

APPENDIX 3C

Sample Notes for Water Plans

I. INTRODUCTION

All notes in these sets are illustrative and require review and revision by the Engineer for each project and specific project conditions. Subsections have been included for easy reference.

Yellow highlights indicate a note to the designer.

2. WATER NOTES

For water notes unless otherwise noted.

MATERIALS

1. ALL PIPE, APPURTENANCES, AND WORK SHALL CONFORM TO THE 2023 CITY OF SEATTLE STANDARD PLANS AND SPECIFICATIONS.
2. ALL MATERIALS FOR WATER DISTRIBUTION MUST BE NEW IN ACCORDANCE WITH COS STD SPEC SECTIONS 7-11 TO 7-15 AND 9-30.
3. TRENCH BACKFILL MUST BE PER MINERAL AGGREGATE TYPE 17. NATIVE MATERIAL WILL NOT BE ALLOWED.
4. PIPE (W) 4" AND LARGER MUST BE DUCTILE IRON PIPE (DIP) CLASS 52 CONFORMING TO AWWA C-151 WITH DOUBLE THICK CEMENT MORTAR LINING CONFORMING TO AWWA C-104. UNLESS OTHERWISE NOTED, JOINTS MUST BE RESTRAINED JOINT. LATERALS FOR HYDRANTS AND 4" AND LARGER SERVICES MUST BE DIP WITH MECHANICAL JOINTS (MJ).
5. FITTINGS ON RESTRAINED JOINTED (RJ) PIPE (W) 4" AND LARGER MUST BE DUCTILE IRON, RESTRAINED JOINTED FITTINGS. RJ FITTINGS MUST CONFORM TO COS STD SPEC 9-30.2(3). MECHANICALLY JOINTED (MJ) FITTINGS MUST BE DUCTILE IRON AND CONFORM TO AWWA C-110 AND C-111, OR AWWA C-153. ALL RJ AND MJ FITTINGS MUST BE DOUBLE-THICK CEMENT MORTAR LINED CONFORMING TO AWWA C-104.
6. ALL MECHANICAL JOINTS ON DUCTILE IRON PIPE CONNECTIONS MUST BE RESTRAINED WITH WEDGE RESTRAINT GLANDS (WRG). WEDGE RESTRAINT GLANDS MUST NOT BE USED ON CAST IRON PIPE.
7. CONCRETE THRUST BLOCKING FOR VERTICAL FITTINGS MUST BE PER COS STD PLANS 330A AND 330B.
8. CONCRETE THRUST BLOCKING FOR HORIZONTAL FITTINGS MUST BE PER COS STD PLANS 331A AND 331B.
9. INSTALL CORROSION PROTECTION AS DETAILED IN THE DRAWINGS. Note to engineer: this note must be revised for each specific site based on soil corrosivity, consult with a corrosion protection engineer as needed.
 - a. ALL PIPE (W) 4" AND LARGER MUST BE POLYETHYLENE ENCASED (FILM WRAPPED) PER COS STD SPECS 7-11.3(6)B AND 9-30.1(4)D. EXTEND ENCASEMENT OVER DIP TO CIP FITTING CONNECTIONS TO THE TRENCH-END WALL AND SECURE TIGHTLY AROUND PIPES WITH DUCT TAPE.
 - b. CONTRACTOR MUST BOND ALL DIP JOINTS PER COS STD PLAN 362. INSTALL 17LB (MIN) HIGH POTENTIAL MAGNESIUM ANODE EVERY 36', BONDED TO DUCTILE IRON

PIPE. DIGITAL LOW RESISTANCE OHMMETER TESTING PER COS STD SPEC 7-11.3(15)D IS REQUIRED. Notes to engineer: anode selection and spacing vary. Testing with ohmmeter is not always required.

10. CONTRACTOR TO WAX TAPE ALL WEDGE RESTRAINT GLANDS, FLANGED JOINTS, AND EXPOSED BOLTS, CONFORMING TO COS STD SPEC 9-30.1(4)F.

