

RULE NO.: R161-18.14

NOTICE OF PROPOSED RULE

POSTING DATE: July 10, 2018

The Director of the Department of Austin Water proposes to adopt the following rule on or after August 11, 2018.

Comments on the proposed rule are requested from the public. Comments should be submitted to Mr. Eric Langhout, P.E.; Austin Water, 3907 S. Industrial Dr., Suite 236, Austin, Texas 78744, 512-972-0073, or via email at Eric.Langhout@austintexas.gov . To be considered, comments must be submitted before August 11, 2018, the 32nd day after the date this notice is posted. A summary of the written comments received will be included in the notice of rule adoption that must be posted for the rule to become effective.

An affordability impact statement regarding the proposed rule has been obtained and is available for inspection or copying at the address noted in the preceding paragraph.

EFFECTIVE DATE OF PROPOSED RULE

A rule proposed in this notice may not become effective before the effective date established by a separate notice of rule adoption. A notice of rule adoption may not be posted before August 11, 2018 (the 32nd day after the date of this notice) or not after September 18, 2018 (the 70th day after the date of this notice).

If a proposed rule is not adopted on or before September 18, 2018, it is automatically withdrawn and cannot be adopted without first posting a new notice of a proposed rule.

TEXT OF PROPOSED RULE

A copy of the complete text of the proposed rule is available for public inspection and copying at the following locations. Copies may be purchased at the following locations at a cost of ten cents per page:

Austin Water, located at 3907 S. Industrial Dr., Suite 236, Austin, Texas, 78744. See Mr. Eric Langhout, P.E. and:

Office of the City Clerk, City Hall, located at 301 West 2nd Street, Austin, Texas.

BRIEF EXPLANATION OF PROPOSED RULE

R161-18.14: Proposed revision to the Utility Criteria Manual 2.9.4

Rule 5 – UCM 2.9.4

- Section 2.9.4.C.4 – The first part explains this is being changed to match the Water Systems language. The second part explains this is being added to match the language from Water and Reclaimed Water. The third part explains this has been added to allow separation between services and maximize the number of street trees.
- Section 2.9.4.C.10 – These additions are being made to provide protection of utilities when installed adjacent to new trees placed within the right-of-way.
- Section 2.9.4.D.13 – This is being added to ensure no one is tapping a brick manhole.

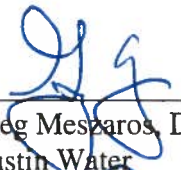
AUTHORITY FOR ADOPTION OF PROPOSED RULE

The authority and procedure for adoption of a rule to assist in the implementation, administration, or enforcement of a provision of the City Code is provided in Chapter 1-2 of the City Code. The authority to regulate construction requirements is established in Section 552.001 and Title 15 of the City Code.

CERTIFICATION BY CITY ATTORNEY

By signing this Notice of Proposed Rule R161-18.14, the City Attorney certifies the City Attorney has reviewed the rule and finds that adoption of the rule is a valid exercise of the Director's administrative authority.

REVIEWED AND APPROVED



Greg Meszaros, Director
Austin Water

Date: 6/25/18



Anne L. Morgan
City Attorney

Date: 7/6/18

UTILITIES CRITERIA MANUAL

2.9.4 - Wastewater Systems

A. Determination of Wastewater Flow

1. Residential single-family units shall be assumed to produce an average wastewater flow of 245 gallons/day.
2. Industrial wastewater flows will be evaluated on a case-by-case basis.
3. Inflow/Infiltration.

In sizing sewers, external contributions are accounted for by including 750 gallons per day per acre served for inflow and infiltration. For sewers in the Edwards Aquifer Zone refer to the Texas Commission on Environmental Quality (TCEQ) requirements. Strict attention shall be given to minimizing inflow and infiltration.

4. Peak Dry Weather Flow (PDWF).

The PDWF is derived from the formula:

$$Q_{pd} = [(18 + (0.0206 \times F)^{0.5}) / (4 + (0.0206 \times F)^{0.5})] \times F$$

where: $F = 70 \text{ gal./person/day} \times \text{population}/1440$
= average dry-weather flow in gpm

5. Peak Wet Weather Flow (PWWF).

The PWWF is obtained by adding inflow and infiltration to the peak dry weather flow. In designing for an existing facility, flow measurement shall be used when available for the preexisting developed area if the reference indicates higher peak wet weather flows than the calculated method.

