

PART TWO - MATERIALS

NOTE: "Developer" in these specifications shall also signify "Contractor" for the purpose of District Financed Projects.

2-1 GENERAL
All materials and equipment shall be new and undamaged. Where possible, the same manufacturer of each item shall be used throughout the job.

2-2 MATERIAL LISTS AND SPECIFICATIONS
The Developer or his Contractor shall deliver to the Engineer a material list not less than ten (10) days before commencement of construction. The list shall contain the manufacturer and model number, if applicable, of the material and equipment to be installed as a part of the work so that the Engineer may determine whether such materials conform to the Plans and Specifications. Materials that are not included in the material list shall not be installed as a part of the work. The manufacturer's technical specifications for pipe, appurtenances and equipment to be incorporated into the work shall be submitted to the Engineer at least ten (10) days before commencement of construction with the materials listed.

2-11 PRESSURE REDUCING STATION
See Construction Drawings and Detail Sheet.

2-12 AIR AND VACUUM RELEASE VALVES
See Standard Details.

2-13 DETECTOR CHECK VALVE
Detector check valves shall be UL approved, FEBCO Model 806 DDC or equal.
See Standard Details.

2-14 HYDRANT GUARD POSTS
Guard posts shall be precast concrete nine inches (9") in diameter by six feet (6') long constructed with concrete having minimum strength of 3,500 psi. Reinforcing shall consist of a minimum of four (4) #3 deformed steel bars. See Standard Detail #4 for placement.

2-3 GUARANTEE BY MANUFACTURER
If requested by the District or the Engineer, a written guarantee made by the manufacturer of any materials to be incorporated into the work shall be furnished, guaranteeing to the District that such materials shall conform to these Specifications and any specifications otherwise applying to the work.

2-4 DUCTILE IRON PIPE AND FITTINGS
(a) Ductile iron pipe shall conform to AWWA Standard C-151. Pipe shall be thickness class 52 or as indicated on the Drawing. Pipe and fittings shall have cement mortar lining conforming to AWWA Standard C-104. Joints shall be mechanical joint or push-on joint and shall conform to AWWA Standard C-111.
(b) Cast iron fittings shall conform to AWWA Standard C-110 or C-153. Mechanical or push-on joints shall conform to AWWA Standard C-111. Flanged joints shall conform to AWWA Standard C-111, class 125. Flange gaskets shall be ring type, cloth insert rubber, 1/16-inch thick, equal to Rainbow or Durable Gasket.

2-5 COPPER PIPE AND FITTINGS
(a) Copper pipe shall conform to ASTM B 88, type K, annealed.
(b) Fittings shall be brass conforming to ASTM B 82 for compression style connections.
See Standard Details.

2-6 VALVES
(a) Gate valves shall be resilient seated, non-rising stem, conforming to AWWA Standard C-615. Valves to have S.S. nuts and bolts. Valves shall be open by turning counterclockwise. Joints shall be as indicated on the Plans.
(b) Butterfly valves shall conform to AWWA Standard C-504 as supplemented herein. Valves shall be Class 150B with flanged, mechanical joint, or flanged x M.J. end connections. Valves in chambers shall be handwheel operated with integral position indicators. Buried valves shall have a stem extension with AWWA 2-inch operating nut and suitable valve box. Buried valves 14 inches or larger and other valves that may be designated "critical" shall be provided with a ground level position indicator and valve box adaptor. Rubber seats may be either body or disc-mounted. Valves using hardware to retain the seat shall positively secure all internal fasteners with lockwires or equivalent means.

2-20 ASPHALTIC CONCRETE
Asphalt concrete pavement shall conform to the technical requirements for Class B Asphalt in the latest edition of the State of Washington Standard Specifications for Road, Bridge and Municipal Construction.

2-21 TOP COURSE AND KEYSTONE MATERIAL
For use in restoration of excavated areas, Top Course and Keystone material shall be manufactured from ledge or lush rock, be free from wood, roots, bark and other extraneous material and shall conform to the following requirements.

U.S. Standard Sieve Size	% Passing
5/8" square opening	100
1/4" square opening	55-75
U.S. No. 40 sieve	8-24
U.S. No. 200 sieve	10 Max.
Sand Equivalent	40 Min.

2-22 BASE COURSE MATERIAL
Base course material shall conform to the following requirements:

U.S. Standard Sieve Size	% Passing
1-1/2" square opening	100
5/8" square opening	50-80
1/4" square opening	30-50
U.S. No. 40 sieve	3-15
U.S. No. 200 sieve	7.5 Max.
Sand Equivalent	40 Min.

