

SANITARY SEWER SPECIAL PROVISIONS

GENERAL REQUIREMENTS

7-17 SANITARY SEWERS

Section 7-17.2; Materials

This section is replaced with the following:

Pipe used for sanitary sewers may be:

Rigid

Concrete
Ductile Iron (Epoxy lined)

Thermoplastic

*ABS Composite
PVC (Polyvinyl Chloride)

Lining Material – The material used for lining the pipe and fitting shall have a successful history of protecting pipe lines in sewer service. The material shall be a high build multi -component amine cured novalac epoxy lining. At least 20% of the volume of the material shall contain ceramic quartz pigment.

All sanitary sewer pipes shall have flexible gasketed joints unless otherwise specified. It is not intended that materials listed are to be considered equal or generally interchangeable for all applications. The Engineer shall determine from the materials listed those suitable for the project, and shall so specify in the specifications or the Plans. Materials shall meet the requirements of the following sections

Reinforced Concrete Storm Sewer Pipe	9-05.7(2)
Solid Wall PVC Sanitary Sewer Pipe	9-05.12(1)
Profile Wall PVC Sanitary Sewer Pipe	9-05.12(2)
Ductile Iron Sewer Pipe	9-05.13
* ABS Composite Sewer Pipe	9-05.14
HDPE Pipe	9-05.21
* (Kelso only)	

All pipes shall be clearly marked with type, class, and thickness. Lettering shall be legible and permanent under normal conditions of handling and storage.

Section 7-17.3; Construction Requirements

This section is supplemented with the following:

Grade and Alignment

All sanitary sewer laterals to be potholed for pipe size, type, and depth prior to construction.

The Contractor shall verify the locations and establish the depth of the existing sewer lines at the points where connections are made prior to trenching for the pipelines. The Engineer shall be notified if there are discrepancies from the depth shown in the Plans.

All sanitary sewer laterals are to be a minimum 6" PVC with a minimum slope of 2% except as indicated on the plans. The depth of trenching for sewer lines shall be such as to give a minimum cover of 36 inches over the top of the pipe at Right-of Way or shall require Ductile Iron pipe & approval from the City of Kelso/Longview unless otherwise shown on the Plans. A minimum 10' horizontal and 18" vertical separation must be provided between all existing and proposed water and sanitary sewer lines and a minimum 4' horizontal and 12" vertical separation must be provided between all other utilities.

All sanitary sewer pipe which cross water pipes shall be Ductile Iron pipe 20' section centered over water pipe.

All backfill shall be compacted 5/8" minus crushed surface top coarse(CSTC).

Foundation material & Geo grid shall be installed as directed by the City of Kelso/Longview & to the depth as directed.

Utility permits must be applied and paid for prior to any connections being made to the sewer system.

As-built drawings shall be required at completion of project. As -built drawings shall be submitted & approved prior to acceptance. As -builds to be on Washington South Datum.

Trace Wire

Trace wire shall be installed on all sanitary and side sewers. The wire shall be taped to the lines at 15 foot intervals and shall be brought to the surface at all junctions and termini using methods approved by the Engineer. Trace wire material for sewers shall be 12 Gauge, soft drawn, insulated, and shall be green in color.



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Longview: **C.B.**

Kelso: **S.Z.**

Splices shall be made with a kit containing a "T" shaped open cell centering device and a plastic bag of urethane and hardener, which is mixed at the time of installation or heat shrinkable insulating tubing. Heat shrinking insulating tubing shall consist of a mastic lined heavy wall polyolefin cable sleeve. The resin used with the "T" shaped open cell centering device shall be a quick curing flexible compound with an approximate set-up time of 4 minutes at 72° F. Also, a pre-filled, direct bury, safety wire connector can be used.

A continuity test shall be performed on tracer wire with inspector present prior to paving roadway.

The curb shall be stamped at each location where the sewer lateral line crosses it with a "S" in a manner approved by the City Engineer.

Manhole Rain Guards

Watertight Manhole Cover Inserts:

The contractor shall furnish and install "Man Pan" (shallow dish) watertight manhole cover inserts, or an Approved Equal, in new manholes and in existing manholes as shown on the Plans. The insert shall have two (2) corrosion resistance lifting lugs molded into the insert for easy removal and re-installation into the manhole frame. The lifting lugs will be located 180 degrees apart and designed to be functional with a standard "J" hook. The insert and each of its components, the valve bodies, valve plugs, springs, and gasket(s) shall be manufactured of plastic, stainless steel or other corrosion proof material. The insert shall be manufactured of recycled High Density Polyethylene. The insert shall be manufactured to allow easy installation within the manhole frame. The pre-molded thickness of the insert shall be no less than 1/8" or greater than 3/16".