WORK ON EXISTING MAINS

11. PRIOR TO LAYING PIPE THE CONTRACTOR MUST:
 - a. IN THE PRESENCE OF THE SPU RESIDENT ENGINEER, EXPOSE THE EXISTING WATERMAIN TO DETERMINE ITS ELEVATION AND ALIGNMENT AT CONNECTION POINTS PER COS STD SPEC 7-11.3(4B).
 - b. PROVIDE ALL CONTROL SURVEYS REQUIRED TO DEFINE THE ALIGNMENT AND ELEVATIONS OF THE WATER MAIN IN CONFORMANCE WITH THE APPROVED PLAN. THE SURVEYS MUST BE PERFORMED BY A SURVEYOR LICENSED BY THE STATE OF WASHINGTON. ALL REFERENCE MARKS MUST BE PRESERVED DURING CONSTRUCTION. A GRADE SHEET, IN ACCEPTABLE FORMAT, MUST BE PROVIDED TO SPU PRIOR TO BEGINNING WORK.
12. ALL WATER MAINS MUST BE PRESSURE TESTED IN ACCORDANCE WITH COS STD SPEC 7-11.3(11) AND DISINFECTED IN ACCORDANCE WITH COS STD SPEC 7-11.3(12). ALL PRESSURE TESTING MUST BE DONE IN THE PRESENCE OF THE SPU RESIDENT ENGINEER. THE CONTRACTOR MUST PROVIDE PLUGS AND TEMPORARY BLOWOFF ASSEMBLIES FOR PRESSURE TESTING AND DISINFECTION. SEE COS STD PLAN 300 FOR FLUSHING CONNECTION DETAILS.
13. SYSTEM CONNECTIONS: CONTRACTOR MUST ASSIST SPU WITH CONNECTIONS TO EXISTING WATERMAINS PER COS STD PLANS 300A-C AND COS STD SPEC 7-11.3(9). SPU WILL PROVIDE THE CONNECTION FITTINGS TO EXISTING PIPE. CONTRACTOR MUST SUPPLY CONNECTION FITTINGS TO NEW PIPE.
14. CUT, CAP AND BLOCK: CONTRACTOR MUST ASSIST SPU W/ CUT, CAP AND BLOCK OF EXISTING WATER MAINS PER COS STD SPEC 7-11.3(9). SPU WILL CUT AND CAP MAIN. CONTRACTOR MUST SUPPLY ALL MATERIALS INCLUDING BLOCKS, PERFORM ALL NECESSARY EXCAVATION, PROTECTIVE MEASURES, AND BACKFILL. THE CONTRACTOR MUST PROVIDE ANY EQUIPMENT AND OPERATORS REQUIRED TO MOVE AND LOWER THE COMPONENT PARTS INTO POSITION. CONTRACTOR MUST SUPPLY MINIMUM ECOLOGY BLOCK FOR 8" MAINS AND MINIMUM 5'x5' DAILEY BLOCK FOR 12" MAINS.
15. PIPE (W) 4" AND LARGER MUST BE SUBJECT TO SEATTLE PUBLIC UTILITIES (SPU) TASTE AND ODOR TESTING PROCEDURES PER COS STD SPECS 7-11.2(2) AND 7-11.2(3).
16. LOCATIONS SHOWN FOR EXISTING UNDERGROUND UTILITIES ARE APPROXIMATE. UTILITIES HAVING NO RECORDED DEPTH ARE SHOWN AT THEIR STANDARD DEPTH. UTILITIES THAT APPEAR CLOSE TO THE PROPOSED WATER MAIN MUST BE EXPOSED BY THE CONTRACTOR PRIOR TO LAYING THE WATER MAIN TO DETERMINE IF CHANGES ARE NEEDED.
17. WHEN EXCAVATING AROUND CHARGED WATER MAIN THE CONTRACTOR MUST EXERCISE CARE IN VICINITY OF THRUST BLOCKS THAT ARE PLACED AT ANY BENDS, TEES OR DEAD

ENDS OF WATER MAINS TO AVOID UNDERMINING THE SOIL SUPPORT FOR THE THRUST BLOCKING.

18. WHEN EXCAVATING PARALLEL TO EXISTING WATER MAIN EXERCISE CAUTION TO AVOID LOSS OF THE TRENCH BEDDING OR BACKFILL.
19. TEMPORARY WATERMAIN: SPU WILL LAY, FLUSH AND TEST TEMPORARY WATER MAINS WITH CONTRACTOR ASSISTANCE. SPU WILL TRANSFER SERVICES WITH CONTRACTOR ASSISTANCE. SPU WILL PROVIDE ALL PIPE MATERIALS AND PERFORM ALL CONNECTIONS. CONTRACTOR MUST PERFORM ALL NECESSARY EXCAVATION, PROTECTIVE MEASURES, BEDDING, BACKFILL, AND PAVEMENT RESTORATION. **Notes to the engineer: review for each specific project and decide in advance with consultation with the LOB if SPU crew or the Contractor will install temporary services. SPU typically furnishes pipe and materials for 2" diameter and smaller temp water mains and 4" diameter and larger services.**

