S EXPENSE.

THE TRACING WIRE SHALL BE CONNECTED TO EACH VALVE AND SHALL BE PLACED UNDER THE PIPE.

PVC PIPE AND FITTINGS

1. PIPE 12 INCH AND SMALLER: AWWA C900, 14 INCH AND LARGER: AWWA C905 AS MODIFIED HEREIN OR UNLESS OTHERWISE INDICATED ELSEWHERE IN CONTRACT DOCUMENTS, SUITABLE FOR POTABLE WATER USE.

A) CLASS AND THICKNESS: DR18 OR AS NOTED ON THE DRAWINGS, WITH DIP EQUIVALENT OUTER DIAMETERS.

B) POTABLE WATER USE: NSF61

C) PIPE MARKINGS: AWWA C900 AND AWWA C905

D) JOINING PIPES: UTILIZE ELASTOMERIC GASKET PUSH ON JOINTS FOLLOWING AWWA C900 AND C905

E) APPROVED MANUFACTURERS:

- IPEX.
- UPONOR ETI.
- JM EAGLE OR APPROVED EQUAL

2. FITTINGS:

A) DUCTILE IRON SPECIFIED HEREIN.

B) PUSH-ON RUBBER GASKETED JOINTS: INJECTION-MOLDED MEETING AWWA C907, CLASS 150, OR FABRICATED MEETING AWWA C900, CLASS 200 OR AWWA C905, CLASS 235.

C) APPROVED MANUFACTURERS:

- HARRINGTON CORPORATION (HARCO), MULTIFITTINGS.
- FREEDOM PLASTICS OR APPROVED EQUAL

3. SERVICE SADDLES:

A) GENERAL:

1) USE FOR 2 INCH AND SMALLER CONNECTIONS.

2) MANUFACTURE SADDLES WITH CLAMPS FOR UNDERGROUND SERVICES:

- A. RATED FOR MINIMUM SERVICE OF 150 PSI
- B. PROVIDE FULL SUPPORT AROUND THE CIRCUMFERENCE OF PIPE.
- C. DO NOT DISTORT, SCRATCH, OR DAMAGE PIPE WHEN TIGHTENED.
- D. CONTAINS THICK TAPPING BOSS, WHICH HAS BEEN PRECISION-MACHINED WITH FULL-LENGTH THREADS FOR WATERTIGHT CONNECTION THAT RESISTS PULLOUT.
- E. THREADS: AWWA C800 WITH STANDARD CORPORATION STOP THREAD.
- F. BRASS OR BRONZE ALLOY MEETING ASTM B62 OR B584 AND AWWA C800
- G. CASTINGS:
 - (1) UNIFORM QUALITY, TRUE TO PATTERN, OF EVEN GRAIN, SOUND AND SMOOTH, AND WITHOUT COLD SHUTS, SWELLS, SCALES, BLISTERS, SAND HOLES, CRACKS OR OTHER DEFECTS.
 - (2) SURFACES: SMOOTH WITH NO BURNT-ON SAND.
- H. USE WATERTIGHT GASKETS OF BUNA-N RUBBER MEETING ASTM D2000 OR NITRILE AROUND TOP.

B) SADDLES FOR PVC AWWA C900 AND C905 PIPE:

- 1) USE TAPPING SADDLE MANUFACTURED SPECIFICALLY FOR AWWA C900 AND C905 PVC PIPE WITH STAINLESS STEEL WIDE BAND STRAPS, NUTS AND WASHERS
- 2) APPROVED MANUFACTURERS AND MODELS:
 - A. FORD METER BOX CO., INC. 202BS
 - B. SMITH BLAIR, INC., 325.
 - C. MUELLER COMPANY SERIES DR2S
 - D. OR APPROVED EQUAL

ALL PVC PIPE USED THROUGHOUT THIS PROJECT SHALL CONFORM TO AWWA C900 DR18 (PR 235PSI) SPECIFICATION, WITH GASKETS MEETING ASTM F477, AND JOINTS IN COMPLIANCE WITH ASTM D3139.

