

SECTION 02732**SANITARY SEWER SERVICE LINES MATERIALS AND INSTALLATION****PART 1 - GENERAL****1.01 WORK INCLUDED**

- A. Installation of sanitary sewer service lines.
- B. Point repairs on existing sanitary sewer service lines.

1.02 GENERAL REQUIREMENTS

- A. Use only standard bends, tees, plugs, wyes, or other approved fittings.
- B. Use only pipe, fittings, and adapters approved by LRWRA.
- C. All pipe and other materials shall be new.

1.02 RELATED WORK

- A. LRWRA Standard Detail Drawings
- B. Section 01100 – Requirements for Developer Funded Projects
- C. Section 02220 – Excavation, Backfilling, and Compacting
- D. Section 02575 - Pavement Repair
- E. Section 02605 - Manholes
- F. Section 02610 – Pipe and Fittings
- G. Section 02730 – Sanitary Sewer Pipelines
- H. Section 02734 - Inspection and Testing of Sewer Lines, Manholes, and Service Lines
- I. Section 03300 - Cast-in-place Concrete

1.03 DEFINITIONS

- A. City Sewer – A public sanitary sewer line and appurtenances which is part of the POTW owned, operated, and maintained by Little Rock Water Reclamation Authority (LRWRA), and in which all owners of abutting properties have equal rights of access and use subject to current Ordinances, rules and Specifications of the City of Little Rock and/or LRWRA. Generally, no gravity sewer line smaller than six (6) inches in diameter is a City Sewer.
- B. Service Line – The sewer which conveys the discharge from a building’s plumbing system or other approved waste system to the City Sewer. The service line begins at the connection to the City Sewer and ends at the building foundation.
- C. Permit - Written authorization issued to a plumber or contractor upon request and after payment of all applicable fees, allowing repair or replacement of an existing service line or installation of a new service line to connect to the LRWRA system. No work shall be allowed on any service (gravity or force main) until a permit is issued by LRWRA. Permits issued by LRWRA are valid for one year

from the date of issue. If permit is not used within the one year period, then a new permit must be purchased at the Fee Schedule in effect at that time.

- D. Plumbing Permit – Written authorization issued to a plumber or contractor upon request allowing work on existing plumbing in an existing structure or to install plumbing in a new or existing structure.

1.04 QUALITY ASSURANCE

- A. Inspect all sewer lines per Section 02734 - Inspection and Testing of Sewer Lines, Manholes, and Service Lines.

1.05 SUBMITTALS

- A. Submit all materials and procedures not described in these specifications to the Engineer of Record. LRWRA shall approve all materials and procedures not described in these specifications.

1.06 REFERENCES

- A. Arkansas State Plumbing Code
- B. City of Little Rock Plumbing Code

1.07 PROTECTION

- A. In all cases the Contractor is responsible for protecting public and private property and protecting any person or persons who might be injured as a result of the Contractor's work.
- B. All utilities shown on the plans may not represent the exact location; however, the contractor is responsible for verifying these locations and contacting "Arkansas One Call System" before excavating.

PART 2 - PRODUCTS

2.01 BEDDING AND BACKFILL

- A. Refer to Section 02220 - Excavation, Backfilling, and Compacting.

2.02 SANITARY SEWER PIPE, FITTINGS, AND MATERIALS

- A. Refer to Section 02610 – Sewer Pipe, Fittings, and Materials.

2.03 BACKFILL AND ASPHALT PAVEMENT REPAIRS

- A. Refer to Section 02575 – Pavement Repair

2.04 MANHOLES, MANHOLE RINGS, AND COVERS

- A. Refer to Section 02605 - Manholes.

2.05 CONCRETE

- A. Refer to Section 03300 - Cast-In-Place Concrete.

2.06 PROHIBITED SERVICE LINE PIPE MATERIALS

- A. The following materials are specifically forbidden for use either in LRWRA sewers or service lines:
1. Asphalt impregnated fiber tube pipe.
 2. Clay pipe.
 3. Concrete pipe.
 4. Open profile PVC pipe as defined in ASTM F794 less than 24" in diameter.
 5. "No Hub" cast iron soil pipe or other non-bell and spigot pipe.
 6. Corrugated Metal Pipe.
 7. Glued joint pipe and fittings.

