AUG 8 2022 AM 8:37

RULE NO.: R161-22.09

NOTICE OF RULE ADOPTION **ADOPTION DATE: August 8, 2022**

By: Robert Goode, Interim Director
Austin Water

The Director of the Department of Austin Water has adopted the following rule. Notice of the proposed rule was posted on July 6, 2022. Public comment on the proposed rule was solicited in the July 6, 2022, notice. This notice is issued under Chapter 1-2 of the City Code. The adoption of a rule may be appealed to the City Manager in accordance with Section 1-2-10 of the City Code as explained below.

This Notice of Rule Adoption was posted on the City website by the City Clerk. Date and time stamp are on the front of the notice.

EFFECTIVE DATE OF ADOPTED RULE

A rule adopted by this notice is effective on August 8, 2022.

TEXT OF ADOPTED RULE

The adopted rule contains no changes from the proposed rule.

R161-22.09: Proposed revision to the UCM 2.1, 2.5, 2.7, 2.9.1, 2.9.2, 2.9.3 & 2.9.4

Rule 1 – UCM 2.1, 2.5, 2.7, 2.9.1, 2.9.2, 2.9.3 & 2.9.4

1. Section 2.1.0 – Edited and added requirement for design to consider operational needs.
2. Section 2.5.1.A – Added the information here for to eliminate date inconsistencies within the UCM and align the date of the life of a construction plan to language in current City Code and in AW GP.
3. Section 2.5.1.A – Added deadline information for Water and Wastewater Tap plan review.
4. Section 2.5.1.E.1 – This is a reminder of TBPE Rules.
5. Section 2.5.1.E.10 – This provides exact title of the referenced ASCE publication.
6. Section 2.5.1.E.20 – Added to prevent unauthorized modification of official adopted Standards.
7. Section 2.5.1.E.21 – Added to allow requirement for thorough, complete drawings.
8. Section 2.5.2.A.6 – Added PRV stations to list.
9. Section 2.5.2.A.17 – Added new requirements for PRV stations.
10. Section 2.5.3.B.14 – Remove the information here and add it to Section 2.5.1.A to eliminate date inconsistencies within the UCM and align the date of the life of a construction plan to language in current City Code and in AW GP.

11. Section 2.7.1 – Remove the information here and add it to Section 2.5.1.A to eliminate date inconsistencies within the UCM and align the date of the life of a construction plan to language in current City Code and in AW GP.
12. Section 2.9.1.A.1 – Stated where the vault easement requirements will be located.
13. Section 2.9.1.A.4 – Added information about separation requirements around water vaults.
14. Section 2.9.2.B.16 – Added as a reminder of manufacturer requirements.
15. Section 2.9.2.B.21 – Added so that design reflects operational needs.
16. Section 2.9.2.C – Clarified which valves are addressed.
17. Section 2.9.2.C.2 – Added to define the areas of high density.
18. Section 2.9.2.C.15 – Added so that design reflects operational needs.
19. Section 2.9.2.D.13 – Added so that design reflects operational needs.
20. Section 2.9.2.E.7 – Change water valve to gate valve. Gate valve is more representative than water valve.
21. Section 2.9.2.F.4.a – Added information about how to comply with bypass requirements.
22. Section 2.9.2.F.5 – Removed Fire Demand Meter sizes.
23. Section 2.9.2.G – Added for PRV Stations.
24. Section 2.9.3.B.2 – Added to allow 16-inch PVC for reclaimed water as allowed in potable water.
25. Section 2.9.3.B.13 – Added to reflect manufacturer requirements.
26. Section 2.9.3.B.14 – Added so that design reflects operational needs.
27. Section 2.9.3.C.15 – Added so that design reflects operational needs.
28. Section 2.9.3.E – Added for PRV Stations.
29. Section 2.9.4.D.7 – Correct the text locations for this table.

The adopted rule contains no changes from the proposed rule. This Notice of Rule Adoption was posted on the City website by the City Clerk. Date and time stamp is on the front of the notice.

SUMMARY OF COMMENTS

Austin Water did not receive comments regarding the rule adopted in this notice.

AUTHORITY FOR ADOPTION OF 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 adopt this rule is established in Section 552.001 of the Texas Local Government Code, Section 552.017 of the Texas Local Government Code, City Code 15-9-9 and Chapter 15 of the City Code.

APPEAL OF ADOPTED RULE TO CITY MANAGER

A person may appeal the adoption of a rule to the City Manager. **AN APPEAL MUST BE FILED WITH THE CITY CLERK NOT LATER THAN THE 30TH DAY AFTER THE DATE THIS NOTICE OF RULE ADOPTION IS POSTED. THE POSTING DATE IS NOTED ON THE FIRST PAGE OF THIS NOTICE.** If the 30th day is a Saturday, Sunday, or official city holiday, an appeal may be filed on the next day which is not a Saturday, Sunday, or official city holiday.

An adopted rule may be appealed by filing a written statement with the City Clerk. A person who appeals a rule must (1) provide the person's name, mailing address, and telephone number; (2) identify the rule being appealed; and (3) include a statement of specific reasons why the rule should be modified or withdrawn.

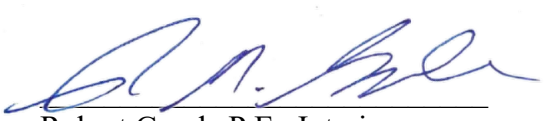
Notice that an appeal was filed and will be posted by the city clerk. A copy of the appeal will be provided to the City Council. An adopted rule will not be enforced pending the City Manager's decision. The City Manager may affirm, modify, or withdraw an adopted rule. If the City Manager does not act on an appeal on or before the 60th day after the date the notice of rule adoption is posted, the rule is withdrawn. Notice of the City Manager's decision on an appeal will be posted by the city clerk and provided to the City Council.