2-9 CORPORATION STOP, SERVICE CLAMP, CURB STOP
See Service Connections in Standard Details.

2-10 TWO-INCH BLOW OFF
See Standard Details.

2-23 IMPORTED BACKFILL MATERIAL
Imported backfill material shall be free from wood, bark, roots or other extraneous material and shall meet the following requirements:

U.S. Standard Sieve Size	% Passing
2-1/2" Square Opening	100
1/4" Sieve	25 Min.
No. 200	10 Max.
Sand Equivalent	35 Min.

FEA GRAVEL WILL NOT BE ALLOWED AS BACKFILL MATERIAL.

PART THREE - CONSTRUCTION
3-1 GENERAL
Except as otherwise noted herein, all work shall be accomplished as recommended in the latest revision of AWWA and APWA Specifications and according to the recommendations of the manufacturer of the material and equipment concerned.

3-2 ALIGNMENT
Pipes shall be laid to the specified grade and alignment as staked in the field. Alignment deviation shall not exceed 0.5 feet. Replacement of stakes lost or destroyed shall be made at the Developer's expense and in accordance with Contract Plans, including modifications called for by the District.

3-3 TRENCH
Trenches shall be excavated to the line and grade designated by the District. Except for unusual circumstances where approved by the District, the trench sides shall be excavated vertical and the trench shall be excavated to only such widths as are necessary for adequate working space. The maximum trench width at the top of the pipe shall normally be the outside diameter of the pipe barrel plus 16 inches. The trench shall be kept free from water until joining material has set. Surface water shall be diverted so as to not enter the trench. The Developer shall maintain sufficient pumping equipment on the job to insure that these provisions are carried out. Boulders, rocks, roots and other obstructions shall be entirely removed or cut out to the width of the trench and to a depth of 6 inches below water main grade. Where material is removed from below a water main grade, the trench shall be backfilled to grade with material satisfactory to the District and thoroughly compacted. Trenching operations shall not proceed until pipe laying is ready to commence and not more than 300 feet of trench shall be opened in advance of pipe laying operations without written approval of the District. All work on County right-of-way shall be backfilled in its entirety each day.

3-4 TRENCH FOUNDATION
The depth of trenching for water mains shall be such as to give a minimum cover of 36 inches over the top of the pipe unless otherwise specified. Pipe cover shall be increased as required to provide minimum 6-inch clearance when crossing curbs or existing utilities, and due to localized breaks in grade. Where the profile of the pipeline and ground surface is shown on the Plans, the pipeline shall be laid to the elevation shown, regardless of depth. Excavation shall be to such depth that the minimum cover over the valve nuts shall be one foot. No valve shall be located in such a position as to be in any roadside ditch, drainage ditch or channel.

3-5 TIMBERING AND SHEETING
The Developer shall provide and install timbering and sheeting as necessary to protect workers, the work, existing buildings, utilities and other properties, and shall meet all OSHA and WESA requirements.

3-6 DUCTILE IRON
Pipe laying shall in general conform to AWWA Standard C-600 and the manufacturer's recommendations unless specifically contradicted by these Specifications. Special care shall be taken in handling pipe to avoid damaging ends, coatings and linings. Pipe shall be carried in slings and shall not be rolled or dragged.

3-7 BEDDING MATERIAL PLACEMENT
All rigid pipe shall be placed in bedding material of the type specified in Section 2-18. The bedding shall be placed from a minimum of four (4) inches below the pipe barrel to the spring line of the pipe as shown on the Standard Details. Bedding material shall be worked and compacted by hand under, around and over the pipe to the depths required for the full width of the trench.

3-8 VALVE BOX INSTALLATION
Valve boxes shall be set flush in pavement. If placed in gravel areas, an asphalt pad 2 inches thick and three feet in diameter shall be placed around the box. No valve boxes shall be installed in the curb and gutter areas.

3-9 COMPACTION OF BACKFILL
Compaction of backfill and bedding procedures in public rights-of-way shall, at the minimum, conform to the requirements of the governmental agency having jurisdiction thereof.

3-10 POLYETHYLENE ENCASEMENT
Where the District determines that the pipe will be installed in corrosive soils, the Developer will protect the pipe with a polyethylene encasement as per ANSI/AWWA C105/A 21.5-82. No holes or repairs in the polyethylene encasement are allowed. Taping is required - poly wrap tape.

3-11 JACKED OR BORED CROSSING
All work shall be done in accordance with the requirements of the agency in control of the facility being bored or jacked. See highway crossings and railroad crossings (Section 3-12) for further details.

