
III Wastewater System Improvements

A. General

This section pertains to general design requirements for wastewater collection system construction in the City of Roanoke. All wastewater flow calculations and all sewer lines shall be sized and designed in accordance with the City of Roanoke Wastewater System Master Plan or as determined by the Public Works Department. No development shall require the use of lift stations, other than the existing lift stations, for the conveyance of wastewater flows without the approval of the City Council. Other pertinent requirements for sewer connections, pipe sizing, sanitary sewer main extension, wastewater restrictions, conservation, impact fee and other sewer related fees are included in the City Code. In the absence of specific standards, all collection, treatment, and disposal systems shall be designed in accordance with the most current criteria adopted by the Texas Commission of Environmental Quality (TCEQ), Chapter 217, "Design Criteria for Sewerage Systems". Drawings must be submitted to TCEQ for review and approval. The approval letter from TCEQ must be submitted to the City. Deviations from the City of Roanoke Texas requirements, standards and criteria must be approved by the City of Roanoke's Director of Public Works or his/her representative.

B. Sanitary Sewer Lines

1. Standard sewer line sizes are 8", 12", 15", 18", 21", 24", 27", and 30" diameter. Other sizes must be approved by the Director of Public Works or designated representative.
2. Sanitary Sewer lines shall be a minimum of 8 inches in diameter.
3. Gravity and pressure sanitary sewer lines shall be constructed at a minimum depth of 4'. Sewer lines shall be located in the parkway on the south and west side of the roadway, and are required to be constructed on both sides of a State Highway. No service lines will be allowed to cross a State Highway or Lot line. Deviations of these requirements may be approved by the Director of Public Works or designated representative in circumstances where compliance is not physically feasible.
4. Easements for sanitary sewer line construction shall meet the following requirements:
 - Refer to Part B Technical Standards
 - i. Sanitary Sewer lines located within a public right-of-way, shall be located within the roadway, 5 ½ feet from back of curb or 3 feet from the edge of pavement for streets without curb and gutter unless approved by the Director of Public Works or a designated representative.

- ii. Parallel lines will require an additional 5' easement width, a minimum of 6' from deeper line.
5. All sanitary sewer lines shall be designed with consideration for serving the full drainage area subject to collection by the sewer in question.
6. All sanitary sewer line installations must extend to the borders of the subdivision or property as required for future extensions of the collection system, regardless of whether such extensions are required for service within the subdivision or property.
7. All sanitary sewers lines shall be designed with hydraulic slopes sufficient to provide a minimum full pipe velocity of 2 feet per second. Design flow and minimum slope shall also conform to (TAC Chapter 217, Design Criteria for Sewage System).
8. Materials
 - a. Polyvinyl Chloride (PVC) Pipe
 - i. All sanitary sewer pipes shall be PVC pipe type SDR-35 for gravity sewer lines constructed less than twelve feet (12') deep. Type SDR-26 pipe shall be utilized where gravity sewer lines exceeds twelve feet (12'). For sanitary sewer mains that exceed 20 feet in depth, the Engineer will be required to determine the type of sanitary sewer pipe to be used and provide documentation to support their selected material type. Sewer mains greater than 20 feet in depth are not allowed and must receive a waiver from the Public Works Director. If service connections are needed on sewer pipe constructed below fifteen feet (15') in depth for a minimum of 500', a parallel line shall be constructed at a shallower depth, specifically for service connections. Ribbed pipe will be allowed on deeper pipe if no service lines are connected to that line. Pressure sewer pipe shall be C900 DR18 PVC.
 - ii. All gravity PVC sanitary sewer pipe shall be green in color. Pressure sewer pipe shall be white in color.
 - iii. PVC sewer pipe and fittings shall conform to the current ASTM Designation D 3034 for 8"-15" diameter pipe and ASTM Designation F 679 for pipes greater than 15" in diameter.

10. Installation

a. General

- i. All installations shall conform to ASTM Designation D2321, and the latest NCTCOG Specifications as amended by these standards.

