



Winston-Dillard Water District
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~ **MATERIALS** ~

- **MAINS** - Minimum size of main shall be six inches (6") for fire flow purposes, cul-de-sacs will generally be fed by 2" poly loop. All lines shall be connected in a grid unless otherwise specified by the Water District.
- **PVC** - All main line material shall be Class 200. And shall be a rubber ring bell and spigot type pipe.
- **DUCTILE IRON** - Ductile iron shall be a minimum of Class 50 and will be required under travel ways, exposed piping, bridges and etc. Joint restraints may be required.
- **POLYETHYLENE** - All polyethylene pipe shall meet PE 3408 - 200 psi copper tube size and be **BLUE** in color.
- **SERVICE LINES** - Service lines, single and dual, shall be a minimum of 1". All service lines shall be copper tube size and shall be installed in conduit at all road crossings.
- **FIRE HYDRANTS** - Fire hydrants, fire lines and valves from the main line tee are the responsibility of the Winston-Dillard Fire District, as well as the location of the hydrants. However all connections to water mains must be approved by the Water District.* A hydrant valve shall be installed on the fire service tee. Exact fire flows are determined by Winston-Dillard Fire District.
- **FIRE LINES** - All dedicated fire lines for suppression purposes, fire sprinklers and etc, will be subject to connection & standby fees, fire lines will be subject to Water Districts current backflow ordinance.

**All hydrants that are required and are not placed in the right of way will be subject to District approval and "private / dedicated hydrant fee's".*

~ FITTINGS ~

- **VALVES** - All valves shall be resilient seat unless otherwise approved by the District. All valves shall meet AWWA specifications. Ten inch (10") and larger inline valves are required to have pre cast concrete support.
- **VALVE BOXES** - All buried valves shall have boxes. And shall consist of a #910 cast iron top section and a PVC riser with, VC212 auto centering bottom. All extensions shall need District approval. All valve covers and lids shall read **WATER**. A 3' square concrete apron shall be placed around all valve boxes when not in roadway.
- **TEES** - Shall be ductile iron.
- **ANGLES** - Shall be ductile iron.
- **SPOOLS** - Shall be ductile iron.
- **COUPLINGS** - Transition and straight.
Transition couplings when connecting two different pipe sizes shall be Hymax style.
Straight couplings shall be ductile iron with mechanical joint fittings.
- **SADDLES** - Shall be a minimum of Romac 101s or District approved equal for 1" services. Romac 202s for 1 ½" & 2" services with iron pipe threads.
- **CORP STOPS** - Shall be brass Ford ball valves or District approved equal with compression Couplings to copper tube size (NO KEY VALVES). 1 ½" shall be iron pipe x pac joint. A 2" service will have resilient seat gate valve with male IP x CTS pac joint coupling.
- **CURB STOPS** - Shall be brass Ford ball valves or District approved equal (NO KEY VALVES) CTS only. 1" & 1 ½" pac joints will be G Series compression, 2" will be pac joint only (external lock).
- **SERVICE LINES** - Service lines and curb stops shall be installed to allow placement of meter and box in right of way against property line or in sidewalk depending on application. Contractor shall be required to set meter connections and meter boxes at proper locations and depths.
- **METERS** - Domestic meters will be installed by the Water District.

- **TAPPING SLEEVES** - Shall be all stainless steel including flange, and full circumferential
- **METER BOXES** - Will be supplied by the contractor. The District prefers Mid States polyethelene or DFW boxes, with compsite lid, unless otherwise specified.
- **BACKFLOW DEVICES** - All required backflow devices will conform to Winston-Dillard Water District Cross Connection Regulations 51995.
- **LOCATOR WIRE** - Locator wire shall be 14 gauge solid copper wire with blue insulation designed for burial. All locator wire will be continious . All splices will be done with a 3M DBR direct burial kit. Locating wire shall be installed directly over center of all mains and services to the meters not to exceed 6" above pipe. Locator wire must be extended up the outside of the riser and inside of the top section on each valve box so a direct hook-up can be made.
- **POLY PIPE INSERTS** - Shall not be used in the Water District.
- **RECEIVING MATERIALS** - Winston-Dillard Water District must be notified at least two hours in advance of material delivery on job site. Contractor shall have a representative from Winston-Dillard Water District on the job site to witness unloading of pipe and materials and check for defects. No pipe or material shall be delivered on Saturday, Sunday or a Holiday. Substandard materials will be rejected.
All pipe shall be unloaded with forks, straps or pipe clamp.
Use of chains is not an accepted procedure at any time.
All pipe that is unloaded by means of dropping or rolling off of trucks shall be rejected. All rejected materials will be labled for non usage or immediately removed by contractor from job site.