CONSTRUCTION METHODS

20. CARE MUST BE EXERCISED WHEN EXCAVATING NEAR EXISTING CHARGED WATER MAINS.
21. WATER SEPARATION FROM SEWER AND STORM DRAIN MUST BE PER COS STD PLAN 286A AND COS STD SPEC 1-07.17(2)A1 AND MAY REQUIRE ADJUSTMENT OF THE WATER MAIN RESTRAINED JOINT LOCATION TO CENTER A SINGLE 18' PIECE OF DIP AT THE CROSSING.
22. CURVES, HORIZONTAL ANGLE POINTS AND VERTICAL GRADE POINTS MUST BE CONSTRUCTED BY DEFLECTING A MAXIMUM ONE-HALF OF THE MANUFACTURER'S ALLOWABLE JOINT DEFLECTION FOR PIPE AND FITTINGS, UNLESS OTHERWISE NOTED.
23. METERS FOR WATER SERVICES LOCATED UNDER DRIVING SURFACES MUST BE PROTECTED BY A FRAME AND COVER WITH INSPECTION COVER (F&C W/IC). THE F&C W/IC MUST BE SIMILAR TO COS STD PLAN 361 BUT MUST INCLUDE AN APPROXIMATE 9" AUXILIARY COVER INSET INTO THE MAIN COVER. F&C W/IC MUST BE RATED FOR AASHTO H-20 LOADING OR BETTER. PROVIDE 3 COURSES OF BRICK AND MORTAR UNDER FRAME SIMILAR TO BLOWOFFS IN COS STD PLAN 340B.
24. ADVANCED UTILITY VERIFICATION:
 - a. THE CONTRACTOR MUST POTHOLE OR MAINTAIN AN OPEN EXCAVATION OF 60 FEET MINIMUM AHEAD OF THE WATER MAIN INSTALLATION TO UNCOVER AND OBTAIN LOCATION AND DEPTH INFORMATION FOR EXISTING CROSSING UTILITIES THAT APPEAR CLOSE (WITHIN 18") TO THE PROPOSED WATER MAIN AND HAVE NO RECORDED DEPTH ON THE DRAWINGS. THE CONTRACTOR MUST NOTIFY THE ENGINEER IF A CONFLICT IS IDENTIFIED TO ALLOW FOR ADJUSTMENTS THAT MAY BE NECESSARY.
 - b. WHEN POTHOLING UTILITIES IS REQUIRED AS SHOWN ON THE DRAWINGS, AS SPECIFIED IN THE UTILITY VERIFICATION PLAN, OR WHERE OTHERWISE NECESSARY TO PROTECT EXISTING UTILITIES, THE CONTRACTOR MUST COMPLY WITH THE REQUIREMENTS OF COS STD SPEC 2-04.3(9) EXPLORATORY EXCAVATION AND UTILITY VERIFICATION.
25. THE CONTRACTOR IS RESPONSIBLE FOR THE PROTECTION OF THE TEMPORARY WATERMANS FROM DAMAGE OR FREEZING.

2.1 PVC WATER LINES

For PVC water lines, add the following:

1. PVC PIPE MUST BE DR - 14 AWWA C900, DI PIPE OD, SLIP JOINT, WITH TRACER WIRE.
2. ALL METALLIC COMPONENTS INCLUDING STAINLESS STEEL AND BOLTING HARDWARE MUST BE COATED WITH A THREE COMPONENT WAX TAPE SYSTEM INCLUDING PRIMER, WAX TAPE AND OUTER WRAPPING WITH FIBERGLASS MESH PER COS STD SPEC 7-11.3(8).
3. WATERMAIN HYDROSTATIC TESTING PROCEDURE MUST BE PER AWWA C605 USING A TEST PRESSURE OF 200 PSI. **Note to engineer: verify the pressure for each specific location in the project.**

2.2 WATER RELINING PROJECTS

For water relining projects, add the following:

1. THE MAXIMUM ALLOWABLE ACCESS PIT EXCAVATION FOR FIRE HYDRANTS, NEW VALVES AND FOR RELINING ACCESS HOLES MUST BE 8'X6' FOR PIPES WITH DIAMETERS OF 24-INCHES OR LESS. MAXIMUM ACCESS HOLE EXCAVATION FOR PIPES 24-INCHES AND LARGER MUST BE 10'X6'. SEE COS STD SPEC 1-07.17(2) FOR MINIMUM CLEARANCES.
2. FIRE HYDRANTS AND GATE VALVES MUST BE REPLACED AFTER THE WATER MAIN IS LINED AND BEFORE IT IS PRESSURE AND BACTERIA TESTED TO BE PUT BACK INTO SERVICE.