- ii. Construction shall begin at the downstream end of the project and continue upstream with the bell facing upstream. No upstream piping shall be installed before downstream piping unless approved by the Director of Public Works or designated representative.
- iii. When PVC pipe is used for force mains, green marker tape with the wording "Buried Sanitary Sewer" shall be installed in the backfill material no more than twelve inches (12") above the top of the pipe.
- iv. The amount of trench excavation shall not exceed 200 (two hundred) feet from the end of the pipe laying operations, and no more than 300 (three hundred) feet of total open trench will be allowed. At the end of each workday, all trench excavation shall be backfilled to the end of the pipe laying operation. Barricades and lights will be required around any open trench left overnight, for any trench within right-of-way or public access easement.
- v. Approved plugs shall be installed at the open ends of the line at the end of each working day. All joints shall be assembled free of dirt and any foreign matter.
- vi. Water jetting of water utility trenches is not permitted.
- vii. Density tests shall be taken every 200 feet and on every lateral that crosses the street. The density reports shall be submitted daily to the Public Works inspection division.
- viii. All density reports shall be completed and delivered to the Director of Public Works or designated representative, before paving is allowed to begin.
- ix. When a 150 psi rated sewer line is required due to its proximity to a water line, the 150 psi rated pipe shall terminate at a manhole on each end. The pipe shall be extended to the interior wall of the manhole. No external boot connection will be allowed.

C. Manholes

1. Manholes shall be located at all intersections of sanitary sewer lines and at intermediate spacing along the line. The maximum spacing shall not exceed 500 feet.
2. Manholes should be located at all changes in grade and at the ends of all sanitary sewer lines that will be extended.
3. A manhole is required at the junction of sewer lines with different inside pipe diameters.
4. A tenth of a foot (0.1') of fall is required through the manhole when a change in flow direction occurs.

5. The City prefers the flow line into a manhole to be 6 inches above the flow line out of the manhole. However, if the flow line must be greater than 6 inches, than the City will require the flow line into the manhole to be two feet (2') above the flow line out, and an interior drop inlet is required.
6. The Minimum manhole inside diameter is four feet (4'). Manholes exceeding 12 feet in depth shall have an inside diameter of five feet (5').
7. Manholes with interior drop connections shall have a minimum inside diameter of five feet (5').,
8. The Minimum cast in place manhole wall thickness is eight inches (8"). For depth's greater than 15 feet a special design will be required.
9. The Minimum pre-cast wall thickness is 5".
10. For commercial or industrial development, a manhole is required where a sanitary sewer line enters and exits private property unless it is located within a City of Roanoke Public Utility Easement.
11. Materials
 - a. Concrete
 - i. Manholes shall be constructed of cast-in-place or precast concrete.

12. Installation

- a. Use the following table to determine sanitary sewer manhole sizes:

Pipe Sizes	Diameter of Manhole
8" through 18"	4' (Less than 12' deep)
8" through 18"	5' (Greater than 12' deep)
21" through 30"	5'
33" through 48"	6'
>48	Special Design

Note:

- The clear distance between the outside of adjacent sanitary sewer lines shall not be less than two feet.

b. Cast-in-place

- i. The manhole foundation shall be poured on undisturbed soil and shall have a minimum thickness of eight inches (8").
- ii. The inlet and outlet pipes shall be poured into the foundation of the manhole. The pipe shall extend one-and-one-half inches (1 1/2") into the manhole.
- iii. The invert shall be shaped and smoothed so that no projections will exist and the invert shall be self-cleaning. The invert floor shall have a minimum slope of one-inch (1") per foot.
- iv. Concrete work shall conform to all requirements of ACI 301, Standard Specification for Structural Concrete, published by the American Concrete Institute, except as modified herein.
- v. Detailing of concrete reinforcement and accessories shall be in accordance with ACI Publication 315.
- vi. Portland Cement shall be Type II, low-alkali and conform to ASTM Designation C-150.
- vii. The manhole shall not be backfilled within 12 hours after the concrete placement.
- viii. The face of curb shall be stamped with an "MH" to mark the location of all manholes. The location of the stamp shall be a line that intersects the center of the manhole cover and the curb perpendicular to the centerline of the street.

c. Precast Manhole

- i. Precast manholes shall be constructed in accordance to ASTM Designation C-478.
- ii. The Manhole base shall have a spread footing and be placed on a minimum of twelve-inches (12") of ¾" crushed rock.