CONTRACTOR TO INSTALL PVC PIPE IN STRICT ACCORDANCE WITH: AWWA C605 AND AWWA M 23 LATEST REVISIONS THEREOF. IF ANY OF THESE DOCUMENTS ARE FOUND TO CONFLICT, THE MOST RESTRICTIVE OF THE REQUIREMENTS SHALL BE MET. PARTICULAR ATTENTION SHALL BE PAID TO THE FOLLOWING ITEMS FROM THESE REFERENCES:

- 1. ANY SCRATCH OR GOUGE IN THE PIPE THAT IS MEASURED AS 10% OR MORE OF THE WALL SHALL BE CAUSE FOR REJECTION OF THAT PIPE. FOR 8 INCH DR 18 THIS EQUALS 0.0503 INCH, AND FOR 8 INCH DR 14 EQUAL 0.0646 INCH, 12-INCH DR14 EQUALS 0.0943 INCH ETC.
- 2. SPECIAL CARE SHALL BE TAKEN IN HANDLING OF PVC PIPE IN COLD WEATHER (40 OR LESS) OR WARM WEATHER (73.4 OR MORE)
- 3. NO PIPE SHOWING EVIDENCE OF SUN BURNING SHALL BE INSTALLED
- 4. ANY/ALL DEFLECTIONS SHALL BE MADE PER THE MANUFACTURE'S RECOMMENDATIONS AND/OR STANDARDS
- 5. PVC PIPE SHALL BE INSTALLED IN ACCORDANCE WITH AWWA C605, INCLUDING A MINIMUM OF 4 INCHES OF BEDDING, BACKFILL AROUND THE PIPE AND TO A HEIGHT OF MINIMUM ONE FOOT OVER THE PIPE WITH 1/2-INCH AND LESS CRUSHED STONE OR PEA GRAVEL. THIS BACKFILL SHALL BE COMPACTED IN 8-INCH LIFTS.
- 6. ALL FITTINGS, VALVES, FIRE HYDRANTS AND OTHER IRON APPURTENANCES, AS WELL AS ANY NUTS AND BOLTS, SHALL BE PROTECTED FROM CORROSION WITH TWO LAYERS OF POLYETHYLENE ENCASEMENT IN ACCORDANCE WITH AWWA C105 INSTALLED WITH ENOUGH TAPE SO AS TO HOLD THE POLYETHYLENE MATERIALS IN PLACE DURING THE BACKFILLING PROCESS.
- 7. THRUST BLOCKS SHALL BE INSTALLED ON ALL FITTINGS, VALVES, FIRE HYDRANTS, ETC. ASSOCIATED WITH THE USE OF PVC PIPE. NO RESTRAINT DEVICES SHALL BE ALLOWED ON PVC PIPE AS THESE MAY CUT INTO THE PIPE WALL RESULTING IN SCRATCHING OR GOUGING WHICH WILL REDUCE THE SURGE RESISTANCE OF THE PIPE.
- 8. CONTRACTOR SHALL FOLLOW ALL APPROPRIATE GUIDELINES WITH REGARD TO SAFELY TAPPING PRESSURIZED PVC PIPE. CONTRACTOR ASSUMES ALL LIABILITY RELATIVE TO SAFETY AND INJURY RESULTING FROM TAPPING PVC PIPE.
- 9. ALL FITTINGS, VALVES, FIRE HYDRANTS, ETC. SHALL BE SUPPORTED SUCH THAT THE WEIGHT OF SUCH APPURTENANCE WILL NOT BE TRANSFERRED TO THE ADJOINING PVC PIPE.

MECHANICAL JOINT RESTRAINT

RESTRAINED JOINTS SHALL BE PROVIDED AT ALL FITTINGS AND TO THE LENGTHS, IN FEET, IN ACCORDANCE WITH MANUFACTURE'S RECOMMENDATIONS AND NFPA STANDARD.

ALL NUTS AND BOLTS SHALL BE 316 STAINLESS STEEL OR EQUAL.

THRUST BLOCKING AS A MEANS OF JOINT RESTRAINT WILL NOT BE PERMITTED.