3-12 HIGHWAY CROSSINGS AND RAILROAD CROSSINGS
This item applies only to rigid surface pavements. The Developer may use any method that provides satisfactory results and is acceptable to the governmental agency having control of the road and to the District, provided that the Developer restores the roadway to its original condition. Normally, highway crossings require the placing of a steel casing by jacking or tunneling and laying the water mains within this casing. For steel casing specifications - see Plans. For District Standards for boring or tunneling see "Water or Sewer Casing Detail" on separate sheet.

3-13 FIRE HYDRANT INSTALLATION
Hydrant installation shall generally conform to AWWA Standard C-600 and the Standard Detail "Fire Hydrant Assembly". The concrete guard posts as shown on the Standard Detail Drawing shall be installed where required by the District. Shackle rods shall receive two coats of cold tar or asphalt prior to installation. Pumper nozzle shall face the road after installation is completed.

3-14 GATE VALVE INSTALLATION
Earlier installation, gate valves shall be cleaned of all foreign material as before specified for installation of pipe. Such blocking as the District may deem necessary shall be provided. The valve and valve box shall be set plumb with the valve box centered on the valve. The top of the valve box shall be set to the grade indicated by the District. If the valve nut is over 3 feet deep, operating nut extensions shall be used.

3-15 VALVE BOX INSTALLATION
Valve markers shall be set where required by the District. The marker shall be set on a line through the valve at a right angle to the centerline of the road. The marker shall be generally set on the property line unless the District decides another location is safer or more conspicuous. Operating nut extensions shall be used if the nut is over 3 feet deep.

3-16 CONCRETE BLOCKING
Concrete blocking shall be cast from 1:3:6 mix with a slump of not more than six inches (6"). Concrete blocking shall be cast-in-place, (not mixed in trench) and have a minimum of 1/4 square foot bearing against the fitting and bearing area against undisturbed soil as shown in the Standard Details. Additional bearing area may be required by the District. Blocking shall bear against fittings only and shall be clear of joints to permit taking up or dismantling joints. All hydrants, bends, tees, and valves shall be blocked. The Developer shall install blocking that is adequate to withstand full test pressure as well as operating pressures under all conditions of service. Vertical blocking, when required, shall conform to that shown in the Standard Details.

3-17 AIR AND VACUUM RELEASE VALVE INSTALLATION
See Plans. Location of the air release valves as shown on the Plans is approximate. The installation shall be set at the high point of the line.

3-18 HYDROSTATIC PRESSURE TEST
The hydrostatic pressure test shall be performed after the water system to be tested is initially filled, but before bacteriological sampling is conducted. Filling of mains from existing facilities shall be through an approved Reduced Pressure Backflow Device (RPBD) or Double Check Valve Assembly (DCVA).

3-19 STERILIZATION AND FLUSHING OF WATER MAIN
Sterilization of water lines shall conform to AWWA Standard C-651. Chlorination shall be by chlorine-bearing compound placed in each pipe length or capnet secured to the top of the barrel of each pipe length. Chlorine residual shall not be less than 50 parts per million. Sterilization shall include all pipe mains, all pipe runs to hydrants and all service lines to the curb stop. Contact period shall be for a minimum of 24 hours during which time all valves shall be opened and closed. After the contact period, all mains, services and pipe runs to hydrants shall be thoroughly flushed and dechlorinated. A pressure test will be taken; then a water sample taken for testing and approval by the Washington State Department of Health. Flushing water drawn from pipe or hydrant shall pass through an approved RPBD or DCVA. No pressure testing is allowed during contact period.

3-20 REPLACING ROAD SURFACING
The Developer shall restore all roadway and driveway surfaces excavated or disturbed to a condition acceptable to the District and to the government agency having control of the road. Before replacing asphalt surfacing, the edges of the existing asphalt shall be trimmed, as necessary, to make a smooth joint. Where concrete must be broken out prior to trench excavation, the cut in the concrete shall be made by sawing square and straight with a concrete saw to a depth of not less than 1 inch.

3-21 SERVICE CONNECTION
(a) Ductile Iron Pipe: Connections into ductile iron pipe shall be by single strap saddles for 1-inch or smaller services and shall be made with double strap saddles for 1-1/2-inch and larger. Connections larger than 1-1/2-inch shall be made as required by the District. All saddles shall be epoxy coated and have stainless steel straps.
(b) Service saddles, corporation stops, tees, curb stops and reducers shall be as manufactured by Ford or equivalent.
(c) Taps to be made using tapping machine.