B. Determination of Pipe Size

1. Minimum Size.

The minimum diameter of all gravity sewer mains shall be eight (8) inches. For service line sizes, refer to the City of Austin Standard Details.

2. Design Requirements.

For sewer mains, fifteen (15) inches in diameter or smaller, use the larger size as determined below:

- a. The main shall be designed such that the PDWF shall not exceed 65% of the capacity of the pipe flowing full.
- b. The main shall be designed such that the PWWF shall not exceed 85% of the capacity of the pipe flowing full.
- c. For sewer mains, eighteen (18) inches in diameter or larger, the main shall be designed such that the PWWF shall not exceed 80% of the capacity of the pipe flowing full.

3. Minimum Design Velocities.

The minimum design velocity calculated using the PDWF must be at least two (2) feet per second (fps). If a minimum velocity of two (2) fps cannot be achieved due to the low projected wastewater flows, velocities lower than two (2) fps at PDWF may be allowed provided that all of the following requirements are met:

- a. The Engineer substantiates in writing and to the satisfaction of Austin Water (AW) that is not possible to meet the two (2) fps velocity at PDWF.
 - b. A minimum of 0.01 ft./ft. (1.0 percent grade) is provided.
4. Maximum Design Velocities.
 The maximum design velocity calculated using the PWWF should not exceed ten (10) fps. Velocities in excess of 10 fps may be considered under special conditions where no other options are available. In such cases, proper consideration shall be given to pipe material, abrasive characteristics of the wastewater flows, turbulence and displacement by erosion or shock.
5. Minimum Slope.
 The minimum allowable slope for eight (8) inches mains within the service area of the City of Austin shall be 0.005 ft./ft (0.5 percent grade) unless otherwise required by 3.b of this section.
6. Allowable pipe sizes.
 The following sizes will be the only sizes allowed for use in the gravity system: 6" (for services only), 8", 12", 15", 18", 21", 24", 30", 36", 42". Larger sizes may be approved on a case by case basis. These pipe sizes do not apply to force mains.
- C. Design Considerations
 1. Materials and Standards.
 All materials and appurtenances shall conform to the AW Standard Products List.
 2. Protecting Public Water Supply.
 No physical connection shall be made between a drinking water supply and a sewer or any appurtenance thereof. An air gap of a minimum of two inlet pipe diameters between the potable water supply and the overflow level connected to the sewer shall be provided.
 3. Location.
 The location of the wastewater main shall be in conformance with the City of Austin Standard Details Manual. Alternative assignments must be approved by AW Utility Development Services (UDS) - Pipeline Engineering. Outside the City Limits, the design engineer shall coordinate utility assignments with both AW and the appropriate county authority.
 4. Separation Distance.
 The separation between ~~wastewater mains/services~~ **water mains, reclaimed mains and wastewater mains** and other utilities shall be in accordance with the Rules adopted by the ~~TCEQ~~ **must comply with TCEQ rules. A minimum horizontal separation distance of five (5) feet, measured from OD of pipe to OD of pipe, shall be maintained between existing or proposed AW infrastructure and all other non-AW mains in order to maintain trench integrity. A minimum horizontal separation between wastewater service lines and dry utility services shall be three (3) feet OD-OD.**
 5. Steep grades.
 Where the pipe grade exceeds 12% and the construction is outside of any pavement, concrete retards conforming to the City standards will be required at intervals of no more than twenty-five (25) feet (preferably at joint locations).
 6. Depth of Cover.

If fill or embankment placed over existing wastewater mains exceeds four (4) feet or the cut exceeds the minimum depth of cover, AW approval is required. If cuts exceed the minimum depth of cover stated below, AW approval is required. The minimum depth of cover over the upper-most projection of the main shall be as follows:

- a. Wastewater piping installed in natural ground in easements or other undeveloped areas which are not within existing or planned streets, roads or other traffic areas, shall be laid at least 42 inches below ground elevation.
 - b. Wastewater piping installed in proposed streets, existing streets, roads or other traffic areas shall be laid at least 66 inches below proposed ground elevation.
7. Turbulence.
- Wastewater lines shall be designed to minimize turbulence to prevent release of sulfide gases and subsequent corrosion.
8. Wastewater lines are prohibited in a critical water quality zone, except for a necessary crossing. (see the Code of the City of Austin, 25-8-261).
9. Curved wastewater mains are prohibited.

