

## 2.6.0 - CONSTRUCTION INSPECTION AND CITY ACCEPTANCE

### 2.6.1 - Construction Inspection Procedure for all projects except CIPs.

To have a City of Austin inspector assigned to a project, the following items must be submitted to the appropriate inspection office. The appropriate contact person will be able to answer any questions regarding the following information:

- A. Ten (10) sets of signed Plans are required. Also required are two (2) copies of signed contracts (lump sum contracts should include water and wastewater quantities on a developer's or consulting engineer's letterhead), four (4) sets of cut sheets with one (1) copy of field notes and two (2) copies of any permits listed on the front of the plans. The engineering review and inspection fees, if applicable, will be determined at that time and payment must be made prior to beginning of construction.
- B. One (1) copy of the bid tabulation (if the project is bid out) will be required with the above listed items for all service extensions submitted for construction. All of these required items must be submitted at the same time. For reviews occurring during the construction phase, seven (7) copies of the revised plans are required.
- C. To set up a Pre-Construction Conference, contact the ~~Planning and Development Review~~ **Services** Department (**DSD/PDR**) (Inspection Office) at the phone number indicated on the plans.
- D. Five copies of the signed plans and a contract must be submitted to the appropriate office at least three (3) working days before the Pre-Construction Conference. Please include the name and phone number of the contact person listed above.
- E. The contractor shall call the One Call Center for information on existing buried utilities.

#### **2.8.0. ABANDONMENT OF FACILITIES**

If a new project will abandon existing facilities, the plans shall provide for the appropriate abandonment of these facilities. The plans shall include, at a minimum, the location, sequence, details, and methodology for abandoning the facility according to applicable AWU requirements. Abandonment shall be considered permanent. Temporary abandonment must be approved on a case-by-case basis. For ~~situations where a certified SMART Housing project is required to perform the proposed infrastructure abandonment, the Austin Water Utility would perform the work in the Right of Way at no cost to the developer.~~ **qualifying properties related to Ordinance 20141120-006 Austin Water will perform the necessary infrastructure work in the Right of Way.**

#### **2.8.1. Wastewater Mains and Services**

A. Abandonment of wastewater mains shall consist of filling the main with a pumpable grout or slurry and meeting requirements of the current specifications. Plans, drawings and specifications shall include method of abandoning or removing services and all other mains.

B. If the existing wastewater service line and/or appurtenances are not to be used in the future, the plans shall call out and indicate the wastewater service line(s) to be abandoned and that they shall be cut and plugged at the main.

C. Abandonment of wastewater force main valves shall be accomplished by removing the valve casing to the top of the subgrade or 24" below the surface, whichever is greater, **and filling remaining casing with concrete** such that the abandoned valve is not identifiable from the surface. The pavement repair shall match the existing pavement section.

#### **2.8.2. Manholes**

Abandoned manholes shall be removed to a level not less than four feet below grade, inlets and outlets securely plugged, inlet and outlet pipes cut and plugged outside the manhole, and the structure filled with stabilized sand.

#### **2.8.3. Lift Stations**

Abandonment of lift stations shall consist of removing all pumps, motors, couplings, valves, and controls from the dry well and all appurtenances above finished grade. Both the wet well and dry well shall be cut down five feet below grade, filled with cement stabilized sand, and covered with top soil to grade. The associated force main shall be properly abandoned. This includes cutting and plugging both ends and/or grouting gravity mains as appropriate.

Area shall be re-vegetated. The Lift Station Maintenance Group shall be notified prior to abandonment.

#### **2.8.4. Water Mains and Service**

A. Abandonment of a water main shall be accomplished by disconnecting the pipe from intersecting pipes that are to remain in service and the installation of a plug on the tee and/or cross at the point of intersection. If the cross and/or tee cannot be securely plugged or is a leaded connection, the cross and/or tee shall be removed. If a valve is located at the tee for the line being abandoned, it shall be removed. In no instance will mains be abandoned by valve closure. Abandonment of water valves located on abandoned mains shall be

accomplished by removing the valve casing to the top of the subgrade or 24" below the surface, whichever is greater, and filling remaining casing with concrete such that the abandoned valve is not identifiable from the surface. The pavement repair shall match the existing pavement section.

B. All water service lines (including fire lines) that are being abandoned and not transferred to a new distribution line should be disconnected at the corporation stop and all other valves and appurtenances, including the water meter, removed. When meters are to be abandoned, the Engineer shall call out the meter number and address, and specify in the plans that the meter must be turned over to the Site and Subdivision Inspector within one working day of its removal. The drawings shall include a note requiring notification of AWU for meter removal.