PIPE SHALL BE ANCHORED AT DEAD ENDS, BENDS, TEES, VALVES AND OTHER FITTINGS REQUIRING RESTRAINT BY MEANS OF MECHANICAL JOINT RESTRAINT. MECHANICAL JOINT RESTRAINT SHALL BE INCORPORATED IN THE DESIGN OF THE FOLLOWER GLAND AND SHALL INCLUDE A RESTRAINING MECHANISM WHICH, WHEN ACTUATED, IMPARTS MULTIPLE WEDGING ACTION AGAINST THE PIPE, INCREASING ITS RESISTANCE AS THE PRESSURE INCREASES. FLEXIBILITY OF THE JOINT SHALL BE MAINTAINED AFTER BURIAL. GLANDS SHALL BE MANUFACTURED OF DUCTILE IRON CONFORMING TO ASTM A 536-80. RESTRAINING DEVICES SHALL BE OF DUCTILE IRON HEAT TREATED TO A MINIMUM HARDNESS OF 370 BHN. DIMENSIONS OF THE GLAND SHALL BE SUCH THAT IT CAN BE USED WITH THE STANDARDIZED MECHANICAL JOINT BELL AND TEE-HEAD BOLTS CONFORMING TO ANSI/AWWA A21.11 AND ANSI/AWWA C153/A21.53 OF LATEST REVISION. TWIST-OFF NUTS SHALL BE USED TO INSURE PROPER ACTUATING OF THE RESTRAINING DEVICES. THE MECHANICAL JOINT RESTRAINT DEVICE SHALL HAVE A WORKING PRESSURE OF AT LEAST 250 PSI WITH A MINIMUM SAFETY FACTOR OF 2:1

VALVES AND APPURTENANCES - GENERAL

THIS ITEM COVERS GATE VALVES AND TAPPING SLEEVES AND VALVES WHICH MAY BE REQUIRED IN CONNECTION WITH THE INSTALLATION OF THE WATER MAINS. ALL VALVES SHALL BE PROVIDED WITH A VALVE BOX OR SHALL BE INSTALLED WITHIN A MANHOLE AS SUBSEQUENTLY SPECIFIED. VALVES INSTALLED WITH CLASS 52 DUCTILE PIPE SHALL BE WRAPPED AS PREVIOUSLY SPECIFIED.

GATE VALVES

GATE VALVES SHALL BE IRON BODY, BRONZE MOUNTED, DOUBLE DISC, PARALLEL SEAT TYPE MEETING THE REQUIREMENTS OF AWWA C500, OR IRON BODY RESILIENT SEAT TYPE MEETING THE REQUIREMENTS OF AWWA C509. VALVES SHALL BE DESIGNED FOR A WORKING WATER PRESSURE OF 200 PSI AND SHALL BE OF THE NON-RISING STEM TYPE WITH A STANDARD AWWA NUT. THE MANUFACTURER SHALL FURNISH AN AFFIDAVIT INDICATING THAT ALL TESTS AND PROVISIONS OF THE APPLICABLE STANDARD HAVE BEEN MET. VALVES SHALL HAVE MECHANICAL JOINT ENDS. STEM SEALS SHALL CONSIST OF AT LEAST TWO "O" RINGS. VALVES SHALL OPEN BY TURNING TO THE RIGHT (CLOCKWISE). IF REQUIRED, OPERATORS SHALL BE PROVIDED WITH EXTENSION STEMS SUCH THAT THE OPERATING NUT TERMINATES APPROXIMATELY 4 FEET BELOW GRADE. EXTENSION STEMS SHALL BE CENTERED IN THE VALVE BOXES BY APPROVED STEM GUIDES. VALVES SHALL BE SET PLUMB, WITH THE VALVE BOX ACCURATELY CENTERED OVER THE VALVE. THE FOLLOWING MAKES AND MODELS OF VALVES WILL BE PERMITTED:

- AMERICAN FLOW CONTROL --- SERIES 500
- KENNEDY --- 4571-R
- MUELLER --- A2360

ALL FITTINGS SHALL BE DUCTILE IRON, SHALL CONFORM TO AWWA C110 AND C153 AND SHALL BE OF MECHANICAL JOINT OR PUSH-ON TYPE.

ONLY THE CITY OF OREGON MAY OPERATE VALVES.