3-22 CONNECTION TO EXISTING PIPE LINES
No connections shall be made to the existing system until all hydrostatic and purity tests have been satisfactorily completed for the new sections of pipe. The two systems shall be completely isolated up to this point.

3-23 WET TAPS
The material requirements for wet or "hot" taps of existing pipe lines shall be as follows:
TAPPING GATE VALVES
Valves shall be of the resilient-seated variety and shall meet or exceed the requirements of AWWA C509. Valves shall be coated internally and externally with fusion bonded epoxy coating meeting or exceeding AWWA C550. Double metal disc or solid metal wedge valve designs are not acceptable. All valves shall be new end of current manufacture, and shall display a current casting date.
For applications with working pressures exceeding 175 psi, a ductile iron valve rated for 250 psi or higher working pressure shall be used. The valve shall be U.S. Pipe Metrosol 250 or approved equal. For applications with working pressures below 175 psi, valves of the following manufacture, or an approved equal, are acceptable. Clow, M & H, Mueller, U.S. Pipe.
TAPPING SLEEVES
All tapping sleeves shall be rated by their manufacturer for a working pressure of at least 200 psi. Acceptable sleeve types are as follows:
"Mechanical Joint" Style: May be of either ductile or grey iron construction, although ductile iron is preferred. Acceptable for both size-on-size and non size-on-size applications on cast iron, ductile iron, and AC mains through 12" on 12" only. All mechanical joint sleeves shall be new and of current manufacture shall display a current casting date and be manufactured by Clow, Dresser, Mueller, Tyler, U.S. Pipe or approved equal.
"Stainless Steel" Style: The District prefers all stainless construction in this style. However, stainless sleeves with ductile iron (but not carbon steel) flanges are also acceptable. These sleeves are acceptable for all applications on ductile iron, cast iron and AC mains through 12" on 12" only. Stainless sleeves shall be manufactured by JCM or Romac or be an approved equal.
The District may at their option make all connections to existing mains and make all crossings of existing roadways at the expense of the Developer.

3-24 BACKFLOW PREVENTION DEVICES
Where the possibility of contamination of the water supply exists, the District will require certain services be equipped with a backflow prevention device. The only acceptable device is that which operates on the reduced pressure principle as indicated in the latest edition of the DOI approved list. The determination as to the need, size and location of a backflow device shall be determined solely by the District.

3-25 TRAFFIC CONTROL
All traffic control shall be according to the Manual of Uniform Traffic Control Devices and/or the agency with local jurisdiction. During construction, traffic shall not be delayed for more than 5 minutes unless previously approved by the District and the agency of jurisdiction.

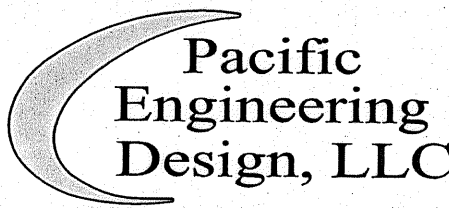
3-26 ASBESTOS CEMENT PIPE
All pipe work and procedures are to be followed as set forth in WAC-296-62-077 thru 296-62-076, including appendix A thru I.

3-27 NEW WATER SERVICE LINES
All new water service lines shall be marked with a 2" x 4" board which is to be located at meter box and the top of which shall be painted white and extended 4 feet above the ground labeled "WATER" in 2" high blue stenciled letters.

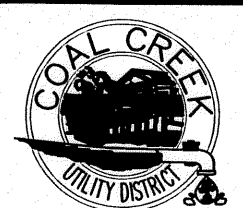
3-28 STREAMGUARD CATCH BASIN INSERTS
All catch basins located along project shall have a streamguard sediment catch basin insert model 9226 as manufactured by Ultra-Drain Guard, model 3003 as manufactured by Foss Environmental or approved equal installed. Inserts are to be cleaned and replaced by Contractor per manufacturer's recommendations or by District direction.

FILE NAME (UPDATED BY)

DESIGNED	REVISOR	DATE	BY	APP'D
JRL		6/8/07	TLR/CJB	DGS
CHECKED	REVISOR	DATE	BY	APP'D
DGS		6/27/08	BCS	DGS
	REVISION			



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REFERENCE INFORMATION	DATE
FIELD BOOK:	JUNE 27, 2008
SURV. CPU FILE:	SCALE
DATUM: NGVD29	NOTED

LAWRENCE PARK STANDARD NOTES

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SHEET **2** OF **3**