OSAGE COUNTY RURAL WATER DISTRICT NO. 15
WATER LINE CONSTRUCTION SPECIFICATIONS

101 GENERAL

Water lines and appurtenances shall be constructed according to the Oklahoma State Department of Environmental Quality Specs.

Specifications shall incorporate the provisions of the AWWA Standards and/or manufacturer recommended installation procedures.

102 TRENCHING

All trenches for water lines shall be dug in a uniform manner. No ditches shall have humps of dirt or rock and shall be left with a smooth bottom for sand bed.

103 BEDDING AND BACKFILL

A minimum of four (4) inches of uniformly spread sand or clean dirt shall be placed in the bottom of all water line ditches before any water line pipe or pipe fittings are installed. The trench shall be back filled around the pipe with sand bedding. The height of sand bedding may be decreased to six (6) inches only with express permission of the District if remaining backfill material contains no clods or stones larger than 3 inches in diameter and the material meets the approval of the District. Clean dirt may be used for fill material upon approval of the District.

104 WATER LINE DEPTH

Depth of the water line ditch shall be such that a minimum of 30" of cover is over the top of the pipe in all situations except that 24" will be allowed when the water line crosses under a drainage ditch.

105 WATER LINE MATERIAL AND SPECIFICATIONS

Water line material specifications on type, grade, pressure, and quality shall be as follows:

1. Polyvinyl chloride pressure pipe shall be PVC 1120. Pipe shall be SDR21-200 psi . Pipe shall conform to ASTM D2241; ASTM 1599 for short burst pressure test; ASTM 1598 for long term pressure test; pipe shall have elastomeric seals in bell end.

2. Water tap and service lines shall be tough tube with approved fittings only. All service lines shall be provided with an approved meter can and yoke.

3. All valves, tees, and bends shall be of D.I. mechanical joint type with 200 psi working pressure. All valves will have two (2) inch square operating nuts. All valves shall have an adjustable type valve box placed over the valve at the finished ground level. All flanges on tees and valves will be mega -lug. All MJ fittings will have mega-lug flanges

4. Coated tracer wire must be attached to the waterline and 2"wide detectable water tape must be installed on top of bedding 12" above pipe level

5. Pipe larger than 2" that passes through a casing must be yellowmine pipe

106 THRUST BLOCKS

All valves, tees, bends, and fire hydrants shall be blocked against a solid ditch bank wall with 3,000 pound per square inch, twenty-eight (28) day concrete.

107 DEAD END MAINS

All water main dead ends shall have an above ground flush hydrant with watch valve. All cul-de-sacs will be looped to avoid dead end lines.

108 TESTING AND DISINFECTING WATERLINES

Testing and disinfecting of water mains will be performed by the Contractor. The contractor shall provide all the water, labor, materials, and equipment required for testing and disinfecting. All water mains shall be tested in accordance with Standard Specifications for installation of Cast Iron Water Mains, AWWA Designation C-600. The pressure test of 150 psi shall be for a thirty (30) minute duration. If the line passes the test without significant pressure drop, a leakage test shall be made at the normal operating pressure under which the line is to operate for a two (2) hour testing duration.

All leaks detected shall be repaired. Before being connected to the treated water system and before being placed in service, all mains shall be disinfected in accordance with Disinfecting Water Mains, AWWA Designation C-601.

109 WATER/ SEWER LINE CROSSINGS

Sewers crossing water mains shall be laid to provide a minimum vertical distance of 24 inches between the outside of the water main and the outside of the sewer. This shall be the case where the water main is either above or below the sewer. The crossing shall be arranged so that the sewer joints will be equidistant and as far as possible from the water main joints. Where a water main crosses under a sewer, adequate structural support shall be provided for the sewer to prevent damage to the water main. No sewer lines joint shall be less than 10 feet from a water line. No septic lines will be located within 10 feet of water main or service line.

110 WATER LINE CASINGS

All casings required for water lines shall be equal to water pipe.