On or before the 16th day after the city clerk posts notice of the City Manager's decision, the City Manager may reconsider the decision on an appeal. Not later than the 31st day after giving written notice of an intent to reconsider, the City manager shall make a decision.

CERTIFICATION BY CITY ATTORNEY

By signing this Notice of Rule Adoption R161-22.09, the City Attorney certifies that 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



Date: 7/28/2022

Robert Goode P.E., Interim
Director Austin Water

Deborah Thomas for

Date: 8/3/2022

Anne L. Morgan
City Attorney

2.1.0 GENERAL

The following information is intended to assist engineers and the general public in the design and construction of ***potable*** water, reclaimed water, and wastewater ***infrastructure*** ~~facilities~~ within the right-of-way or public easement. All work inside private property shall comply with applicable City of Austin adopted Plumbing Codes with "Local Amendments" for all private plumbing works including those located outside the City's Zoning Jurisdiction. ***Section 2 addresses issues that would commonly be encountered in engineering design of potable water, reclaimed water, and wastewater systems.*** Information herein is to provide minimum City of Austin requirements only. Sound engineering judgment shall be utilized to determine if these minimum requirements are suitable for each ~~particular~~ ***project-specific*** engineering design. ***Each design shall provide new infrastructure that functions as intended and that can be efficiently and effectively operated and maintained by the City of Austin throughout its service life. The designs must reflect consideration for the means and methods by which operation and maintenance personnel and equipment can readily and safely access this infrastructure in the future.***

Source: Rule No. R161-19.10 , 5-15-2019.

2.5.0 - CONSTRUCTION PLAN INFORMATION AND SUBMITTAL REQUIREMENTS

2.5.1 - General

A. Construction plans for water, reclaimed water, and wastewater service ***(including all associated facilities and appurtenances)*** shall be submitted to Austin Water's (AW) Utility Development Services (UDS) - Pipeline Engineering for verification of conformance to City of Austin (COA) Standards and Specifications. All plat, preliminary plan, site plan and subdivision construction cases shall be submitted in PDF (.pdf) format to allow electronic review by AW. Any other file type(s) submitted for review purposes will be rejected. In addition to providing PDF files, all final designs shall be submitted in Computer-aided design (CAD) format as follows: For AW funded Capital Improvement Projects, CAD files shall be in accordance with the COA Public Works Department Engineering Services Division Design CAD Standards Manual (http://austintexas.gov/department/engineering-services-division), as amended, prior to AW approval; For water, wastewater, and reclaimed water infrastructure projects that are not AW funded Capital Improvement Projects, final designs shall be submitted in a CAD format (not necessarily using the City's CAD standards) prior to AW approval. Plans in CAD format shall only apply to base files and not sheet files (plan and profile) for all projects in which AW infrastructure is relocated, constructed, or repaired. ~~The Pre-Construction Meeting~~ ***Utility construction activities*** must ~~occur~~ ***be initiated, as documented by an issued Notice to Proceed,*** within ~~two~~ ***three*** years of the date of ~~AW plan~~ approval ***of a City site plan or general permit***, otherwise they must be resubmitted to the AW review team to ensure compliance with any changes in requirements related to health and safety. ***Utility Construction activities related to Water and Wastewater tap plan reviews must follow the requirements outlined in Section 15 of the Building Code.***

B. If the provider of service is a Municipal Utility District (MUD), Water Control and Improvement District (WCID) or private utility corporation, then prior approval by the provider of service is also required.

C. Plans submitted to AW must show approved easements and/or permits on highway and/or railroad crossings.

D. Plans that include fire lines must have approval by the City of Austin Fire Department and the Development Services Department.

E. All water, reclaimed water, and wastewater plans will include the following items:

1. Engineer's dated signature and seal of a Professional Engineer licensed in the State of Texas on each plan sheet ***and including the engineering firm name and Texas registration number (Title 22 TAC §137.33 and §137.77)***.
2. Date of Plans and revisions.
3. North arrow and scale must be shown. The standard horizontal scale for plan and profile sheets shall be 1" = 40', 30' or 20' for the plan view. The vertical scale shall be 1" = 4', 3' or 2', respectively. The same scale shall be used on all plan and profile sheets. All Texas Department of Transportation design build projects, Capital

Improvement Projects, and General Permit projects shall be 1"=20' horizontal scale for the plan view. For sheets other than plan and profile, horizontal scales of 1" = 40', 30' or 20' may be used as appropriate. Where relevant and applicable, a scale of 1" = 10' for plan views and a scale of 1" = 1', 2', 3', 4', or 5', as needed to fit the area on the page and provide the most clarity for profiles, shall be used for detailed water, reclaimed water, and wastewater connections, designs, utility crossings, and/or special detail drawings. The minimum size for plan and profile sheets shall be 22" × 34". Plan view and associated profile shall appear on the same sheet with the plan view at the top half of the sheet.

4. A general location map, showing MAPSCO and grid numbers.
5. Current standard COA Water and Wastewater construction notes.
6. Indicate on the cover sheet, the subdivision file number, include a copy of the service extension form, and show all required permit numbers such as development permit, Texas Department of Transportation permit, railroad crossing permit, etc.
7. Volume and page number of recorded easement and of any temporary working space.
8. For sites and subdivisions, show GIS numbers of all existing mains and appurtenances. For City-funded, City-reimbursed, and City-cost-participation projects, show GIS numbers for all existing and proposed mains and appurtenances.
9. Property lines and dimensions, legal description, lot and block numbers, right-of-way dimensions, and curb and sidewalk locations and street names.
10. Location, size, and material of all existing and proposed water, reclaimed water, and wastewater mains, lines and services with respect to easements and rights of way. Existing and proposed mains 24 inches and larger shall be shown by double lines indicating pipe outside diameter. The direction of flow in the wastewater mains shall be indicated on the drawings. COA record drawings for potable water, wastewater, and reuse water may not be reliable. The Engineer is encouraged to collect subsurface utility data according to American Society of Civil Engineers (ASCE), Standard Guidelines for the Collection and Depiction of Existing Subsurface Utility Data***, Standard CI/ASCE 38, latest edition***.
11. Location, size, and description of other existing and proposed utilities within the limits of construction. Existing and proposed utilities 24 inches and larger shall be shown by double lines indicating the outside diameter.
12. Curve data for roads, property lines, water, and reclaimed water lines.
13. Final plat recording or land status report.
14. Street address for all existing structures shall be shown on the lot(s) where the structures are located.
15. Pressure zone designation for subject tract and zone boundaries where applicable.