2.07 SERVICE LINE PIPE AND FITTINGS

- A. Service lines are four (4) inches or six (6) inches in diameter.
- B. Furnish the following:
1. PVC Pipe for 4" Service Lines – PVC pipe for 4" service lines shall be SDR 21, 200 psi or C900 DR18. Fittings shall be SDR 21 PVC with push on gaskets conforming to ASTM F477 and joints conforming to ASTM D3139 or C900 DR18 Non-Pressure Fittings, with push on gaskets conforming to ASTM F477 and ASTM D 3212. Glued joints shall not be permitted.
 2. PVC Pipe for 6" Service Lines – PVC pipe for 6" service lines shall be SDR 26 gravity sewer pipe conforming to ASTM D3034. Joints and gaskets shall conform to ASTM D3212 and ASTM F477. Fittings shall be SDR 26 PVC Non-Pressure Fittings, with push on gaskets and joints conforming to ASTM D 3212 and ASTM F477. Glued joints shall not be permitted.
 3. Ductile iron pipe per ASTM A 746 or ANSI A 21.51 with push on rubber gasket joints.
 4. High Density Polyethylene (HDPE) pipe SDR 17 or thicker.
 5. Cast iron soil pipe per ASTM A74. Bell and spigot pipe with rubber gaskets per ASTM C 564. Joints shall be push on equipped with a rubber gasket.

2.08 CLEANOUTS

- A. Cleanouts shall be 4-inch two-way double cleanouts. Cast iron shall meet the requirements of ASTM A74. Joints shall be hub and spigot with rubber gaskets meeting the requirements of ASTM C564. PVC cleanouts shall be SDR 21 PVC with gasketed joints meeting the requirements of ASTM D2665 and ASTM D3311. PVC SDR 21 PVC cleanouts shall be as manufactured by Dallas Specialty or approved equal.
- B. Cleanouts shall have two 4"x4" combination cleanouts with brass plugs.
- C. Cleanouts shall have gasketed cleanout plugs.
- D. Cleanouts shall be as shown in the LRWRA Standard Details.
- E. Cleanouts are required at the building foundation per the Little Rock Plumbing Code.

- F. A cleanout shall be the same diameter as the pipe on which it is installed.

2.09 DUCTILE IRON FITTINGS

- A. All ductile iron fittings shall conform to the requirements of ANSI/AWWA C153/A21.53, latest revision, for Ductile Iron Compact Fittings. Minimum pressure class shall be the same as pipe.
- B. Ductile Iron Fittings shall be provided with **double thickness** cement mortar lining in accordance with AWWA C104.
- C. Buried ductile iron fittings shall be furnished with standard bitumastic coating on the exterior per AWWA standard.
- D. Fittings shall be wrapped with polyethylene wrap in tube or sheet form conforming to the requirements of ANSI/AWWA C105/A21.5.

2.10 SHIELDED COUPLINGS FOR SERVICE LINES

- A. Connection of new service lines to existing service lines shall be by a shielded coupling.
- B. Coupling shall be water-tight, leak proof seal that is resistant to both infiltration and exfiltration.
- C. Gasket shall meet the requirements of ASTM C1173.
- D. Couplings 4-inch through 8-inch and 10-inch shall incorporate a minimum of 2 clamps per band. Couplings 9-inch and 12-inch through 16-inch shall incorporate a minimum of 4 clamps per band.
- E. Coupling shall consist of corrosion resistant 304 stainless steel components, and a high impact polyimide (nylon) securing cage, over an injection molded EPDM rubber gasket.
- F. Shear band, screw housing, screw saddle, and screw shall be 304 stainless steel.
- G. Shielded flexible couplings shall be Maxadaptor by Gripper Gasket LLC, Fernco Strongback RC Series Coupling, or approved equal.

2.11 SERVICE LINE CONNECTION FITTINGS FOR GRAVITY MAINS

- A. Service connection fittings for gravity sewer pipe installed by conventional open cut (15" and larger), new service connections to existing mains (all diameters), and lines rehabilitated by CIPP and pipe bursting method (all diameters) shall be model CB Sewer saddle manufactured by Romac Industries, Inc. of Bothell, WA (800-426-9341), or approved equal.
 1. Casting shall be ductile iron per ASTM 536 protected with yellow shop coat.
 2. Furnish with 3.5-inch wide stainless steel (per ASTM A240) adjustable strap.
 3. Bolts shall be ½ inch UNC rolled thread, lubricant coated, stainless steel per ASTM A193, type 304.
 4. Nuts shall be stainless steel per ASTM A 194, type 304.
 5. Washers shall be stainless steel per ASTM A240, type 304 and plastic lubricating washers.
 6. Gasket shall be SBR per ASTM D2000 compounded for water and sewer service.

7. Opening for inserting the connection fitting into the wall of the pipe shall be made with a hole saw of the diameter and type recommended by the connection fitting manufacturer.