13. Manufacturers

- a. Approved precast manhole manufacturers are as follows:
 - i. Hydro-conduit
 - ii. Hansen

D. Manhole Frame and Cover

1. Cover

a. Materials

All manhole covers shall conform to the Standard Specifications for Grey Iron Castings, ASTM A-48, Class 30 B.

b. Installation

- i. All manhole covers shall be 30-inches in diameter.
- ii. All manhole covers shall have two integrally cast pick bars.
- iii. Manhole covers shall weigh approximately 134 lbs.
- iv. Manhole covers shall indicate “Sanitary Sewer”.

c. Manufacturers

- i. Bass and Hays
- ii. Vulcan

2. Frames

a. Materials

All manhole frames shall conform to the Standard Specifications for Grey Iron Castings, ASTM A-48, Class 30 B.

b. Installation

- i. All manhole frames shall provide a 30 1/4" opening to assure proper fit of the manhole cover.
- ii. Manhole rings shall weigh approximately 170 lbs.

c. Manufacturers

- i. Bass and Hays
- ii. Vulcan

3. Extension Ring

a. Materials

All precast reinforced concrete extension rings shall conform to ASTM C-478.

b. Installation

- i. The number of extension ring sections shall be kept to a minimum (i.e. use one - 12" extension ring instead of two —6" extension rings).
- ii. A 1" x 3 ½" bitumastic gasket shall be used to seal the extension ring at both joints.

c. Manufacturers

Hydro Conduit

4. Rain Pan

a. Materials

The rain pans shall be high-density polyethylene plastic.

b. Manufacturers

Knutson or approved equal.

E. Sanitary Sewer Service

1. No sewer service line (lateral) shall be less than 4" in nominal inside diameter. Commercial sewer laterals shall be 6" minimum in inside diameter.
2. Sewer laterals shall be located at the center of the lot, extend to the property line and be a minimum of 10 feet from the water service. The end of the lateral shall have a tee connection at the right-of-way to allow for the placement of a clean out during the building permit phase.
3. Sewer laterals are not permitted to connect to manholes. Sewer laterals must connect to the sanitary sewer main with a wye connection.
4. Sewer service laterals shall have no more than 6' of cover at the property line and shall maintain a minimum slope of 1.0 percent.

5. Materials

a. Polyvinyl Chloride (PVC) Pipe

- i. All lateral sewer service lines shall be PVC pipe type SDR-35.
- ii. All PVC sanitary sewer pipe used for lateral services shall be green in color.

6. Installation

a. Polyvinyl Chloride (PVC) Pipe

- i. All service laterals shall be installed in accordance with the sanitary sewer embedment and backfill standards.
- ii. All service laterals below a proposed area to be paved shall be installed and properly backfilled prior to the subgrade preparation and pavement construction.
- iii. All lateral locations shall be stamped into the curb with an "S" at the point the lateral crosses the curb with 4" high lettering. The lateral indicator mark shall be placed at the edge of pavement when there is no curb and gutter.

F. Cleanouts

1. Materials

a. Polyvinyl Chloride (PVC) Pipe

- i. All cleanouts are to be constructed of PVC pipe type SDR-35.
- ii. All PVC sanitary sewer pipe shall be green in color.
- iii. PVC sewer pipe and fittings shall conform to the current ASTM Designation D 3034 for 4"-15" pipe and ASTM Designation F 679 for pipes greater than 15".

G. Main Line Cleanouts

1. Main Line Cleanouts are not allowed

H. Aerial Sewer

1. The piers for the aerial crossing shall be designed in accordance with the guidelines of the Ductile Iron Pipe Research Association.
2. Aerial sewer crossings shall be located in areas where the sewer line cannot be constructed with the appropriate minimum cover. The design engineer shall design the

aerial crossing in accordance with these standards and as approved by the Director of Public Works or designated representative.

3. Pier placement and spacing shall be determined according to soils analysis performed by a geotechnical engineer. Piers shall be placed at a maximum span distance as indicated by the design engineer's calculations.
4. Pier placement and spacing along with a soils report shall be submitted to the Director of Public Works or designated representative.

5. Materials

a. Pipe

- i. All above ground sewer installations shall be ductile iron, minimum Class 150, utilizing restrained joints and shall have a wall thickness required for the size and span as designed. The pipe shall have an internal polyurethane coating.
- ii. The aerial pipe shall be connected to the sanitary sewer pipe by means of a manhole on each side of the aerial crossing.

b. Piers

Piers to be constructed with a minimum of Class A 3,000 psi reinforced concrete.

6. Installation

a. Pipe

The design engineer shall submit a pipe design for approval by the Director of Public Works or designated representative.

b. Piers

The design engineer shall submit a pier design for approval by the Director of Public Works or designated representative.

