

CHAPTER 8 – LANDSCAPING AND IRRIGATION STANDARDS

8.1 GENERAL INFORMATION

This section of the City of Surprise Engineering Development Standards explains the required standards for landscape and irrigation systems in the City of Surprise.

1. Landscape plans are to be submitted to the Community Development Department for review and approval. Final approvals will be contingent on approval by the Community Development, Public Works Engineering, and Public Works Landscape Maintenance Division.
2. All irrigation lines, 1 inch or greater, within the right-of-way shall be shown on the water plans. A permit is required for this work and is subject to inspection by the City of Surprise civil inspector.
3. Only plants on the Arizona Department of Water Resources (ADWR) Phoenix Active Management Area Low Water Use Drought Tolerant Plant List are to be used within city limits.
4. The following lists of **single-trunk** trees are on the city's approved list for areas in public right-of-way, including medians. All other trees must have prior approval from the Community Development Planning Division and Public Works Landscape division:
 - Willow acacia (*Acacia Salicina*)
 - Palo Blanco (*Acacia willardiana*)
 - Southern Live Oak (*Quercus virginiana*)
 - Texas Mountain Laurel (*Sophora Secundiflora*)
 - Desert Willow (*Chilopsis Linearis*)
 - Ash (*Fraxinus Greggii*)
 - African Sumac (*Rhus lancea*)
 - Chinese Pistache (*Pistacia Chinensis*)
 - Mesquite Thornless (Chilean)*
 - Ironwood (*Olneya Tesota*) *
 - Palo Verde (*Parkinsonia Aculeata /florida*)*
 - Palo Verde Desert Museum*

*Only in medians and approved on a case-by-case basis only

5. All trees will be measured and have a minimum caliper size as defined in the Arizona Nursery Association's Container Grown Tree Guide. In no case will the caliper be less than 2 inches (measured 18 inches from the ground). The height of the tree shall be a minimum of 7 feet.
6. The Community Development Planning Division and Public Works Landscape division may select and tag trees at the nursery location and will review at project site prior to installation.
7. All medians are to be decomposed granite, unless otherwise approved; and shall be finish graded to slope from the curb line to the plants. Median noses less than 3-foot wide are to have 1 1/2" – 3" decomposed granite (pit run rock) mix.

8. Decomposed granite (DG) shall be 1/2" or 3/4" screened material (depending on availability of desired color). The preferred color of decomposed granite in the City of Surprise right-of-way will be Madison Gold (or approved equal), however in some cases, approved colors may vary based on surrounding areas. All DG shall ultimately be approved by the Community Development Planning Division. Note on Plans: Contractor must submit decomposed granite samples for City approval prior to ordering.
9. Tree root barriers are required per Detail 8-14 when trees are within three feet of sidewalks, curbs, pavement or walls.
10. All trees are to be located a minimum of 12 feet from the walls for well sites, water supply facilities, lift stations, and water reclamation facilities.
11. Sight visibility triangles/lines shall be shown on landscape improvement plans (refer to Detail 4-01 and 4-02).
12. Trees located in medians may be allowed a minimum of seven feet from the curb. Trees must be centered in medians less than 14' wide.
13. All landscaping shall be located a minimum of five feet from any fire hydrant, water meter, or vault.
14. Landscaping, at full growth, shall not impede pedestrian or vehicular traffic. All landscaping shown on plans shall be shown mature size.
15. Trees cannot be removed from the right-of-way without written authorization from the Public Works and Community Development Departments.
16. The type, color, and size of brick pavers that may be used for city medians in the City of Surprise Right-of-Way shall be approved by the Community Development Planning Division. Paver Type shall be per Table 8.1 or approved equal. If approved, a Controlled Low Strength Material (CLSM) per MAG Section 728, one half (1/2) sack, shall be placed as a base in all paver locations. The minimum thickness of the CLSM shall be six (6) inches.