16. Where water, wastewater, and/or reclaimed water mains cross each other, details shall be shown to indicate compliance with TCEQ requirements.
17. Typical cross sections showing multiple utilities proposed to be within private streets or easements.
18. An index on the cover sheet or on the 2nd page of the drawings.
19. Construction drawings shall contain Overall Location Maps and Key Maps for any individual water, reclaimed water, or wastewater line that requires three or more plan and profile sheets.
20. ***Current, applicable City of Austin Standard drawings (Modified Standard drawings are not permitted).***
21. ***Supplementary drawings in the form of special details, as needed, to clearly and concisely convey the design intent.***

F. Final plan approval may require additional authorizations such as:

1. Texas Department of Transportation permit.
2. Railroad permit.
3. Gas Company permit.
4. Easement acquisition (Vol. and Page or document number listed on plans).
5. County approval.
6. Water District approval.
7. Municipal Utility District approval.
8. Texas Department of Health approval.
9. Texas Commission on Environmental Quality.
10. Non-occupancy letter.
11. Service Extension approval.
12. Planning and Development Review Department approvals.

Source: Rule No. R161-17.06 , 5-31-2017; Rule No. R161-19.10 , 5-15-2019; Rule No. R161-19.18 , 11-13-2019.

2.5.2 - Water and/or Reclaimed Water System Plans

A. All plan view drawings shall include all applicable items listed in the General Requirements above plus the following items:

1. Stations of all proposed service connections to existing or proposed mains, if the service line is not perpendicular from the main to the property line.

2. For proposed connections to mains or facilities to be constructed by others: identify the project by project name, AW project number, and service extension request number.
3. Station numbers for mains for beginning points, ending points, points of curvature, points of tangent, points of reverse curve, points of intersection, valves, fire hydrants, other appurtenances and grade breaks.
4. Station numbers for the mains where they cross any other utility.
5. Details of appurtenances.
6. The location of all existing and proposed services, mains, valves, fire hydrants, water meters, ***system pressure reducing valve stations,*** and backflow preventers.
7. One hundred year flood plain limits.
8. Proposed and affected existing mains shall be labeled with design velocities at maximum day plus fire flow and at peak hour flow.
9. Calculated design pressure at highest and lowest lot served.
10. Location (beginning and ending station numbers) and type of thrust restraint.
11. Retaining walls, including geogrid, straps, tiebacks and all other components.
12. Culverts, bridges, and other drainage structures.
13. Fire hydrants, located so as not to conflict with ADA features, traffic signal foundations, sign supports, and other surface features.
14. Geotechnical borings (required for City funded projects only).
15. Auxillary water sources, if any.
16. If the existing main is CSC or Welded Steel, show locations of the existing pipe joints and the specific sections of the pipe that must be removed to accommodate the proposed connection.
17. ***For proposed pressure reducing valve stations show the following:***
    a. ***the location of the station vault on the project in plan and profile views (separate from any detailed vault structural details included elsewhere in the drawings)***
    b. ***plan and profile views of all pipes, fittings, and valves, external to the station vault, that are required to connect the station to the system (as shown in Figure 2.5.2.A.16)***
    c. ***the location of a System Isolation Valve, its purpose clearly identified (see Figure 2.5.2.A.16)***
    d. ***the location of a Flow Test Hydrant Assembly, its purpose clearly identified (see Figure 2.5.2.A.16)***

e. a tabulation of PRV Station information that includes the data shown in Table 2.5.2.A.16 (to be completed prior to final approval)

Figure 2.5.2.A.16

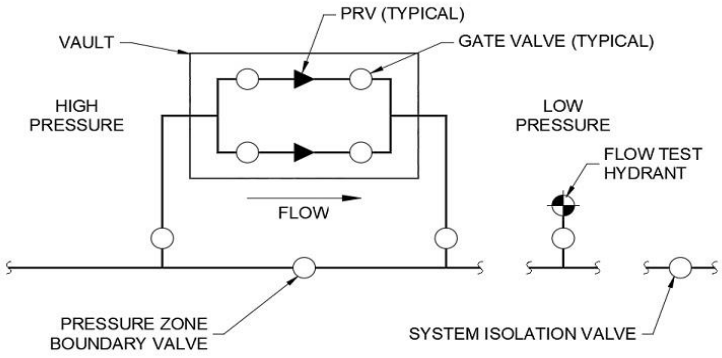


Table 2.5.2.A.16

PRV STATION INFORMATION						
Upstream (high pressure)		***Downstream (low pressure)***		***High Pressure***	***Low Pressure***	
					4"	***8" or 12"***
Zone	***HGL***	***Zone***	***HGL***	***PSI***	***PSI***	***PSI"***

B. A profile drawing shall be provided for all water mains, per Austin City Code, Section 14-11-173 (C)(2), showing all applicable items listed in the General Requirements plus the following items:

1. The existing ground profile and proposed street finish grade or subgrade.
2. Station numbers and elevations of all utility crossings.
3. Station numbers and soil geology information at stream crossings to evaluate the need for special surface restoration.
4. Identify pipe size, percent grade and pipe material to be used including ASTM and/or AWWA designation. If an alternate material is to be allowed, both should be listed (example "Dl. or DR14 PVC"). Lines must be included to indicate pipe flowline and crown.