8. The gasket used with the Romac fitting shall be for connection of the service line material specified above.

B. Service connection fittings for gravity sewer pipe (6" through 12" in Diameter) installed by conventional open cut methods shall be molded wyes (material shall be similar to sewer main pipe), with elastomeric gasket bell and spigot ends meeting the same requirements as the sewer main pipe. Branch outlet shall include any necessary adapter to accept the service line material specified above and shown on the Drawings.

C. All wyes where service connections are not immediately installed shall be sealed with a gasket type permanent plug.

2.12 SERVICE WYES FOR GRAVITY MAINS

A. The wye material and joint type must match that of the mainline pipe.

B. Wyes shall terminate in a bell suitable for connection of the 4-inch service line pipe as specified herein.

PART 3 - EXECUTION

3.01 Six-inch (6") Service Line Installation

A. All sewer lines 6-inches in diameter and larger shall be constructed in accordance with Section 02730 – Sanitary Sewer Pipelines.

3.02 SPECIAL REQUIREMENTS CONCERNING FIELD LOCATION OF PIPE, BENDS, AND CLEANOUTS ON SERVICE LINES

A. Bends

1. Avoid using short radius ninety-degree bends on 4-inch service lines
2. Use only long sweep bends where bends are absolutely necessary.

B. Cleanouts

1. Cleanouts are required at the building foundation per the Little Rock Plumbing Code.
2. On lines longer than one hundred (100) feet, cleanouts are required at one hundred (100) foot maximum spacing. Cleanouts at bends may be used to accomplish this requirement.
3. Install cleanouts adjacent to any ninety-degree bend.
4. Install pipe on cleanout riser up to finish grade.
5. A cleanout shall be the same diameter as the pipe on which it is installed.

C. Backwater Traps (Sewage Check Valve)

1. Provide backwater traps as required by Section 6.14 of the Arkansas Plumbing Code or as shown on the plans.
2. Backwater Traps shall be Mainline "Adapt-A-Valve" or approved equal.

3.03 EXCAVATION - GENERAL

A. Perform excavation and prepare bedding in accordance with Section 02220 - Excavation, Backfilling, and Compacting.

- B. Never lay pipe in a water-filled trench, or when trench conditions or weather are unsuitable for such Work.
- C. Divert surface water and de-water trenches during excavation.
- D. Excavate for bells so that the entire barrel of the pipe will be uniformly supported on the pipe bedding before placing pipe in the trench.

3.04 PIERS

- A. Install concrete piers as indicated on the plans per Section 03300 - Cast-In-Place Concrete.
- B. Use only ductile iron pipe on piers.

3.05 PIPE INSTALLATION

- A. Inspect each joint of pipe carefully internally and externally before it is placed in the trench. Plainly mark and separate from the remaining pipe any joint found to be cracked, warped, or otherwise damaged. Remove these damaged joints from the project site as soon as possible.
- B. Cut pipe in a neat and workmanlike manner without damage to pipe or pipe lining when trimming joint length. Cut ends shall be beveled according to the manufacturer's recommendations to prevent damage to the bell gasket.
- C. Lay all pipe with the bell upstream.
- D. Use proper equipment for lowering sections of pipe into trenches. Lower pipe carefully into the trench so the spigot and bell will not become contaminated.
- E. Lay the service line on a straight alignment and at a constant slope. Install pipe at a minimum slope of one percent (1.00%), or one-eighth inch fall per linear foot (1/8"/LF). The maximum allowable deflection in a horizontal plane is one-inch per linear foot (1.00"/LF).
- F. Install bends on 4" service lines at all changes in alignment and slope. Cleanouts are required at 90 degree bends and every 100 feet on lines longer than 100 feet. Bends on 6" and larger service lines are only permitted within 5 feet of the building foundation and 2 feet from the manhole being connected to; if longer than 150 feet, bends are not allowed and manholes must be built.
- G. Keep the pipe joints' interior clean from all dirt and other foreign matter as the Work progresses. Maintain the pipe's interior cleanliness until accepted or put in service.
- H. Close the open ends of the pipeline temporarily with an appropriate manufactured watertight plug at the end of each day's Work or when discontinuing pipe installation for an appreciable period.

3.06 PIPE TO PIPE CONNECTIONS

- A. Make all pipe joints in strict accordance with the manufacturer's recommendation and as stated below for the particular type of connection. Make all joints watertight in accordance with the latest ASTM Standards.
- B. "No-Hub" type pipe connections are not permitted.
- C. Slip-type or Push-on Joints Connection Procedure
 - 1. Clean the bell and spigot end of the pipes prior to jointing thoroughly with a brush. Exercise particular care to clean the gasket seat.