TAPPING VALVES

TAPPING SLEEVES AND VALVES SHALL BE FURNISHED BY THE CONTRACTOR. THE TAPPING SLEEVE AND VALVE WILL BE INSTALLED BY THE CITY OF OREGON. ALL EXCAVATION AND BACKFILL WILL BE PERFORMED BY THE CONTRACTOR.

A. INSTALLATION REQUIREMENTS - THE EXISTING WATER MAIN INTO WHICH A PRESSURE CONNECTION IS TO BE MADE CANNOT BE SHUT DOWN OR TAKEN OUT OF SERVICE. THE INSTALLATION SHALL BE MADE BY PERSONNEL SKILLED AND EXPERIENCED IN THE MAKING OF PRESSURE TAPS. THE CONTRACTOR SHALL EXERCISE EXTREME CARE IN THE SELECTION AND ADJUSTMENT OF DRILLING EQUIPMENT AS WELL AS IN THE INSTALLATION, INSPECTION AND CUTTING PROCEDURES. PRIOR TO ORDERING ANY TAPPING SLEEVE ASSEMBLY, THE CONTRACTOR SHALL EXPOSE A SECTION OF THE EXISTING MAIN AND VERIFY THE CIRCUMFERENCE OF THE PIPE.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR INSPECTION, PROPER ASSEMBLY, ALIGNMENT AND FITTING OF THE TAPPING SLEEVE AND VALVE TO THE MAIN. IN THE EVENT OF ANY MISMATCH OF ANY PURCHASED MATERIALS, IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO REFIT THEM IN THE FIELD OR TO MAKE THE NECESSARY ARRANGEMENTS WITH THE MANUFACTURER FOR FACTORY REFIT.

THE SEVERED SECTION OF WATER MAINS SHALL BE REMOVED THROUGH THE TAPPING VALVE AND GIVEN TO THE CITY OR THEIR ENGINEER AS PROOF OF SATISFACTORY EXECUTION OF THE OPERATION. THE ENGINEER, AT HIS OPTION, MAY RETAIN THE COUPON FOR SUCH ANALYSIS OR TESTS AS ARE NECESSARY TO EVALUATE THE CONDITION OF THE EXISTING WATER MAIN, WATER TREATMENT, DEPOSITS, ETC.

THE CITY OF OREGON, DIVISION OF WATER, HAS THE NECESSARY EQUIPMENT AND EXPERIENCED PERSONNEL TO MAKE PRESSURE TAPS AND WILL PERFORM SAME AT THE REQUEST AND EXPENSE OF THE CONTRACTOR.

B. TAPPING SLEEVES - TAPPING SLEEVES SHALL BE MADE IN TWO HALVES FOR ASSEMBLY AROUND THE MAINS. GASKETS SHALL EXTEND THE ENTIRE LENGTH OF THE SLEEVES TO FORM WATERTIGHT JOINTS WHEN THE SIDE BOLTS ARE TIGHTENED IN ACCORDANCE WITH THE MANUFACTURERS' RECOMMENDATIONS. BRANCH FLANGES SHALL HAVE FEMALE FACES TO ACCOMMODATE MALE FACES OF TAPPING VALVES.

C. TAPPING VALVES - TAPPING VALVES SHALL BE GATE VALVES AS PREVIOUSLY SPECIFIED, EXCEPT AS MODIFIED BY THE FOLLOWING SUPPLEMENTARY REQUIREMENTS:

TAPPING VALVES SHALL BE OF THE CAST IRON BODY, RESILIENT SEAT TYPE, MEETING THE REQUIREMENTS OF AWWA C509-LATEST REVISION.

VALVE OUTLETS SHALL BE MECHANICAL JOINT IN COMPLIANCE WITH AWWA C111. THE CYLINDRICAL SECTION OF THE INTERIOR ANNULAR RECESS OF THE BELL SHALL BE MACHINED WITH THE BORE THROUGH THE SEAT RINGS TO PROVIDE ALIGNMENT FOR THE DRILLING MACHINE.