10. Location of mains and services in the proximity of Street Trees and Planting Zones:

"Street Tree Utility Gap/Utility Gap" refers to the area between street tree planting zones where utility services will be located.

Where Street Trees are placed within the right-of-way, root barriers shall be placed on all sides of the planting zone where AW mains and/or services are located. Root barriers shall be installed no closer than seven (7) feet from the tree trunk. Utilities shall be placed no closer than two (2) feet from the root barrier. In no circumstances shall utility infrastructure be placed within the planting zone. Where "Street Tree Utility Gaps" are located between planting zones, the gap shall be a minimum of eight (8) feet wide between root barriers. Additional width will be required to allow for multiple utilities to be placed within the "utility gap."

D. Manholes

1. Location.

Manholes shall be located and spaced so as to facilitate inspection and maintenance of the wastewater main. All manholes must be accessible to maintenance equipment, including 2½ ton straight trucks, dump trucks, vacuum trucks, and standard (not compact) sizes of backhoes and loaders. In isolated cases, construction of all-weather access roads may be necessary for manhole and/or wastewater line access if required, design guidance is provided in Section 2.9.4.D.12. Manholes shall be placed at the following locations:

- a. Intersections of mains.
- b. Horizontal alignment changes.
- c. Vertical grade changes.
- d. Change of pipe size.
- e. Change of pipe material.
- f. The point of discharge of a force main into a gravity wastewater main.
- g. For multi-family projects exceeding fifteen (15) dwelling units and for commercial developments containing more than 4,000 square feet of air conditioned space and requiring a water meter greater than 2", a manhole is required on the main at the point of connection to the wastewater service.

- h. At the upstream end of mains.
 - i. At other locations as required by Chapter 15-10 (Wastewater Regulations) of the Austin City Code.
2. Spacing.
- Manhole spacing for lines smaller than 24 inches should not exceed 500 ft.; for larger mains, spacing may be increased, subject to approval by the Utility.
3. Covers.
- a. All manholes located in unpaved areas or in the TCEQ Edwards Aquifer Recharge Zone (EARZ) shall have bolted, watertight covers.
 - b. When existing manholes are adjusted in height to match finished surface elevations, the most current manhole ring and cover size shall be utilized. This may require removal and replacement of the existing manhole cone section to facilitate the above work.
4. Corrosion Prevention.
- Manholes shall be constructed of or lined with a corrosion resistant material. Where new construction ties into an existing manhole, the existing manholes must be lined, coated, or replaced with a corrosion resistant material. The Design Engineer shall provide an AW Manhole Inspection report for Wastewater Manhole replacement or rehabilitation for both CIP and non-CIP projects.
5. All lines into manholes, including drop connections, shall match crown-to-crown where feasible. Any deviation must be approved in advance by AW UDS - Pipeline Engineering.
6. Drop manholes are not allowed where the size of the incoming main requiring the drop exceeds 15 inches diameter. External drops will be limited to a depth of 15 feet from the lid of the manhole to the base. Drop manholes in excess of 15 feet deep must be designed with an internal drop and must be a minimum size of five (5) foot diameter.
7. Minimum inside manhole diameters shall be as indicated in the following table:

Main Size	Depth		
	Less than 20'	20'—30'	Greater than 30'
Up to 15"	48"	60"	72"
18"—24"	60"	60"	72"
30" & 36"	72"	72"	72"

Note 1: In the event a structure is utilized inside a manhole, the clear space between the structure and the manhole wall shall be a minimum of 48".

Note 2: If more than two mains connect to a manhole, or if two mains connect to a manhole at an angle other than 180 degrees from each other, a larger diameter manhole may be required in order to accommodate mandrel insertion and hydraulically efficient flow.

Note 3: New pipe connections to existing manholes shall provide a minimum of 12" clearance between the existing pipe ID and the new core hole ID measured on the inside surface of the manhole, regardless of the orientation of the pipes with respect to one another. New precast manholes and manholes with cast-in-place bases shall have holes for pipe penetrations in the manhole wall separated by a minimum of seven (7) inches, designed by the manhole manufacturer and as measured from the inside diameter of the cored holes on the inside wall of the manhole to ensure the structural integrity of the manhole wall.