#### **2.8.5. Reclaimed Water Mains and Services**

All reclaimed water service lines that are being abandoned and not transferred to a new distribution main shall be disconnected at the corporation stop. All other valves and appurtenances, including the water meter, shall be removed. The drawings shall include a note requiring notification of AWU for meter removal.

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A. Size/Capacity Determination

1. General

- a. Hazen Williams Friction Coefficient  $C = 80$ , higher  $C$  coefficient may be used for new mains only upon approval by the City with sufficient documentation to show effects of long-term use.
- b. Average day demand = 200 gal/person/day.
- c. Peak day demand = 530 gal/person/day.
- d. Peak hour demand = 900 gal/person/day.
- e. If the maximum static pressure exceeds ~~65~~ 80 psi, a pressure-reducing valve (PRV) will be required on the property owner's side of the water meter and should be shown on the plan view.
- f. Minimum operating pressure is 50 psi at the highest elevation meter location using average day demand.

Peak Hour Demand Requirements


- a. The maximum allowable velocity shall not exceed 5 feet per second (fps).
- b. The minimum pressure at any point in the affected pressure zone must not be less than 35 psi.


3. Emergency Demand (Fire Flow) Requirements

- ~~a.~~ *Emergency demands are considered to be fire flow requirement plus peak day demands.*
- ~~b.~~ *Fire flow requirements (flow rate and duration) will be determined in accordance with the City of Austin Fire Code and associated rules under Chapter 25-12 Article 7. Where the City of Austin Fire Code does not apply, the fire flow requirement (flow rate and duration) will be determined by the regulating fire department.*

~~c.~~ ~~a.~~ The maximum allowable velocity shall not exceed 10 fps.

~~b.~~ ~~Fire flow (reference City of Austin Fire Protection Manual) requirements will be determined in accordance with the City of Austin Fire Code and associated rules.~~

d.  The minimum residual pressure at any point in the affected pressure zone at peak day plus fire flow must not be less than 20 psi.

e.  Required fire pumps, for high-rise buildings, as defined in the building code, shall be supplied by connections to a minimum of two water mains. The domestic water line will be allowed off one of the fire lines. Domestic water lines must be metered either after the fire line or along the fire line that includes the domestic water line. Separate supply piping shall be provided between each connection to the water main and the pumps. Each connection and the supply piping between the connection and the pumps shall be sized to supply the flow and pressure required for the pumps to operate.

Exception: Two connections to the same main shall be permitted provided the main is valved such that an interruption can be isolated so that the water supply will continue without interruption through at least one of the connections.

#### 4. Sizing of Water Mains

a. Computer modeling is preferred for sizing water mains. However, for water mains less than 16 inches in diameter other engineering calculation methods may be accepted. The largest size, as determined by comparing the service area's peak hour demand and peak day plus fire flow demand, shall be used. The minimum size for any street type, however, will be governed by various factors which include fire protection requirements, high density land usage, and the designer's consideration of general system gridding, future transmission mains, neighboring developments and area configuration. Transmission line sizes will be determined on a case-by-case basis. Minimum main size shall be 8 inches with consideration for 4-inch pipe in cul-de-sacs less than 200 feet in length. Provision must be made in these cases for a flush valve at the end of dead end lines.

**b. For purposes of water main sizing the emergency demand shall be assumed at a single point on the existing or proposed water main at the subject tract or development phase, unless otherwise approved by AW.**

5. Storage Requirements - If it is determined by the Austin Water Utility (AW) that additional storage is required, the following criteria shall be used:

Effective Storage = 100 gal/person

Emergency Storage = 100 gal/person

TOTAL STORAGE = 200 gal/person

Effective Storage is defined as storage, which will provide a minimum of 35 psi of pressure at the highest service elevation in pressure zone.

The **Owner's Consulting** Engineer may be required to provide computer simulations as determined on a case-by-case basis.

B. Mains

1. ~~Minimum main size shall be 8 inches with consideration for 4 inch pipe in cul de sacs less than 200 feet in length. Provision must be made in these cases for a flush valve at the end of the 4" line. The minimum size for any street type, however, will be governed by various factors which include fire protection requirements, high density land usage, and the designer's consideration of general system gridding, future transmission mains, neighboring developments and area configuration. Looped systems are required. Transmission line sizes will be determined on a case by case basis.~~

While looped systems are required, it is recognized that in certain situations, short sections of dead end pipe may be more practical. When a dead end section of water main, containing more than 100 gallons of water, is approved for installation, the following requirements must be met:

- a. If a dead end section is installed for future connection or extension, and no service will be taken from the stub prior to the future connection or extension, a **properly restrained** valve **pipe system** must be placed at the location where the main

becomes a dead end (i.e. at the tee) or at the last service connection.