I. Sewer Line Boring

1. The design engineer shall design the sewer pipe casing for the following loading conditions and applicable combinations thereof:
 - a. Cooper's E-80 Railway loading or AASHTO HS20 loading as applicable.
 - b. Earth loading with the height of fill above the casing as shown on the plans.
 - c. Loads applied during jacking, including axial load from jacking.

- d. All other applicable loading conditions, including loads applied during transportation and handling.

2. Materials

a. Steel Casing Pipe

Steel casing pipe shall be new (or used if approved by the Director of Public Works) and suitable for the purpose intended and shall have a minimum yield strength of 35,000 psi. The Casing shall meet ASTM A-36, ASTM A-570, ASTM A-135, ASTM A-139, or approved equal. The Pipe shall be coated with coal tar epoxy (15 mils min.) in accordance with AWWA C-210. The Pipe joints shall be welded in accordance with AWWA C-206. After the pipe is welded, the coating shall be repaired.

b. Cement Mortar

Cement mortar shall consist of one (1) part cement to two (2) parts clean sand with sufficient water to make a thick, workable mix.

c. Pressure Grout Mix

Grout shall be comprised of 1 cubic foot of cement and 3.5 cubic feet of clean fine sand with sufficient water added to provide a free flowing thick slurry. If desired to maintain solids in the mixture in suspension, one cubic foot of commercial grade bentonite may be added to each twelve to fifteen cubic feet of the slurry.

d. Casing Insulators

Casing insulators shall be utilized for any type of carrier pipe. Insulators shall be high density polyethylene. Insulators shall fit snug over the carrier pipe and position the carrier pipe approximately in the center of the casing pipe to provide adequate clearance between the carrier pipe bell and the casing pipe. Insulators shall be manufactured by "Recon" and be Racci Type or approved equal.

3. Installation

a. Tolerances

- i. All bores shall be installed at a grade no less than the minimum indicated by TAC, Chapter 217 for the desired pipe size.
- ii. All bores shall maintain grade enough to ensure desired clearance distances between existing utilities and bore.

b. Excavation and Backfill of Access Pits

- i. Bore pits must be a minimum of four feet (4') from the back of curb when boring under roadways.
- ii. Excavation over the limits of the bore or tunnel will not be permitted. Trench walls of access pits adjacent to the bore or tunnel face shall be truly vertical. Shore the trench walls as necessary to protect workmen, the public, structures, roadways, and other improvements.
- iii. Excavations within the right-of-way and not under a paved surface shall be backfilled and consolidated by mechanical methods as specified in these standards for compaction of trenches under roadways. Surplus material shall be removed from the right-of-way and the excavation finished to original grades. Backfill pits immediately after the installation of the carrier pipe is completed. If carrier pipe is not installed immediately after casing pipe installation, the right-of-way Owner may require the access pits to be temporarily backfilled until installation of carrier pipe.

Areas disturbed by excavation or backfilling operations, shall be replaced by seeding or sodding as specified.

J. Lift Stations

1. Instrumentation and Control

- a. The voltage supplied for pump operation shall be 3 phase, 480 volts. Converting single-phase power to three-phase power using additional mechanical equipment will not be allowed.
- b. Wet well level indication shall be accomplished through use of an ultra sonic level-sensing device. The City standard for this item is the Milltronics HydroRanger.
- c. A Motorola MOSCAD Remote Control Unit (RTU) shall be installed at all lift stations. Programming of the RTU is the responsibility of the contractor, and shall be coordinated with the City. The Motorola RTU shall be a “smart” RTU , utilizing a micro-compressor for communications, calculations, local control, and data storage. The RTU shall be modular capable of receiving and transmitting control messages to and from the MASTER STATION via the existing repeater. An integral radio transceiver shall be provided for direct communication with the MASTER STATION via the existing repeater. The RTU shall be the MOTOROLA MOSCAD-L remote terminal. Substitutions will not be considered.

- d. Submersible pumps shall be provided with moisture and motor over-temperature sensors.
- e. Discharge flow from the lift station shall be measured by using a magnetic flow meter. The meter manufacturer installation requirements shall be followed to ensure accuracy of flow measurements. The meter shall be placed in a concrete vault with an aluminum access door rated for the anticipated traffic load. Combining the meter vault with the valve vault is acceptable. The vault will be designed to drain or pump water accumulation in the vault to the wet well. The Magnetoflow® Mag Meter manufactured by Badger Meter Inc., is an approved model.