2.5.3 - Wastewater System Plans

B. A profile view shall be provided for all wastewater mains and shall include all applicable items listed in the general requirements above plus the following items:

1. The existing ground profile and proposed street finish grade or subgrade or finished grade if not under pavement.
2. Station numbers and elevations of all utility crossings.
3. Station numbers and soil geology information at stream crossings to evaluate the need for special surface restoration.
4. Identify the pipe size, percent grade and pipe material to be used including ASTM and/or AWWA designation. If an alternate material is to be allowed, both should be listed (example "Dl or PVC"). Lines must be included to indicate pipe flowline and crown.
5. Station numbers and elevations for starting points, ending points, manholes, clean-outs and at intermediate points every 100 feet.
6. Elevations shall be indicated on the profile showing the finish floor elevations of all existing structures. If the structure has an active septic tank or other disposal system, the flow line elevation of the plumbing where it exits from the structure is to be indicated. If a lot or tract is vacant, side shots may be required from the middle of each lot to ensure gravity service is possible from the lot to the main.
7. Peak dry weather flow and peak wet weather flow, as well as the associated velocities in each pipe.
8. Retaining walls, including geogrid, straps, tiebacks and all other components.
9. Culverts, bridges and other drainage structures.
10. Rim elevations for manholes.
11. Flow line elevations for all pipe connections at manholes and junction boxes.
12. Geotechnical boring graphic symbols showing subsurface materials (required for City funded projects only).
13. Beginning and ending stations for encasement pipe (per UCM 2.9.1.D).
14. ~~(NOTE: AW plan Approval shall expire three years from the date of current approval. If construction has not begun on the facility within three years of the approval date, Plans must be resubmitted for approval and must include all criteria in effect at the time resubmitted.)~~

Source: Rule No. R161-17.06 , 5-31-2017.

2.7.0 LIFT STATION REVIEW, APPROVAL AND ACCEPTANCE

2.7.1 Engineering Report, Plans and Specifications Review and Approval

~~(NOTE: Lift station plan Approval shall expire one (1) year from the date of approval. If construction has not begun on the facility within one (1) year of the approval date, plans must be resubmitted for approval and must include all criteria in effect at the time resubmitted.)~~

A. Prior to design, four (4) copies of a detailed engineering report shall be submitted to Austin Water (AW) for review and approval of the lift station and all related line work. The engineering report shall include the following:

1. Justification for the proposed lift station. The report must clearly show that gravity lines are not available and are not economically feasible and that the number of lift stations has been minimized. This justification must include a cost benefit analysis of gravity versus lift station project including 30 years of operation and maintenance of the proposed system.
2. A master development plan for the service area of the proposed lift station shall be prepared. This plan shall include a map showing the location of the lift station, the service area, the boundaries of the drainage basin it is in and the location of the nearest existing wastewater interceptor within that basin.
3. Engineering calculations and data described in Sections 2.9.4.A and 2.9.4.H shall be contained in the engineering report.
4. The Engineering Report shall be approved by AW prior to beginning preparation of the plans and specifications.

2.9.1 General Criteria for Water, Reclaimed Water, and Wastewater Systems

A. Easements

1. Easements for water, reclaimed, and wastewater infrastructure shall be a minimum of 15 feet wide, or twice the depth of the infrastructure, measured from finished grade to infrastructure flowline, whichever is greater. Infrastructures 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. If fill is placed over an existing easement, the easement width will need to be adjusted to meet the minimum width requirements. When water, reclaimed water and wastewater infrastructures are located outside of the right-of-way, they shall be within a dedicated utility easement. ***See UCM 2.9.1.A.4 for exclusive water utility vault easement requirements.***

2. Easement documents and the metes and bounds shall be reviewed and approved by AW 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.

3. Private plumbing may cross a Public Utility Easement (PUE) or easement created for the purpose of installing underground public utilities, perpendicular or no more than 45° from the perpendicular. At no time shall private plumbing be allowed to run in parallel with and within the easement boundaries.

4. All AW vaults within the ROW or easements require a minimum 5-foot exclusive space around and under the vault structure. With exception of an associated irrigation service, all other existing or proposed underground utilities, appurtenances, and structures shall adhere to this exclusive space criteria. AW maintained vaults outside of the ROW shall utilize an Exclusive Water Line Vault Easement.

2.9.2 - Water Systems

B. Mains

16. Changes in alignment in water lines, both horizontal and vertical, shall be achieved by deflection of joints or by use of fittings. Deflection of pipe joints at fittings is only allowed on ductile iron pipes. Longitudinal bending of pipe is not allowed. ***Deflection of joints in ductile iron pipe shall not exceed manufacturer's maximum allowable deflection. For PVC pipe, the deflection at pipe joints shall not exceed 1°, or the manufacturer's maximum allowed deflection, whichever is less.***

17. Utility crossings constructed under water lines by trenchless methods are allowed only if the distance between the outside surface of the water line and the top, crown, or roof of the excavation made for the crossing utility is at least two times the diameter or horizontal span of the trenchless excavation below the water line, or 36 inches, whichever is larger. The trenchless method shall support the advancing face and roof or crown of the excavation at all times when within a horizontal distance of 10 feet of the water line.

18. Utility crossings constructed under water mains by open cut methods are not allowed if the water main consists of asbestos cement pipe or cast iron pipe with lead caulk joints. In those instances, the main must be removed and replaced to accommodate construction of the subject utility. Replacement will be with new pipe of the type currently used in the AW system for comparable size pipe. If the utility crossing under the water main is a water or wastewater service line, in lieu of replacing the main, the Engineer may provide a design detail showing how the main shall be supported during the open cut method.

19. Bedding and backfill for that portion of a utility installed by open cut construction under and within 5 feet horizontally of a water main shall be made using controlled low strength material from the bottom of the subject utility to the bottom of the bedding envelope of the water line even if that water line is removed and replaced as described above.