~ TRENCHING ~

- **SANITARY REQUIREMENT** - Pipe shall be plugged or capped to maintain a water-tight seal on the end of lines during construction. This will take place at the end of each day and whenever the trench is to be left open for an extended period of time unattended. This is to minimize the possibility of contamination from surface runoff, from rainfall, construction watering, foreign objects. Ditchline must be kept free of surface water at all times.
- **EXCAVATION** - Contractor shall secure and comply with applicable Federal, State, County and City permits. Contractor is responsible for all locates prior to and during construction.
- **TRENCH WIDTH & DEPTH** - Trench width shall be wide enough to ensure a minimum of 6" bedding on both sides of pipe. Trench depth shall be deep enough to ensure a minimum of 36" cover over pipe and a maximum of 42" cover. Any variances **MUST BE PREAPPROVED** by Winston-Dillard Water District. Any part of trench excavated below grade shall be corrected with thoroughly compacted material.
- **TRENCH SAFETY** - All shoring and safety is the responsibility of the contractor and shall be done with current guidelines and practices.
- **PIPE LAYING** - Pipe shall be installed one section at a time in the trench. Pipe shall be laid with the bell facing in the direction of laying unless otherwise directed. Pipe deflection shall be per manufacture specifications. The pipe shall be laid on firm bedding material to afford bearing over the full length of the pipe. Refer to sanitary requirements. **Pipe must be placed by hand, pipe clamp or by strap into the ditch.** Use of chains is not allowed at anytime.
- **BEDDING** - Bedding shall be a minimum of 6" of granular material. Place bedding material simultaneously on both sides of the pipe to a depth of at least 6" above the pipe barrel. A minimum of 12" of cover is to be laid prior to compaction for water mains. Service lines shall be bedded and compacted in the same manner. All bedding shall be ¾-0 crushed rock, having reasonably uniform graduation from course to fine. Pea gravel, sand or other bedding material shall be used only with pre approval from the Water District. *(refer to pg. 12)*
- **THRUST BLOCKING** - All tees, angles, reducers, valves and tapping sleeves shall be installed with adequate thrust blocking. Standard Thrust

Block Details are shown on *page 13* and should be used as a minimum required with strict attention applied to verifying soil bearing strength. All thrust blocking shall be of concrete unless otherwise approved by the District and shall have a compressive strength of not less than 2000 PSI in 36 hours. Blocking shall be placed between solid ground & the fitting to be anchored. The area of bearing on fitting & ground shall be maximized without preventing access to the fitting for maintenance. No fill should be installed between the fitting & the blocking soil. All fittings are to be wrapped in plastic. (*refer to pg. 13*)

- **BACKFILL** - In traveled ways Class A trenches shall be utilized. Class B trenches are to be used elsewhere. (*See detail sheet pg. 12*) Class B trenches: the native material used in the trench must have no rocks, foreign material or debris larger than 3". Backfill material shall predominate in the finer sizes.
- **JOINT RESTRAINTS** - All MJ pipe fittings shall have mechanical restraints, such as Romagrip, Mega Lug for Ductile Iron Pipe, and Romac Grip Rings for PVC.
- **AIR VALVE ASSEMBLIES** - When required shall be ARI Brand model D-040 combination air and vacuum release valve, installed to Water Districts specs. (*refer to pg. 14*)
- **SAMPLING STATIONS** - When required shall will be Koreleen - Station Guard XLT and will be installed to Water Districts specs. (*refer to pg. 15*)
- **AUTO FLUSHERS** - When required shall will be #9400 Eclipses Automatic flushing device, non-freezing model, installed to Water Districts specs. (*refer to pg. 16*)
- **ROAD CROSSINGS - CREEK CROSSINGS - EXPOSED PIPELINE** Shall be ductile iron.
- **CLEAN UP / SITE RESTORATION** - Cleaning up shall be a continuing process from the start of work to final acceptance of the project. The Contractor shall, at all times, at his own expense and without further order keep property on which work is in progress free from accumulations of waste material or rubbish caused by employees or by the work, and at all times during the construction period shall maintain structure sites, rights-of-way, adjacent property, and the surfaces of streets and roads on which work is being done in a safe condition for the Contractor's workers, and the public. Accumulation of waste materials

that might constitute a fire hazard will not be permitted. Spillage from the Contractor's hauling vehicles on travelled public or private roads and parking areas shall be promptly cleaned up. Upon completion of the construction, the Contractor shall, at his own expense, remove all temporary structures, rubbish, and waste materials resulting from his operations. All properties disturbed by project construction shall be restored to the original or better condition.

~ TESTING & CHLORINATION ~

SCOPE: Flushing shall be to remove all air or foreign material, if any, in pipe. Pressure Testing shall be done to check proper assembly and materials to ensure the lines will withstand the demands of the system. Disinfection of the new water main and service lines is required to ensure consumer safety and to meet Oregon State Health Division requirements. Bacteriological tests shall be taken.

FLUSHING operations shall be at an adequate velocity and duration to ensure all debris and air is removed from the line. A Water District Representative must operate all line valves and oversee the flushing procedure.