2. Pumps, Piping, Valves and Wells

- a. Pumps shall be sized to operate at optimum efficiency. Minimum acceptable efficiency at the operating point will be sixty percent (60%).
- b. Each pump discharge must have a cushioned swing check valve and isolation valve.
- c. Inlet piping shall be designed to minimize turbulence.
- d. Valves shall be located in a separate vault from the wet-well.
- e. The valve vault shall have a concrete floor with a drain line connecting the vault to the wet-well. The drain line shall have a gasket flap valve at the discharge into the wet-well to prevent wet-well contents from entering the valve vault.
- f. The Wet-well working volume shall be sized to allow for the recommended pump cycle of 6 minutes per pump, with no more than 10 starts per hour.
- g. Lift station piping shall be designed with an additional emergency pump connection that allows the station to be operated with the primary pump out of service for an extended period of time.

3. Site Requirements

- a. All lift station sites are required to have a minimum 6-foot chain link fence. Fencing specifications are as follows:
 - i. Fence fabric shall be hot dip galvanized 9-gauge steel.
 - ii. Three strands of hot dip galvanized barbed wire are required above the top rail and must terminate at the corner posts with brace bands.
 - iii. A 12' double gate is required for vehicle traffic.
 - iv. Posts shall be schedule 40 hot dip galvanized steel. The Post shall be placed in concrete.

- b. A concrete pad will be required at the front of the control cabinet. The pad shall provide a 3' working area away from the face of the cabinet and extend the width of the enclosure mounting structure. The Pad depth shall typically be 4".
 - c. Crushed stone will be required inside the fenced area of the station. This requirement includes a water penetrating weed barrier covered with a minimum crushed stone in accordance with NCTCOG Item 2.1.8 (d).
 - d. 12" x 6" concrete perimeter curb is required to contain the crushed stone. The curb shall be 6" in width and extend approximately 6" below finished grade.
 - e. A potable water service shall be provided at the station site. A one-inch service with a one-inch angle stop and double check valve shall be installed in an appropriately sized meter box. The meter box shall meet the City's current standard for water service connections.
 - f. The site shall be graded to drain away from the station to prevent storm water inflow or infiltration into the wet-well.
 - g. The site shall be located outside of the 100-year flood plain.
 - h. The site shall not be located within 100 feet of an existing or proposed residence.
 - i. If applicable, the lift station site driveway shall include an area for maintenance vehicles to park off public roadway while performing maintenance. The minimum driveway length shall be 15 feet.
 - j. A concrete driveway turning area is required where access drives extend more than 20 feet from main roads. The driveway area shall be "T" shaped with the applicable turning radius. The minimum driveway width shall be 15 feet.
 - k. The lift station site shall be property owned by or dedicated to the City. Lift stations are prohibited from placement within public right-of-way or easements.
4. Materials
- a. Instrumentation and Control
 - i. All enclosures, with the exception of the metering base, shall be NEMA 4X stainless steel.
 - ii. All electric conduits will be epoxy coated rigid steel or aluminum rigid.
 - b. Pump Accessories, Piping, Valves and Wells
 - i. Wet-well interior piping shall be fabricated of flanged Class 150 Ductile Iron.

- ii. Fasteners used for pipe connection shall be 318 stainless steel.
- iii. Pump guide bars, guide bar brackets, cable/chain hooks and pump lifting chains shall all be fabricated of stainless steel.
- iv. The Pump access door, and doorframes must be fabricated from aluminum.
- v. Isolation valves shall be resilient seated gate valves in accordance with the water standards.
- vi. Swing check valves shall be in accordance with AWWA C-508. Check valves eight inch (8") and larger shall be equipped with a bottom mounted oil dash pot.
- vii. Wet wells shall be constructed of concrete. Fiberglass or steel wet wells are not acceptable.
- viii. The wet well interior concrete surface shall be coated with two coats of Tnemec Series 66 high-build epoxoline. The application shall be per manufacturer recommendations.
- ix. All submersible wet well pumps shall be equipped with an automatic mixing/flushing valve attached to the pump volute. This accessory item will direct a water jet across the floor of the wet well to temporarily suspend settled materials. This valve will operate by using the hydraulic energy created by the operation of a pump. An additional mixer needed to suspend settled material will not be accepted.