Note 4: The vertical distance between the highest point of the invert shelf and the bottom of any horizontal or near-horizontal surface protruding into a manhole or junction box, shall be at least six (6) feet, when the depth of the main is sufficient.

8. Where a separation of nine (9) feet between an existing water main and a new manhole cannot be achieved during construction of a new wastewater main the joints in the wastewater manhole shall be made watertight using externally applied joint wraps. Where a separation of nine (9) feet between a water main and an existing manhole cannot be achieved during construction of a new water main, then the manhole shall be assessed as per Section 2.9.4.D.4 to determine if the manhole is watertight and if not, shall require the manhole to be made watertight.
9. Manholes constructed on existing wastewater mains may have a cast-in-place base. All other manholes shall have a precast base.
10. Manhole and junction box inverts shall have a minimum slope of 2.5% between the inlet and outlet pipe inverts.
11. Manholes and junction boxes located below ground water
 - a. When the interior surface of a concrete manhole or junction box is coated with a urethane, polyurethane, or epoxy liner, the exterior surface of that portion of a manhole or junction box located below ground water level shall be water proofed using a flexible system applied to the exterior surface. The drawings shall indicate which structures must be water proofed and the elevation to which water proofing must be applied (2 feet above ground water level).
 - b. Manhole joints below the ground water level and/or located in the 100 year floodplain shall be sealed by installing a joint wrap material over the joint on the manhole exterior.
 - c. Construction joints in cast-in-place junction boxes shall be water proofed using water stops.
12. All-weather access roads should be at least 12 feet wide, placed within a 20-foot wide (minimum) access easement, intended for emergency use by maintenance equipment. If the wastewater easement is wide enough to accommodate the access road, it may be used in lieu of an access easement. This 12 foot maintenance access road should be outside the toe of any fill slope and the top of any cut slope and shall not have a post construction longitudinal slope greater than 15% nor a post construction transverse slope greater than 5%, shall not have a vertical grade break of greater than 12%, should have an inside turning radius of no less than 28.3 feet, an outside turning radius of no less than 42 feet, shall be cleared of all vegetation and graded, and should maintain a horizontal and vertical clearance from existing and proposed vegetation and all other objects of no less than 14 feet.

The access road shall include a means for equipment to turn around when located more than 200 feet from a paved public roadway. Turn around shall meet the above listed design criteria. Access roads shall be cleared, graded and stabilized with stones in accordance with

Standard Detail 662S-2, Pond Maintenance Road Typical Cross Section. Other materials and geometrics may be approved on a case by case basis by AW.

13. If a proposed development intends to connect to an existing brick manhole, the manhole will need to be removed and replaced.

E. Ventilation

Ventilation shall be provided as required by TCEQ Rules and Regulations.

F. Inverted Siphons

The use of siphons is discouraged. When no other feasible option exists, the following criteria apply. Siphons shall have a minimum of two barrels. The minimum pipe size shall be six (6) inches with a minimum flow velocity of 3.0 fps at peak dry weather flow. The minimum dry weather flow shall be used to size the smallest barrel. Three-barrel siphons shall be designed to carry the capacity of the incoming gravity wastewater mains(s) with one barrel out of service.

An additional corrosion resistant pipe shall be designed to allow for the free flow of air between the inlet and outlet siphon boxes. The diameter of this air jumper shall not be smaller than one-half the diameter of the upstream sewer. Air jumper pipe design shall provide for removal of condensate water that will collect in the pipe.

Siphons shall be designed to allow draining, cleaning, and diversion of flow from individual barrels and inspection. Siphon inlet and outlet structures shall be manufactured with polymer concrete.