The insert shall have a one way valve that is corrosion and wear resistant and which releases pressure at approximately 1 psi. The valve's vent shall have a minimum capacity of 12 DFM. The shall be installed in the center of the insert. A corrosion resistant nut shall be supplied and installed on the backside of the insert to prevent removal of the valve.

The insert shall be stamped "CONFINED ENTRY REQUIRED" with one inch high lettering.

The watertight manhole insert shall be manufactured and finished to fit upon the manhole frame rim on which the manhole cover rests.

Installation:

The manhole frame shall be cleaned of all dirt/debris before placing the insert upon the rim.



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The watertight manhole insert lip with gasket shall be placed in contact with 360 degrees of manhole frame rim to retard water seepage between the insert and the frame.

Testing:

After installation of the watertight manhole insert, the seal and valve shall be water tested and shall not allow more than 1 gallon of inflow during a period of 24 hours.

Cleaning and Testing

Section 7-17.3(2)A; General

This section is supplemented with the following:

Cleaning will be performed with a combination vacuum truck capable of removing all material from the newly constructed sewer lines. The downstream manhole shall be plugged during all construction, cleaning and testing to prevent any material from entering the existing system.

All manholes shall be hydrostatically tested. In substitution of hydrostatic testing, all manholes may be vacuum tested.

Exfiltration Testing: Prior to making exfiltration leakage tests, the contractor may fill the manhole with clear water to permit normal absorption into the manhole structure provided, however, he shall complete the leakage test within twenty-four hours after filling. The specified leakage allowance assumes pre-wetted conditions.

The exfiltration test shall be performed by plugging the pipe connections and filling the manhole with clear water to within 6" of the top of the manhole frame and monitoring for two hours. Leakage shall be no more than 0.2 gallons per hour per foot of head above invert twenty-four hours after filling. The specified leakage allowance assumes pre-wetted conditions.

Vacuum Testing: The vacuum test shall be performed by plugging the pipe connections and by the use of accepted vacuum apparatus pulling a vacuum to an initial condition of 10" Hg. Depending upon the apparatus selected, the manhole may be tested before backfilling.

The criteria for acceptance of a vacuum test is that the leakage shall not exceed 10 cubic feet per minute (cfm) for 48" diameter manholes, 12 cfm for 54 and 60 inch diameter.

The testing procedure involves measuring the depth to invert of the manhole and timing the loss of vacuum from 10 to 9 inches Hg. The manhole shall be considered acceptable if the time measured meets or exceeds the conditions of the following equations:

$$T_{48''} = 1.767d$$

$$T_{54''} = 2.120d$$

$$T_{60''} = 2.120d$$

$$T_{60''} + = 2.473d$$

T = time in seconds (manhole diameter subscript) for 1" drop in vacuum from 10" to 9" mercury.

d = depth in feet of manhole measured from the final surface to invert.

Vacuum testing of manholes without grade rings and frame and covers either prior to backfilling or after backfilling shall be considered acceptable when vacuum drops from 10 inches to 9 inches of mercury is timed at greater than 60 seconds.

If any manhole fails to meet the requirements of the selected test, the contractor shall determine the source or sources of leakage and shall repair or replace all defective materials or workmanship at no expense to the City.

Section 7-17.3(2)H; Cleaning and Testing

This section is supplemented with the following:

Testing and TV inspection shall be performed after completion of top course or finish grade & prior to paving.

The City of Kelso/Longview will require all sanitary sewer lines (including service side sewers within the Right of Way) to be inspected by the use of a television camera before final acceptance under the direct supervision of a City Inspector. a one inch ball shall be attached in front of the camera and shall follow flow line to allow inspection for bellies.

The Contractor shall bear all costs for this work & for incurred in correcting any deficiencies found during television inspection including the cost of any additional television inspection that may be required by the Engineer to verify the correction of said deficiency. The Contractor shall be responsible for all costs incurred in any television inspection. The City must be provided with a written report and a copy of the inspection on an approved media.

A test video is required 48 hours prior to the television work for review/approval of the quality obtainable from any equipment including push cameras. Allow a minimum of 48 hours for City review. If equipment doesn't meet the expected quality, different equipment shall be required.

A city inspector shall be on site to witness TV inspection. No approval shall be given until City of Kelso/Longview staff reviews the provided reports & inspection. Any deficiencies discovered during the inspection shall be corrected to the satisfaction of the City.