20. Connections to Concrete Steel Cylinder Pipe

    a. Special Details are required to show materials and method of connecting proposed water mains to existing Concrete Steel Cylinder, or CSC, water mains.

    b. Connections to Bar-Wrapped CSC Pipe shall be by cutting and removing an appropriate pipe segment, and replacing with Ductile Iron fittings, valves, or pipe, using appropriate CSC to DI steel transition adapters and steel butt straps.

    c. Connections to Prestressed Concrete Cylinder Pipe (PCCP) shall be by removing entire pipe segments, joint to joint, and replacing with Ductile

Iron pipe or welded steel pipe, as designated by AW, using appropriate bell-to-MJPE and spigot-to-MJPE transition adaptors.

21. ***Mains shall be located so that isolation valves, air valves, and hydrants will be readily accessible during their service life for maintenance and operations personnel and equipment.***

C. Valves ***(gate valves for isolation purposes)***

1. There shall be a valve on each fire hydrant lead restrained to the main using bolt-through types of connections between the valve and the branch outlet from the main. These and all valves 24 inches and smaller shall be resilient seated gate valves.
2. Valves shall be located at the intersection of two or more mains and shall be spaced so that no more than thirty customers will be without water during a shutout. Water mains designated by Systems Planning for distribution, up to and including 24 inches in diameter, shall be valved at intervals not to exceed 500 feet in high-density areas and 1,200 feet in residential areas. Water mains 24 inches and larger designated by Systems Planning for transmission shall be valved at intervals not to exceed 2,000 feet or at a branched water main connection, whichever is less. ***High density areas shall consist of inside the Downtown Area Project Coordination Zone, commercial areas CBD, DMU, W/LO, CS, and CH or residential areas mixed with multifamily (MF) zoning designations MF-4, MF-5, and MF-6 as defined and described in the Land Development Code.***
3. For valves at the end of dead end mains, see Section 2.9.2.B.1.a.
4. Branch piping (both new and future branches) shall be separated from the main with gate valves.
5. For all mains, valves at intersections shall be placed at point of curvature (p.c.) of the curb line.
6. Valves shall be located so that isolating any segment of water main requires closing of no more than three valves.
7. The operating nut or extension of any valve shall be between 18 inches and 24 inches below finished grade.
8. Valves with valve extensions and those at pressure zone boundaries shall be equipped with a locking type debris cap.
9. Each valve that is 16 inches and smaller in diameter shall be supported by a pre-cast or cast-in-place concrete pad conforming to details in COA valve installation Standards. Each valve that is 24 inches and larger in diameter shall be supported by a monolithic, cast-in-place reinforced concrete foundation conforming to

project-specific detailed structural drawings. Cast-in-place supports shall not interfere with access to any nuts or bolts at the connecting pipes.

10. Valves having "push on" joints are not permitted for fire hydrant leads and laterals.
11. Butterfly valves shall not be allowed.
12. Water mains shall be designed so that valves can be installed vertically unless conditions dictate otherwise.
13. Water mains installed under TxDOT ROW, railroad ROW, or any flowing or intermittent stream, creek, river or semi-permanent body of water (water crossing), except when installed by horizontal directional drilling technology (or HDD), shall be installed in a steel pipe encasement with spacers, pipe joint restraint and factory end seals. The crossing design shall include the installation of a drain valve assembly at the lowest point in the crossing, and an isolation valve at the high point on each side of the crossing with a CARV installed on the downslope side of each valve.

    Water crossings shall conform to current COA Erosion Hazard Zone (EHZ) crossing criteria.
14. Valve operators shall be located a minimum of 24 inches from an existing property line.
15. ***Valves, regardless of their intended purpose, shall be located so that during their design service life they will be readily accessible for maintenance and operations personnel and equipment.***

D. Fire Hydrants

1. Hydrants shall be installed at the intersection of two streets and between intersections where necessary, at distances not in excess of 300 feet between hydrants in commercial or other high-density areas and not more than 600 feet in residential areas.
2. Hydrants shall be installed on both sides of all divided road/highways to provide adequate firefighting coverage. Roads/highways where opposing lanes of traffic are separated by a vehicle obstruction shall be considered a divided road/highway.
3. The entire fire hydrant assembly shall have restrained joints.
4. Fire hydrants shall not be designed to be within 9 feet in any direction of any wastewater main, lateral, or service regardless of material of construction.
5. Fire hydrants shall be designed so as not to interfere with sidewalk ramps, trash receptacles, and street light and signal pole foundations.
6. To avoid sidewalks, ramps, and other features, fire hydrants placed near a street corner should in general be located outside the curve radius and a minimum of 4

feet from ramps. Exceptions may apply in existing neighborhoods or long (>5 feet) radius curb return.

7. Placement of fire hydrants should take into consideration above ground improvements, landscaping, critical root zones, grades and other utilities.
8. In existing neighborhoods, new fire hydrants should be placed as close as possible to the existing fire hydrant locations with the exception of new hydrants needed to meet minimum spacing requirements.
9. Fire hydrants should be placed on the short side of the street where possible unless there are site constraints.
10. When fire hydrants are subjected to pressures above 150 psi, they shall have an attached PRV installed and set to reduce the operating pressure of the fire hydrants below 150 psi.
11. When new water lines are installed along with new fire hydrant leads, the drawings shall indicate existing fire hydrants are to be replaced with a new one, if the existing fire hydrant is older than 10 years old.
12. Fire Hydrants shall not be designed in such a manner as to provide fire flow for developments served by other water utility service providers.
13. ***Fire hydrants shall be located so that during their design service life they will be readily accessible for maintenance and operations personnel and equipment.***

E. Services

1. Water services shall be in accordance with COA Standard Details.
2. Individual meter services and fire lines will not be taken from transmission lines. Transmission lines are generally considered to be 24 inches in diameter or larger.
3. Water meters shall be placed within the public ROW or in an easement immediately adjacent to the ROW. Meters may not be located inside fences and must be accessible by vehicle. Water meter boxes and its appurtenances are not allowed in sidewalks, paved areas, driveways or load bearing pavement.
4. Service taps to the main shall have a minimum separation distance of 3 feet.
5. Service taps, regardless of type, shall not be made in vaults.
6. Domestic water services shall not be supplied from fire hydrant leads.
7. Per the Texas State Department of Health Services, hospitals shall have no less than two approved potable water services that are installed in such a manner as to prevent interruption of service. The two services shall be from two different water mains, if possible, and separated by a ~~water~~ ***gate*** valve. If served by the same main, the services shall be separated by a ~~water~~ ***gate*** valve on that main.