G. Service Lines

1. Wastewater service lines, between the main and property line, shall have an inside diameter not less than six (6) inches. The minimum grade allowed for service lines is one (1) percent. In all new systems, grade breaks exceeding allowable joint deflection must be made with approved fittings and shall not exceed a cumulative total of 45 degrees.
2. No service connections shall be made to mains larger than 15 inches in diameter.
3. Service connections to force mains that are two (2) inches in diameter and smaller may be allowed on a case by case basis. Service connections to force mains that are larger than two (2) inches in diameter shall not be allowed.
4. New double wastewater services shall be placed along the common property line between two lots on the opposite property line from water services. Single wastewater services shall be a minimum of nine feet from a water service per TCEQ rules. Services to lots without a water/wastewater easement will terminate at the property line with a cleanout; service to lots having a five (5) foot by five (5) foot water/wastewater easement will terminate within the easement. For details, see the City of Austin Standard Details.
5. Wastewater clean-outs are not allowed in sidewalks, paved areas, load bearing pavement, or driveways. If the clean-out must be located in a sidewalk or paved area (as allowed by a variance issued by AW only), then AW approved locking lids will be required for the clean-out.
6. Sample and inspection ports are required for service lines when industrial waste monitoring is required. They shall be located at the property line within the public right-of-way (ROW) or utility easement line to indicate the line of responsibility of the utility. They shall not be located in traffic areas, paved parking areas or sidewalks.

H. Easements

1. Easements for wastewater mains shall be a minimum of 15 feet wide, or twice the depth of the main, measured from finished grade to pipe flowline, whichever is greater. Mains shall be centered on the easement. Narrower easements will be considered where the Engineer

provides evidence, to the satisfaction of AW, that maintenance activities will not be hindered by the reduced width.

2. Easement documents and the metes and bounds shall be reviewed and approved by AW UDS - Pipeline Engineering prior to recordation in the real property records of the appropriate county. Easement recordation in the real property records of the appropriate county is required prior to AW approval of construction plans.
- I. Requirements for Existing and Proposed Wastewater Infrastructure beneath Circular Intersections or Other Geometric Street Features
 1. Installation of Circular Intersections or Other Geometric Street Features over existing wastewater infrastructure.
 - a. Existing wastewater infrastructure may be allowed to exist beneath circular intersections or other geometric street features such as, but not limited to, modern roundabouts, medians, bulb-outs, splitter islands, channelization islands, and other types of physical roadway features. These features may contain hardscaping, landscaping, water quality features, public art, permanent structures, street furniture, or other similar amenities.
 - b. The planning and design of these features and their amenities shall include consideration for access, maintenance, protection, testing, cleaning, and operations of the wastewater infrastructure. Where existing wastewater facilities are to remain, trees with root zones of 18 inches in depth or greater at maturity may be considered for inclusion provided the drip lines at maturity of the proposed trees are not located within a minimum horizontal separation of 7.5 feet from any wastewater infrastructure. Public art, permanent structures, and other similar amenities may be considered for inclusion provided they are not located within a minimum horizontal separation of 7.5 feet from any wastewater infrastructure. The drip lines at maturity of ornamental trees with root zones at maturity of less than 18 inches in depth, grasses, woody or herbaceous shrubs, and street furniture may be located within a minimum horizontal separation of 7.5 feet from any wastewater infrastructure.
 - c. The need for relocating, replacing or protecting in place existing wastewater infrastructure beneath these features and their amenities shall be determined on a case-by-case basis by AW.
 2. Installation of Circular Intersections or Other Geometric Street Features in new areas of development with no existing wastewater infrastructure.
 - a. Proposed wastewater infrastructure may be placed beneath proposed circular intersections or other geometric street features such as, but not limited to, modern roundabouts, medians, bulb-outs, splitter islands, channelization islands, and other types of physical roadway features. These features may contain hardscaping, landscaping, water quality features, public art, permanent structures, street furniture, or other similar amenities.
 - b. The planning and design of these features and their amenities shall include consideration for access, maintenance, protection, testing, cleaning, and operations of utility infrastructures. Trees with root zones of 18 inches in depth or greater at maturity may be considered for inclusion provided the drip lines at maturity of the proposed trees are not located within a minimum horizontal separation of 7.5 feet from any wastewater infrastructure. Public art, permanent structures, and other similar amenities may be considered for inclusion provided they are not located within a minimum horizontal separation of 7.5 feet from any wastewater infrastructure. The drip lines at maturity of ornamental trees with root zones at maturity of less than 18 inches in depth, grasses, woody or herbaceous shrubs, and street furniture may be located within a minimum horizontal separation of 7.5 feet from any wastewater infrastructure.

- c. The need for alternative alignments or the inclusion of protective systems for the proposed wastewater infrastructure beneath these features and their amenities shall be determined on a case-by-case basis by AW.