2. Apply pipe lubricant and attach gasket in strict accordance with the specific joint manufacturer's recommendations. Clean and insert the rubber gasket in the gasket seat within the bell. Insert the spigot end of the upstream pipe in the bell of the downstream pipe. Push the upstream joint until it is in firm contact with the shoulder of the bell.

D. Mechanical Joints Connection Procedure

1. Clean thoroughly the spigot end of the pipe, the bell of the connecting pipe, and the rubber gasket as specified for slip-type or push-on joints. Clean the gland in a similar manner.
2. After the gland and gasket are placed on the spigot end of the pipe, a sufficient distance from the end to avoid fouling the bell, insert the spigot end in the fitting bell to the point of firm contact with the bell shoulder. Then advance the rubber gasket into the bell and seat in the gasket seat. Exercise care to center the spigot end within the bell. Bring the gland into contact with the gasket, enter all bolts, and make all nuts hand tight. Exercise continued care to keep the spigot centered in the bell.
3. Make the joints tight by turning the nuts with a torque wrench: First partially tightening a nut, then partially tightening the nut 180 degrees away from it. Work around the pipe with uniformly applied tension until the required torque is applied to all nuts. Required torque ranges and indicated wrench lengths for bolts are as follows:

Diameter (inches)	Range of Torque Foot Pounds	Length of Wrench (inches)
5/8	40-60	8
3/4	60-90	10
1	70-100	12
1-1/4	90-120	14

E. Shielded Couplings

1. Install shielded coupling only where dissimilar pipe materials are connected.
2. Take care that proper alignment is maintained and a maximum spacing between pipes does not exceed one-half inch.

3.07 SERVICE LINE CONNECTIONS TO CITY SEWER PIPELINES

- A. Wye Connection – Use existing wye or other prefabricated outlet if one has been left in the city sewer for sewer service to a lot unless it can be shown that the dwelling unit or building cannot drain by gravity to the wye.

C. Taps

1. Where a wye or other prefabricated outlet in the city sewer is not available to serve a lot, a tap connection shall be installed at a location approved by LRWRA to connect the building sewer to the city sewer.
2. The contractor shall install all taps using approved materials and equipment.

D. Manhole Taps

1. Make manhole tap connections into existing manholes as indicated on the plans.
2. Install manhole taps no more than twenty-four (24) inches or 2/3 of the main line pipe diameter whichever is greater, above the manhole invert.

3. Make manhole tap watertight and flush with inside surface of manhole.
4. Manhole taps are considered as part of the service line and are subject to inspection.

3.08 BACKFILLING AND INSPECTION

- A. Before backfilling, place concrete encasement at transitions between different types of pipe and around all flexible rubber couplings as shown on the Drawings. Use Class A concrete per Section 03300-Cast-In-Place Concrete.
- B. Install backwater traps (sewage check valve) if required.
- C. Before backfilling, install concrete anchor collars in accordance with the details at the location and interval and shown on the Drawings. Use Class B concrete and reinforce with steel bars per Section 03300-Cast-In-Place Concrete.
- D. After the pipeline is installed and visually inspected by LRWRA or their designated representative, backfill the trench per Section 02220-Excavation, Backfilling, and Compacting.
- E. Test the service line per Section 02734-Inspection and Testing of Sewer Lines, Manholes, and Service Lines.
- F. Repair all pavements per Section 02575-Pavement Repair.
- G. Repair all incidental damage to buildings, structures, utilities, pavements, landscaping, etc.
- H. Repair sodded and grass areas to original condition.

3.09 SERVICE LINE REPLACEMENT/REPAIRS

- A. Obtain permit per LRWRA requirements.
- B. When possible, the existing tap or wye should be used to connect a repaired or replaced service line.
- C. When the existing wye or tap cannot be used, then the Contractor shall seal original wye or tap (to prevent entrance of rainwater or debris into the city sewer) and contact LRWRA Engineering Services to arrange for inspection of seal.
- D. Repair damaged portion in accordance with these specifications.
- E. Contact LRWRA Engineering Services to arrange for inspection of service line repair.

3.10 PIPE BURSTING SERVICE LINES

- A. Pipe bursting of existing service lines shall be done only with prior approval from LRWRA personnel. Submittal of location, depth, method used, pipe material to be installed and reason for bursting service line instead of conventional relay will be required prior to approval.
- B. Pre and post televising of existing service line and new service line will be required.
- C. Connections at each end of pipe bursting shall be inspected by LRWRA personnel. All normal inspection fees will be charged for pipe bursting installations.

END OF SECTION 02732