F. Water Meters

1. Properties with two, three, or four individual dwelling units (attached or detached) shall have an individual AW water meter serving each dwelling unit. Dwelling units are defined as a residential unit providing independent living facilities. Accessory uses defined in the Land Development Code, are not viewed as dwelling units and will not be required to provide multiple meters.
2. Commercial and Multi-family separate meter requirements:
    a. Except as provided by subsection b. of this section, commercial and multi-family properties shall purchase and install a separate AW meter or meters to measure water used for all common areas and outdoor purposes, including swimming pools, fountains, permanently installed irrigation systems, and irrigation with quick-coupler hose bibbs.
    b. Upon receipt of a completed application on a form approved by AW, AW may grant a waiver from this requirement if:
        1) the development does not include any landscaping; or
        2) a permanent automatic irrigation system does not exist nor is planned to be installed and multiple hose bibs are available for any necessary hand watering; or
        3) commercial landscaping requirements do not apply to the property; or
        4) there is impervious cover of 90% or more; or
        5) the water is being used for a new fire in-line installation; or
        6) air conditioning condensate or other alternative on-site water is being required to meet common areas and outdoor water demands; or
        7) there has been a change of use for interior remodeling; or
        8) well water is being used to meet all common areas and outdoor water demands.
3. For properties with five or more attached or detached living units on a single lot, including mobile home communities, commercial facilities with multiple occupants, and/or multi-use facilities, that do not have public water meters for each unit, owners must comply with private submetering requirements established by plumbing code and/or TCEQ.
4. Requirements for meters 3 inches and larger

a. ~~Bypasses shall be provided on all meters 3 inches and larger except those used for irrigation only~~ ***Bypass requirements shall comply with current standard details and/or the installation requirements of the meter manufacturer***.

b. Pipe and meter size shall be determined by Owner based upon plumbing code and AWWA Water Meter Standards. Plans must be prepared by a Licensed Engineer Registered in the State of Texas.

5. Fire Demand Meters ~~(4"×2", 6"×2", 8"×2", 10"×2", 12"×2")~~ shall be allowed only if domestic demand necessitates a domestic meter of 3 inches or larger. If domestic demand does not require a 3 inches or larger meter, required fire flow shall be provided via an appropriately sized dedicated fire line with a double check detector backflow prevention assembly per AW Standard Detail. For small fire demand applications where both fire demand and domestic demand can be provided with 2 inches or smaller meter, a single meter may be used for both fire and domestic.

6. New water meters shall be in conformance with AW's automated metering infrastructure technology, and with the applicable standard product list. Applicants filing a tap plan will be responsible for the costs of extending AW's technology to the tract of land requiring service through the granting of an easement to the City as applicable. Applicants filing a site plan or subdivision plan will be responsible for the costs of extending AW's technology to the tract of land requiring service including technical assessments by AW and its agent; an easement granted to the City; poles, street lights, or other structures to locate a data collection units upon; and providing electrical service to the data collection units where solar power is not practical. AW or its agent shall determine the location of the data collection units, and perform the installation, and ongoing maintenance and repair of such infrastructure.

G. ~~Reserved~~ ***System Pressure Reducing Valves***

1. Pressure reducing valves (PRVs) and the associated pipe, valves, fittings and appurtenances shall be installed in buried, pre-cast or cast-in-place, reinforced concrete vaults. The installation is commonly called a PRV Station.

2. Each gate valve and PRV in a PRV Station vault shall be mounted on a vertically adjustable (threaded) pipe saddle support having an integral base plate that is founded on a concrete pad.

3. The PRV Station shall be an integral part of the distribution system as indicated in Figure §2.5.2.A.16.

4. The location of the station in the system shall be as directed by AW; however, the exact location shall be determined by the Engineer so that the vault is behind any street curb and in an area not subject to pedestrian, bicycle, or vehicular traffic. Each PRV Station shall be located so that during its design life

it will be readily accessible for maintenance and operations personnel and equipment.

5. *The PRV Station shall be located such that surface stormwater runoff is directed away from the station either naturally or by grading of the site. The station shall not be located in a ditch, swale, depression or other ground surface feature that collects or conveys stormwater runoff.*
6. *To allow for the necessary initial and occasional future flow testing of the PRVs, a Flow Test Fire Hydrant and a System Isolation Valve meeting the following requirements must either already exist nearby in what will become the low-pressure side of the system or must be installed there as a part of the Project during which the PRV Station is constructed:*
    a. *the System Isolation Valve must be located in the distribution system piping on what will become the low-pressure side of the vault*
    b. *the System Isolation Valve must be located within 100 feet of the PRV Station*
    c. *the System Isolation Valve must be located so that it can be closed without disrupting service to any existing customer*
    d. *the Flow Test Fire Hydrant assembly must be located on what will become the low-pressure side of the system, between the PRV Station vault and the System Isolation Valve*
7. *Pre-cast, reinforced concrete vaults—the details of which are given on a COA Standard drawing—were designed for specific site and loading conditions. Vaults subject to conditions that differ from those assumed for the Standard and those vaults that are cast-in-place must be designed by Texas-licensed Engineers (Structural). The designs must meet applicable ASTM and ACI criteria. An internal piping layout that differs from the COA PRV Station Standard must be as specified by AW for the site-specific conditions that necessitate the use of a non-standard vault. Modifications to Standard drawings are not permitted.*

2.9.3 - Reclaimed Water Systems

B. Mains

1. Sizing of Mains - Computer modeling is preferred for sizing reclaimed water mains. However, for mains less than 16 inches in diameter other engineering calculation methods may be accepted. Standard main sizes are: 6 inches, 8 inches, 12 inches, 16 inches, 24 inches, 30 inches, 36 inches, 42 inches, and 48 inches.