PRESSURE TESTING- Before testing a pipeline for leakage, the pipeline shall be bulkheaded. The pipeline shall be tested for water-tightness by filling it with water and bring the hydrostatic pressure up to 175 PSI. The Contractor shall furnish necessary bulkheads, pumps, pressure gauges, means of measuring water loss, and all other equipment, materials and labor required for making the tests. All of the pipelines must be pressure tested. Pipeline may be divided up into sections depending on the length of project, The lengths, sections and provisions for testing shall be subject to approval by Winston-Dillard Water District. All air vents shall be open during the filling of the pipeline with water. After a test section is completely filled, it shall be allowed to stand under slight pressure to allow the lining to absorb what water it will and to allow the escape of air from any small airpockets. Time will be regulated by length of line and predetermined by the Water District. The pressure shall then be raised slowly to the hydrostatic pressure of 175 pounds per square inch and shall be maintained for a period to be determined by Winston-Dillard Water District. No pipe installation will be accepted until the leakage is less than the number of gallons hour as determined by table shown on *page 9*. Should any test of pipe laid disclose leakage greater than that allowed, the Contractor shall, at his own expense, locate and repair the defective joints or pipe until the leakage is within the specified allowance. No piping or joints having visual leakage will be accepted. All such repairs shall be made subject to the approval of Winston-Dillard Water District. If any considerable leakage has been discovered, or if the measured leakage exceeds the limit stated, the District shall require one or more retests after repairs have been made. All leakage tests shall be made in the presence of Winston-Dillard Water District.

DISINFECTION OF WATERLINES - Before being placed in service the entire line shall be chlorinated. Chlorine shall be applied by the method of hypochlorite solution.

Chlorination by means of tablets or powders placed in each length of pipe during installation is specifically prohibited.

The chlorination agent shall be applied at the beginning of the section adjacent to the connection and shall be injected through a corporation cock insuring treatment of the entire line. Water shall be fed slowly, by Water District, into new line with chlorine applied in amounts to produce a dosage of 50 ppm throughout the entire section being tested for a period of 24 hours. A residual of not less than 10 ppm shall be produced in all parts of the line. During the chlorination process, all valves and accessories shall be operated.

PSI DURING ALL CHLORINATION PHASES THE LINE PRESSURE MUST NEVER EXCEED 40 psi.

After chlorination, the water shall be flushed from the line at its extremities until the replacement water tests are equal chemically and bacteriologically to those of the permanent source of supply.

Contractor shall be responsible for the discharge of chlorinated water and must comply to all rules and regulations including dechlorination. Water samples shall be taken for bacteriological tests by the contractor and witnessed by Winston Dillard Water District.

Sample sites and frequency shall be determined by the Water District.

Test corporation stops must be turned off and injection lines shall be removed after approved bacteriological testing is received at the Water Office.*

**Testing will not be considered complete until a copy of approved bacteriological tests are received in the Water District Office.*

Pressure Test Form

Date: _____

Location: _____

Starting Pressure: _____

Starting Time: _____

Ending Pressure: _____

Ending Time: _____

Total Time: _____

Total Pressure Loss: _____

Amount of Water to Re-pressurized: _____

Allowable Leakage (use formula below): _____

Pass: _____ Fail: _____ Signature: _____

Allowable Leakage Formula

$$L = ND\sqrt{P}$$

$$7400$$

L= Allowable leakage (gal/hr)

N= Number of joints in the tested line pipe

D= Nominal diameter of pipe

P= Average test pressure (psi)

NOTES/CALCULATIONS:

~AUTHORITY OF THE DISTRICT ENGINEER / INSPECTOR ~

The District Engineer or appointed employee of the District shall be the representative during the construction and shall observe the work in progress on behalf on the District.

This general inspection of the construction will not, however, relieve the construction contractor (s) from his (their) obligation to conduct comprehensive inspections and to maintain full responsibility for the techniques and sequences of construction, the safety precautions incidental thereto, and for performing the construction work. He shall also have the authority to reject all work and materials which do not conform to the agreement or District specifications. The engineer or appointed representative shall have the authority to order changes in the work.

The Winston-Dillard Water District engineer will not be responsible and has not been retained or compensated to provide design and construction review services relating to the contractor's safety precautions or to means, methods, techniques, sequences or procedures required for the contractor to perform his work.

WARRANTY

~ CORRECTION OF DEFECTIVE WORK BEFORE FINAL ACCEPTANCE ~

The warranty will begin after all compliance work has been completed and two (2) sets of accurate as-builts plans are provided and received at the Water District office. No meters will be sold or installed until the as-builts are received. All work shall be guaranteed for a minimum of one (1) year against defects in materials and workmanship. The Contractor hereby agrees to make, at his own expense, all repairs or replacements necessitated by defects in materials or workmanship supplied by him or his subcontractors that become evident within one (1) year after the date of written notice from Winston-Dillard Water District recommending final acceptance of the entire project. The Contractor also agrees to hold Winston-Dillard Water District harmless from claims of any kind arising from damage due to said defects. The Contractor shall make all repairs and replacements promptly upon receipt of written orders for same from Winston-Dillard Water District. If the Contractor fails to make the repairs and replacements promptly, Winston-Dillard Water District may do the work, and the Contractor and his surety shall be liable for the cost thereof.