- b. If a dead end is installed and service is to be provided via the dead end
  - i. The water demand from the service (or services) must be sufficient to turn over the water every 72 hours.
  - ii. If the service(s) do not provide sufficient demand to turn over the water every 72 hours, an approved automatic flushing device must be installed and programmed such that the 72 hour criterion is met.

- 2. Water mains should be located, where maintenance can be accomplished with the least interference with traffic, structures, and other utilities.

The separation between water and wastewater mains must comply with the Texas Commission on Environmental Quality (TCEQ) rules or have a variance approved by TCEQ before submittal to the City. 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 water mains and all other utilities and/or conduits in order to maintain trench integrity.

Mains should normally be located on the high side of the street. However, mains shall be installed on both sides of all divided road/highways. Roads/highways, where opposing lanes of traffic are separated by a vehicle obstruction, shall be considered a divided road/highway.

~~The following locations may be considered as standard assignments:~~

<del>Right-of-Way</del>	<del>Assignment</del>
<del>50 to 60 feet</del>	<del>14.5 feet from ROW</del>
<del>70 to 80 feet</del>	<del>17.5 feet from ROW</del>
<del>90 to 120 feet</del>	<del>22.5 feet from ROW</del>

In major collector and arterial roadways, mains should be located outside the pavement, curbs, etc., wherever feasible. When mains are located outside of the right-of-

way, they shall be within a dedicated utility easement. Main assignments in such city streets must be approved by the Austin Utility Location and Coordination Committee.

~~assignments~~ ~~f~~For lines in such county roads assignments must also be approved by the ~~e~~County ~~e~~Engineer.

3. Piping materials and appurtenances shall conform to City of Austin Standard Specifications and ~~the Utility's~~ AW's Standard Products List (SPL).
4. Minimum depth of cover over the uppermost projection of the pipe and all appurtenances shall be at least 48 inches below finished grade. ~~as follows:~~
  - ~~a. Water piping installed in undisturbed ground in easements of undeveloped areas, which are not within existing or planned streets, roads, or other traffic areas, shall be laid with at least 36 inches of cover.~~
  - ~~b. Water piping installed in existing streets, roads, or other traffic areas shall be laid with at least 48 inches of cover below finished grade.~~
  - ~~c. Unless approved by the Austin Water Utility, installation of water piping in proposed new streets will not be permitted until paving and drainage plans have been approved and the roadway traffic areas excavated to the specified or standard paving subgrade, with all parkways and sidewalk areas graded according to any applicable provisions of the drainage plans or sloped upward from the curb line to the right of way at minimum slope of 1/4 inch per foot. Piping and appurtenances installed in such proposed streets shall be laid with at least 36 inches of cover below the actual subgrade. The maximum depth will be as approved by the Utility for the specific materials, application, and conditions.~~
5. For mains 16 inches in diameter and larger and on smaller mains where appropriate, hydrants or drain valves shall be placed at low points and on the up-slope side of all valve locations.
6. All fire lines shall have a gate valve on the line at the connection to the main line and a backflow preventer inside the property line, but accessible for inspection by City personnel. All unmetered fire lines shall have a ~~Utility~~ AW



approved flow detection device. This flow detection service shall be located such that no more than 100 gallons of water is contained between the device and the point where the fire line is connected to the City's main.

7. On water mains 16 inches in diameter and larger and on smaller mains where appropriate, combination air valves will be placed at all high points and air/vacuum valves shall be 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 mains twenty-four (24) inches and larger will include an 18" outlet with blind flange installation at high points where the installation of an air release valve (ARV) would be necessary. In the absence of an ARV requirement, an 18" outlet with blind flange shall be placed every 2500 feet. **Proposed waterline connections to air release valve piping are prohibited.**
8. Joint restraint for pipes larger than 16 inch diameter shall be by use of integral, factory joint restraint systems, ~~or by restraint gaskets.~~
9. Joint restraint shall be provided for all pipe bends and where necessary when joint deflection is utilized. **A minimum safety factor of 1.5 shall be used when calculating restrained water pipe length.** When joint restraint is required in intersections, extend the joint restraint, 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. Concrete thrust blocking may be approved on a case by case basis. 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.~~
10. Allowable pipe sizes.  
The following sizes will be the only sizes allowed for use in the system: (4"see item 1. above), (6" fire-hydrant leads and services only), 8", 12", 16", **20"**, 24", 30", 36", and 42". Larger sizes may be approved on a case by case basis. **These pipe sizes do not apply to force mains.**

11. Connections 4" and larger of new mains to existing 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.

12. Wyes are not allowed on waterlines.

13. The maximum bend for waterlines is 45 degrees.

14. All potable water mains shall be constructed of ductile iron or PVC pipe. For Ductile iron pipes, Pressure Class 350 minimum for pipe 12-inch diameter and smaller and Pressure Class 250 for pipes greater than 12-inch diameter shall be used. For PVC pipe 16-inch diameter and smaller conforming to the requirements of AWWA C-900 or C-905, DR 14 shall be acceptable. Alternative pipe materials may be considered on a project by project basis.