2. ~~All r~~***R***eclaimed water mains shall be constructed of ductile iron pipe, Pressure Class 350 minimum for pipe 12-inch diameter and smaller and Pressure Class 250 for pipe greater than 12-inch diameter. ~~For mains 12-inch~~ ***PVC pipe 16-inch*** diameter and smaller~~, PVC pipe,~~ conforming to the requirements of AWWA C-900, DR 14 shall ***also*** be acceptable. Plans shall indicate that all mains and appurtenances shall be manufactured in purple, factory painted purple or bagged in purple. Color shall match Pantone 522.

3. Piping materials and appurtenances shall conform to City of Austin ***(COA)*** Standard Specifications, Standard Details, and AW Standard Products List (SPL).

4. Minimum depth of cover over the uppermost projection of the pipe and all appurtenances shall comply with ~~City of Austin (~~COA~~)~~ Standard Details. Maximum depth will be approved by AW for the specific materials, application and conditions. If fill or embankment placed over existing reclaimed water mains or services increases by more than 4 feet or results in a final depth exceeding two times the easement width if applicable, AW review and approval is required. If a cut over the existing reclaimed water mains or services results in less than the minimum cover required by COA Standard Details, AW approval is required.

5. For mains of 16 inches and larger, drain valves shall be placed at low points.

6. On mains 12 inches in diameter and larger, automatic air release valves will be placed at all high points. Mains larger than 16 inches shall have an automatic air release valve placed at the down-slope side of all valve locations. Air/vacuum and vacuum release valves shall be approved on a case-by-case basis. All reclaimed mains 24 inches and larger will include an 18 inches outlet with blind flange installation at high points where the installation of an ARV would be necessary. In the absence of an ARV requirement, an 18 inches outlet with blind flange shall be placed every 2500 feet.

7. Dead-end mains shall terminate with a flushing device and flushing devices shall be installed as necessary to facilitate flushing of the system.

8. Mains shall have an approved flushing device located at the high point between main intersections.

9. Joint restraint for pipes larger than 16-inch diameter shall be by use of integral, factory joint restraint systems, or by restraint gaskets.

10. Joint restraint shall be provided for all pipe bends, reducers, and tees. When joint restraints are required in intersections, the joint restraints shall extend, at a

minimum, to the point of curvature (PC) of the curb line. Notes shall be placed in both plan and profile views and shall include at a minimum the type of restraint to be utilized and the beginning and ending stations of the restraint.

11. The proximity of other utilities and structures must be taken into account when specifying the use of thrust blocking. The use of thrust blocks will be prohibited in the downtown area (Loop 1 to I35 and Lady Bird Lake to 30th Street) due to the congestion of utilities, structures and excavations in the right of way. Concrete thrust blocking may be approved on a case by case basis.
12. Connections of new reclaimed mains to existing reclaimed mains shall be made by cutting in a tee. Tapping sleeves may be allowed in lieu of cutting in a tee on a case-by-case basis. Full-body tapping sleeves shall be used. A tapping sleeve will not be allowed if the materials and conditions of the existing main preclude tapping. "Size on size" taps will not be permitted, unless made by use of an approved full bodied mechanical joint tapping sleeve.
13. ***Deflection of joints in ductile iron pipe shall not exceed manufacturer's maximum allowable deflection. For PVC pipe, the deflection at pipe joints shall not exceed 1°, or the manufacturer's maximum allowed deflection, whichever is less.***
14. ***Mains shall be located so that isolation valves, air valves, and flushing devices will be readily accessible during their service life for maintenance and operations personnel and equipment.***

C. Valves ***(gate valves for isolation purposes)***

1. All valves 24 inches and smaller, shall be resilient seated gate valves.
2. Valves shall be located at the intersection of two or more mains. Reclaimed Water mains designated by AW for distribution, up to and including 24 inches in diameter, shall be valved at intervals not to exceed 500 feet in high-density areas and 1,200 feet in residential areas. Reclaimed Water mains 24 inches and larger designated by AW for transmission shall be valved at intervals not to exceed 2,000 feet or at a branched reclaimed water main connection, whichever is less.
3. At dead ends, gate valves shall be located one pipe length 10-ft. minimum from the end points of the main. The Engineer shall provide - and show drawings - complete restraint for all such valves, pipe extensions and end caps.
4. Branch piping (both new and future branches) shall be separated from the main with gate valves.
5. For all reclaimed mains, valves at intersections shall be placed at point of curvature (p.c.) of the curb line.
6. Valves shall be located so that isolating any main intersection requires closing of no more than three valves.