VALVE LOCATION AND SETTING

MAIN LINE VALVES SHALL BE INSTALLED AT INTERSECTIONS SO AS TO BE ABLE TO ISOLATE THE LINE AND PREVENT BACK FEET AND AT INTERVALS AS SHOWN ON THE PLANS. A GATE (WATCH) VALVE SHALL BE INSTALLED WITH EACH FIRE HYDRANT AS SUBSEQUENTLY SPECIFIED.

MAIN LINE VALVES INSTALLED IN EXISTING OR PROPOSED PAVED AREAS OR AS OTHERWISE REQUIRED BY THE CITY SHALL BE INSTALLED IN MANHOLES. VALVES INSTALLED AT ALL OTHER LOCATIONS SHALL BE WITH A VALVE BOX AS SUBSEQUENTLY SPECIFIED. VALVES SHALL SET PLUMB WITH THE MANHOLE ACCURATELY CENTERED OVER THE VALVE AND WITH THE TOP OF THE MANHOLE COVER FLUSH WITH THE SURFACE OF THE GROUND OR PAVEMENT.

WATCH VALVES INSTALLED WITH FIRE HYDRANTS AND ALL OTHER MAIN LINE VALVES SHALL BE INSTALLED WITH VALVE BOXES. VALVES SHALL BE SET PLUMB WITH VALVE BOX CENTERED OVER THE VALVE AND WITH THE TOP OF THE BOX FLUSH WITH THE SURFACE OF THE GROUND OR PAVEMENT.

VALVE BOXES

VALVE BOXES SHALL BE CONSTRUCTED OF A GOOD GRADE OF CAST IRON; SHALL BE COATED; SHALL BE OF THE THREE PIECE SCREW TYPE; SHALL HAVE A 5 1/4 INCH SHAFT; AND SHALL BE PROVIDED WITH A HEAVY NEED FITTING COVER HAVING THE WORD "WATER" CAST ON THE TOP. BASES SHALL COVER THE ENTIRE BONNET SECTION OF THE VALVE. BOXES SHALL CORRECTLY SET ON VALVE BODY AND SHALL EXTEND TO THE GROUND ELEVATION WITH SUFFICIENT LENGTH FOR EACH SECTION TO BE PROPERLY ENGAGED.

VALVE MANHOLES

ALL MAIN LINE VALVES SHALL BE ENCLOSED IN STANDARD VALVE MANHOLES AS SHOWN IN ATTACHED DETAILS. MANHOLES SHALL BE CONSTRUCTED OF EITHER APPROVED SOLID CONCRETE (CIRCULAR) BLOCK OR APPROVED PRECAST MANHOLE SECTIONS MEETING ASTM C-478. MANHOLE WALLS SHALL REST ON A CLASS 1 REINFORCED CONCRETE OR BERM STONE (ODOT ITEM 411) FOUNDATION AS SHOWN. IF BLOCK IS USED, A 1/2" COAT OF CEMENT MORTAR, INSIDE AND OUT, MUST BE PROVIDED. WHERE PIPE PASSES THROUGH THE WALLS PROVIDE A GASKETED FLEXIBLE WATERTIGHT CONNECTION (KOR-N-SEAL, OR EQUAL), OR 1/2" JUTE ROPING OR NEOPRENE GASKET MATERIAL.

WHERE SPECIFIED, MANHOLE STEPS MEETING ASTM C-478 SHALL BE PROVIDED AND SHALL BE OF ALUMINUM OR REINFORCED POLYPROPYLENE.

FOR PRECAST SECTIONS, TOPS SHALL BE OF THE ECCENTRIC OR FLAT SLAB TYPE AND SHALL BE CONSTRUCTED OF CLASS 1 REINFORCED CONCRETE. IF PRECAST SECTIONS ARE USED, A MINIMUM OF 6" OF ADJUSTING RINGS MUST BE PROVIDED.

VALVES MUST BE POSITIONED INSIDE MANHOLE SO AS TO ALLOW UNOBSTRUCTED ACCESS TO VALVE OPERATING NUT WITH VALVE WRENCH.

ONLY THE CITY OF OREGON
MAY OPERATE VALVES.

SCALE

DRAWN A.L.B.

CHECKED

DATE

05/26/16

AS SHOWN

WATERLINE
NOTES & DETAILS

CITY OF OREGON