15. All potable water pipe within utility easements on private property shall be Ductile Iron Pipe, Pressure Class 350 minimum for pipe 12-inch diameter and smaller and Pressure Class 250 minimum for pipes greater than 12-inch diameter.

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.

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 ten 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.

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.

C. Valves

1. There shall be a valve on each fire hydrant lead restrained to the main. These and all valves twenty-four (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 (30) customers will be without water during a shutout. For lines smaller than twenty-four (24) inches, typical spacing should be 500 feet in high-density areas and 1,200 feet in residential area. Mains twenty-four (24) inches and larger shall be valved at intervals not to exceed 2,000 ft.
3. At dead ends, gate valves shall be located one (1) pipe length ten (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 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 (3) valves.
7. The operating nut or extension of any valve shall be between eighteen (18) inches and twenty-four (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. All vertical gate valves larger than sixteen (16) inches shall have the bonnet located in a vault or manhole. All horizontal gate valves larger than sixteen (16) inches shall have the valve actuator (gearing) located in a vault or manhole.
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.

D. Fire Hydrants

1. Hydrants shall be installed at the intersection of two (2) 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 nine 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. ~~6~~ When fire hydrants are subjected to pressures above 150 psi, they shall have an attached pressure reducing valve (PRV) installed *and set* to reduce the operating pressure of the fire hydrants below 150 psi.
11. ~~7~~ 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 ~~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.*

E. Services

1. Water services shall be in accordance with City of Austin Standard Details. More than two meters on a single service line will be considered on a case-by-case basis.
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 right-of-way (ROW) or in an easement *immediately adjacent to the ROW. Meters may not be located inside fences and must be vehicular accessible from roadways.* Water meter boxes are not allowed in sidewalks or driveways.
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.*

F. Water Meters ~~for Multi-Family and Commercial Customers~~

1. Properties with two, three, or four ~~living~~ *individual dwelling* units *(attached or detached)* shall have an individual water meter serving each ~~living~~ *dwelling* unit. *Dwelling units are defined as a residential unit providing independent living facilities. Accessory uses defined in Land Development Codes 25-2-893 and 25-2-901, are not viewed as dwelling units and will not be required to provide multiple meters.*

Commercial and multi-family properties shall purchase and install a separate 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.

3. ~~All multi-family, manufactured home rental community, or multiple-use facility, in order to provide for the measurement of the quantity of water, if any, consumed by the occupants of each unit, shall install:~~

**For properties with 5 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.**

- ~~a. Submeters, owned by the property owner or manager, for each dwelling unit or rental unit, or~~  
~~b. Individual meters for each dwelling unit or rental unit.~~

4. **Requirements for meters 3" and larger**

**a.** Bypasses shall be provided on all meters three (3) inches and larger.

**b.** **Pipe and meter size shall be determined by Owner: Approval by AW. Plans must be prepared by a Licensed Engineer Registered in the State of Texas.**

- 5.** **Fire Demand Meters (4"X2", 6"X2", 8"X2", 10"X2", 12"X2") shall be allowed only if domestic demand necessitates a domestic meter of 3" or larger. If domestic demand does not require a 3" 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 Austin Water Standard Detail. For small fire demand applications where both fire demand and domestic demand can be provided with 2" or smaller meter, a single meter may be used for both fire and domestic.**

G. Easements

1. Easements for water 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 AWE, 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 AWE 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 AWE approval of construction plans.

H. Requirements for Existing and Proposed Water Infrastructure beneath Circular Intersections or Other Geometric Street Features

1. Installation of Circular Intersections or Other Geometric Street Features over existing water infrastructure.
  - a. Existing water 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 water infrastructure. Where existing water 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 water 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 water 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 water infrastructure.

- c. The need for relocating, replacing or protecting in place existing water infrastructure beneath these features and their amenities shall be determined on a case-by-case basis by AWEU.
  - 2. Installation of Circular Intersections or Other Geometric Street Features in new areas of development with no existing water infrastructure.
    - a. Proposed water 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 water 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 water 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 water infrastructure.
    - c. The need for alternative alignments or the inclusion of protective systems for the proposed water infrastructure beneath these features and their amenities shall be determined on a case-by-case basis by AWEU.
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