7. The operating nut or extension of any valve shall be between 18 inches and 24 inches below finished grade.
8. Valves with valve extensions and those at pressure zone boundaries shall be equipped with a locking type debris cap.
9. Each valve that is 16 inches and smaller in diameter shall be supported by a pre-cast or cast-in-place concrete pad conforming to details in ~~City of Austin~~ ***COA*** valve installation Standards. Each valve that is 24 inches and larger in diameter shall be supported by a monolithic, cast-in-place reinforced concrete foundation conforming to project-specific detailed structural drawings. Cast-in-place supports shall not interfere with access to any nuts or bolts at the connecting pipes.
10. Butterfly valves shall not be allowed.
11. Valve boxes and lids shall be square, with "Reclaimed Water" indicated on the lid.
12. Reclaimed water mains shall be designed so that valves can be installed vertically unless conditions dictate otherwise.
13. Reclaimed water mains installed under TxDOT ROW, railroad ROW, or any flowing or intermittent stream, creek, river or semi-permanent body of water (water crossing), except when installed by horizontal directional drilling technology (or HDD), shall be installed in a steel pipe encasement with spacers, pipe joint restraint and factory end seals. The crossing design shall include the installation of a drain valve assembly at the lowest point in the crossing, and an isolation valve at the high point on each side of the crossing with a CARV installed on the downslope side of each valve.

    Reclaimed water crossings shall conform to current COA Erosion Hazard Zone (EHZ) crossing criteria.
14. Valve operators shall be located a minimum of 24 inches from an existing property line.
15. ***Valves, regardless of their intended purpose, shall be located so that during their design service life they will be readily accessible for maintenance and operations personnel and equipment.***

C. Services

1. Reclaimed water services shall be in accordance with ~~City of Austin~~ ***COA*** Standard Details.
2. The plans shall show the locations of backflow prevention assemblies.
3. The plans shall show irrigation lines, sizes, and specify pipe color (purple). All sprinkler heads and sprinkler control box covers shall be purple.
4. The plans shall show reclaimed meter locations and specify a color (purple).
5. Services for cooling towers or interior building use shall have a separate meter.

6. Meter boxes and vaults shall be square or rectangular with "Reclaimed Water" cast into the lid.
7. Reclaimed water meters shall be placed within the public ROW or in an easement immediately adjacent to the ROW. Meters may not be located inside fences and must be accessible by vehicle. Reclaimed water meter boxes and its appurtenances are not allowed in sidewalks, paved areas, driveways, or load bearing pavement.
8. Service taps to reclaimed mains shall be separated from other taps and pipe joints by a minimum distance of 3 feet.
9. Service taps, regardless of type, shall not be made in vaults.

D. Automated Metering Infrastructure

New reclaimed water meters, reclaimed meter boxes, and reclaimed meter box lids shall be in conformance with AW's automated metering infrastructure technology, and with the applicable standard product list. Applicants filing a tap plan will be responsible for the costs of extending AW's technology to the tract of land requiring service through the granting of an easement to the City as applicable. Applicants filing a site plan or subdivision plan will be responsible for the costs of extending AW's technology to the tract of land requiring service including technical assessments by AW and its agent; an easement granted to the City; poles, street lights, or other structures to locate a data collection units upon; and providing electrical service to the data collection units where solar power is not practical. AW or its agent shall determine the location of the data collection units, and perform the installation, and ongoing maintenance and repair of such infrastructure.

E. ***System Pressure Reducing Valves***

1. ***Pressure reducing valves (PRVs) and the associated pipe, valves, fittings and appurtenances shall be installed in buried, pre-cast or cast-in-place, reinforced concrete vaults. The installation is commonly called a PRV Station.***
2. ***Each gate valve and PRV in a PRV Station vault shall be mounted on a vertically adjustable (threaded) pipe saddle support having an integral base plate that is founded on a concrete pad.***
3. ***The PRV Station shall be an integral part of the distribution system as indicated in Figure §2.5.2.A.16.***
4. ***The location of the station in the system shall be as directed by AW; however, the exact location shall be determined by the Engineer so that the vault is behind any street curb and in an area not subject to pedestrian, bicycle, or vehicular traffic. Each PRV Station shall be located so that during its design life it will be readily accessible for maintenance and operations personnel and equipment.***
5. ***The PRV Station shall be located such that surface stormwater runoff is directed away from the station either naturally or by grading of the site. The station shall***

not be located in a ditch, swale, depression or other ground surface feature that collects or conveys stormwater runoff.

6. ***To allow for the necessary initial and occasional future flow testing of the PRVs, a Flow Test Fire Hydrant and a System Isolation Valve meeting the following requirements must either already exist nearby in what will become the low-pressure side of the system or must be installed there as a part of the Project during which the PRV Station is constructed:***
    a. ***the System Isolation Valve must be located in the distribution system piping on what will become the low-pressure side of the vault***
    b. ***the System Isolation Valve must be located within 100 feet of the PRV Station***
    c. ***the System Isolation Valve must be located so that it can be closed without disrupting service to any existing customer***
    d. ***the Flow Test Fire Hydrant assembly must be located on what will become the low-pressure side of the system, between the PRV Station vault and the System Isolation Valve***
7. ***Pre-cast, reinforced concrete vaults—the details of which are given on a COA Standard drawing—were designed for specific site and loading conditions. Vaults subject to conditions that differ from those assumed for the Standard and those vaults that are cast-in-place must be designed by Texas-licensed Engineers (Structural). The designs must meet applicable ASTM and ACI criteria. An internal piping layout that differs from the COA PRV Station Standard must be as specified by AW for the site-specific conditions that necessitate the use of a non-standard vault. Modifications to Standard drawings are not permitted.***

2.9.4 Wastewater Systems

D. Manholes.

7. Minimum inside manhole diameters shall be as indicated in the following table:

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

Main Size	***Depth***		
	Less than 20'	***20'—30'***	***Greater than 30'***
Up to 15"	***48"***	***60"***	***72"***
18"—24"	***60"***	***60"***	***72"***
30" and 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 inches.

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. A straight section of invert that is 4 inch to 6 inch in length is required to transition between the curved portion of the invert channel and the connecting pipes in order to accommodate the mandrel apparatus for up to 15 inch diameter pipes.

Note 3: New pipe connections to existing manholes shall provide a minimum of 12 inches 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 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 6 feet, when the depth of the main is sufficient.