5. Installation

a. Instrumentation and Control

- i. All stations shall be equipped with a 12 volt/DC flashing strobe placed at an elevation visible by passing traffic.
- ii. Stations shall be equipped with radio equipment compatible with the City's existing Motorola MOSCAD SCADA equipment. Antenna mountings, masts, and cables shall be provided for continuous and accurate telemetry and control.
- iii. All stations will be equipped with a magnetic flow meter located on the discharge pipe. The flow meter shall be contained in a concrete vault with an aluminum access door. Installation of the meter shall be in accordance with manufacturer's installation recommendations to ensure accuracy of flow valves.

- iv. Modifications to the existing SCADA system will be required with the addition of any new station. The installing contractor shall provide the following information to the City prior to beginning this modification process.
 - 1) The general contractor shall provide evidence that the instrumentation subcontractor has maintained a continuous business operation for at least five (5) years.
 - 2) The general contractor shall provide evidence that the instrumentation subcontractor maintains a staff of competent technicians and licensed installers who are Motorola MOSCAD factory trained.
 - 3) The general contractor shall provide evidence that the instrumentation subcontractor maintains a fully staffed service shop for supplying demand service calls on MOSCAD systems and maintains an office of operation within a reasonable response distance (generally in the Texas Counties of Denton, Tarrant, or Dallas) to the City of Roanoke.
 - 4) Enclosures shall be mounted on an appropriately sized mounting structure. Mounting structures shall be constructed of 6" x 2" x 0.25" hot dip galvanized steel channel stock. Intersections shall be bolted, not welded, with stainless steel fasteners. Aluminum or epoxy coated steel unistrut may be attached to the mounting structure to facilitate placement of enclosures. The legs of the mounting structure shall be set at least 24" below grade and be encased in concrete.
- b. Pumps, Piping Valves and Wells
 - i. Pump access doors and door frames must be fabricated from aluminum with a recessed lifting handle, locking lever to hold the door in the open position, and a method of placing a No. 5 Master padlock on the door for safety and security.
 - ii. All submersible wet well pumps shall be equipped with an automatic mixing/flushing valve attached to the pump volute. This accessory item will direct a water jet across the floor of the wet well to temporarily suspend settled materials. This valve will operate by using the hydraulic energy created by the operation of a pump. An additional mixer needed to suspend settled material will not be accepted.
6. Manufacturers
 - a. Instrumentation and Control
 - i. Acceptable Manufacturers
 - 1) Motorola MOSCAD

- 2) Milltronics
- 3) Badger Meter Inc.
- ii. Acceptable Installers
 - 1) GE Automation Systems
 - 2) WHECO Controls
 - 3) I&C Sales, Carrollton, TX as a preferred installer of Motorola equipment
- b. Wastewater pumps
 - ITT Flygt submersibles

K. Testing Procedures

1. Sanitary Sewer Lines

- a. A City inspector shall be in attendance for each testing procedure. Testing shall be performed by a company certified by the pipe manufacturer.
- b. Deflection Testing. Upon completion of sanitary sewer pipe installation, the contractor shall pull a mandrel through the pipe to test for a maximum 5% deflection, unless otherwise specified.
- c. Video Inspection. Before acceptance of a public sanitary sewer line by the City, the contractor will be required to retain a qualified company to perform a video inspection of the public sanitary sewer lines constructed by the contractor. The video inspection will be at the contractor's expense. Prior to video inspection, the public sanitary sewer lines shall be flushed. The video inspection shall be done no sooner than ten days prior to final acceptance of the project.
- d. Criteria for Repair and Reinspection:
 - i. Pulled or slipped joints
 - ii. Water infiltration
 - iii. Structural damage to the pipe

The City will make the final determination if repairs are required. A final set of videos and logs shall be given to the designated City Inspector of the project. Two copies of the audio/video inspection in DVD format must be furnished. The operator must note the following in the video:

- 1) Date and time of recording
- 2) Developer's or contractor's name
- 3) Project name and contract number
- 4) Name of company performing the inspection
- 5) The location of the line, its designation, main size, and direction of run, as well as identifying every 50-foot station, and identifying the station of each manhole.

e. Air Testing

Air Testing shall be in accordance with TCEQ requirements. Item 6.7.2 (f)

2. Manholes

A City inspector shall be in attendance for each testing procedure. Vacuum Testing shall be in accordance with TCEQ requirements. Item 6.7.2 (c).

END OF SECTION