111 FIRE HYDRANTS

Fire hydrants shall be buried a minimum of three (3) feet below finished grade. Fire hydrants shall rest on a solid base consisting of a 4" X 18" X 16" concrete cap block. Concrete shall be poured behind the hydrant base against a solid ditch wall. Concrete blocking shall stay three (3) inches below the base flange of the hydrant so the hydrant barrel weep- holes will not be blocked. One (1) inch gravel shall be placed around the base flange and twelve (12) inches above the base flange of the hydrant. On all fire hydrant installations there shall be a six (6) inch valve placed just ahead of the hydrant in the water main. All fire hydrants shall be set to have a minimum clearance of eighteen (18) inches and a maximum clearance of thirty (30) inches from the finished grade to the bottom of the first hose connection. Hydrants will not be set on any line smaller than 6" and subject to approval of the District.

All fire hydrants shall be two-way hydrants with two; 2.5" National Standard Thread Hose Nozzles with a 1.5" pentagon-operating nut (open left).

112 VALVES

112.01 GATE VALVES 3 INCH OR LARGER IN SIZE

Except as modified or otherwise provided herein, AWWA C500 shall govern the design, component materials, construction, and manufacture of all gate valves three (3) inches or larger in size. Valves shall be Mueller resilient seat types.

Resilient seated gate valves shall be from body and shall be in accordance with AWWA C-509-80 or latest revisions thereof and shall have the following design features:

All valves shall have a working pressure of 200psi and shall be hydrostatically tested from both directions and shell tested at 400psi. In order to pass all tests there will be absolutely no leaking. The body, bonnet, and stuffing box shall be flanged together with ASTM A-307 Grade B bolts and nuts.

Stems shall be matched from modified manganese bronze rod with an integral forged thrust collar machined to size and shall be interchangeable with stems in existing double disc gate values of the same size and manufacturer.

Stem seals shall be one “O” ring below the thrust collar forming a lubricant reservoir between to isolate and lubricate the thrust collars, bearing surfaces and “O” rings. An anti-fraction washer shall also be placed above the thrust collar to further accommodate operating torque.

Valves discs shall have an integrally cast ASTM B-62 bronze stem nut to provide disc rigidity and a positive travel stop to prevent over compression of the resilient seat. The disc shall be open to flow on one side to prevent collection of corrosive products and debris.

All internal ferrous metal surfaces (machined or cast) shall be factory spray coated with a two component thermoset epoxy to a nominal thickness of 4 mil and the exterior shall be coated with asphalt varnish.

112.02 CHECK VALVES

Check valves shall be manufactured in conformity with all applicable requirements of AWWA C-500, relative to materials, minimum body thickness, valve ends, body seat rings, workmanship, painting, markings, and testing.

Check valves, which are installed in six (6), inch or larger pump discharge piping shall be of the unobstructed waterway, quick closing, spring-loaded type. Increasing check valves shall be M & H 60-SL or Rensselaer H-342. Equal end size check valves shall be M & H 60-SL, Mueller A2600-6-02 or Rensselaer H-341. Spring-loaded horizontal swing check valves shall be provided with stainless steel shafts, with both ends extending through bronze bushed bearings and outside stuffing boxes.

Unless otherwise specified, all other check valves three (3) inches or larger in size shall be flanged, iron body, horizontal swing type with all seats, seat rings, pins, bushings, and other parts subject to wear constructed of bronze. Check valves 2.5" or smaller shall be bronze regrinding horizontal swing check valves. Threaded end check valves shall be Cane 36, Fairbanks 0605, Jenkins 762-A, or OIC 236.

113 INSTALLATION OF WATER MAINS

Before excavation of the water supply trench is started, all intersecting sewer lines, house sewer lines, and sewer within ten (10) feet of the water line shall be located, mapped, and means taken to prevent discharge or waste into the trench. If any sewer is disturbed, it must be carefully restored immediately to a tight operating condition.

Pipe laying operations should be suspended during rains or whenever the trench cannot be kept waterless. A tight plug should be placed in the open end of a main at all times when work is not in progress.