Table 8-1 – Approved Brick Pavers

Manufacturer (or approved equal)	Type	Color	Dimensions
AZ Block 2000	Valencia Holland	Sunset Blend	4" X 8"
Pavestone	Holland Stone	Antique Terra Cotta	4" X 8"
Superlite Block	Holland	Sedona Blend (4) and Charcoal (1) 4:1 Ratio	4" X 8"

8.2 IRRIGATION SYSTEMS

1. Utility boxes, meters, vaults, etc. are to be located in the right-of-way or utility easement along the sides of the roads and never in the median. However, irrigation valve boxes may be located in the median planting area.
2. Developers shall use only irrigation equipment that is compatible with the existing equipment. The developer shall refer to the City of Surprise for the approved list of equipment. Equipment manufactured by Hunter Industries, is compatible with the city's inventory and Hunter equipment, or an approved equal, shall be used. Solar controllers are preferred and shall be DIG, Leit series, post mounted solar controller or an approved equal.
3. All controllers, meters, etc. must be enclosed by locking protective covers and screened from view.
4. The line separation requirements of Chapter 6 apply to all lines.
5. All irrigation systems will be installed with purple pipe.
6. Marking tape labeled as "Reclaimed Water" is required on irrigation systems that use or may use reclaimed water in the future.
7. Purple marker balls shall be installed on all irrigation mainlines four inches and larger within the public right-of-way at all fittings and every 200 feet if the distance between fittings is greater than 200 feet.
8. Landscape areas that are to be maintained by the city shall have separate water meters and electric or solar controllers, as approved by the City.
9. A city approved backflow preventer is required for irrigation services, for potable water, non-potable water and reclaimed water and shall meet EPA low lead standards.
10. All irrigation mainlines and laterals shall be Schedule 40; all risers, tees, and other fixtures shall be Schedule 80 in the right-of-way. All irrigation mainlines in the right-of-way shall be sleeved. The minimum sleeve size is 5 inches.

8.3 IRRIGATION SYSTEMS SUPPLIED BY RECLAIMED WATER

These comments are applicable to irrigation systems that are supplied by reclaimed water or may be supplied by reclaimed water in the future.

1. Reclaimed water shall not be used to irrigate landscaping located in 404 washes or structures or any landscaping that may ultimately runoff or drain to a 404 wash or waters of the US (i.e., open channels, catch basins, and retention/detention facilities).
2. All irrigation systems will be installed with purple pipe.
3. Marking tape labeled as "Reclaimed Water" is required on irrigation systems that use or may use reclaimed water in the future.
4. The reclaimed irrigation system shall be separate and independent of any drinking water system. Cross connections between potable water and reclaimed water are not permitted.

5. All valve boxes and risers shall be labeled as “Reclaimed Water – Do Not Drink.”
6. Drinking fountains shall be protected from the spray or misting of reclaimed water.
7. The line separation requirements of Chapter 6 apply to all lines.
8. The irrigation system shall be designed to minimize runoff, pooling, and ponding.
9. The system shall be designed to eliminate overspray.
10. Hose bibs on reclaimed water systems are prohibited.
11. Cross connection testing shall be completed prior to connection to the reclaimed water system. A reclaimed water meter shall not be installed and the irrigation system shall not be connected to a reclaimed water line without first conducting a cross connection test. See section 8.4 for Cross Connection Testing Requirements.
12. As-built plans shall be submitted to the city prior to connection to the reclaimed system. Any modifications to the landscape design shall be provided to the city.
13. All irrigation mainlines and laterals shall be Schedule 40; all risers, tees, and other fixtures shall be Schedule 40 in the right-of-way. All irrigation mainlines in the right-of-way shall be sleeved. The minimum sleeve size is 5 inches.

8.4 CROSS CONNECTION TESTING REQUIREMENTS

1. A cross connection testing plan shall be developed for the specific property and shall be sealed by a Professional Engineer or Landscape Architect actively registered to practice in the State of Arizona.
2. The testing plans shall include the following:
 - a. A description of the property to be tested and the location of the property.
 - b. A detailed procedure for the cross connection testing to demonstrate that the non-potable water system is separate and not connected to the potable water system. The procedure shall be developed based on the conditions at the site and will need to include specific meter and valve information.
 - c. A list of all water taps to be tested.
 - d. A site-specific field log sheet.
 - e. Copy of the as-built building plans showing the potable and non-potable water system and all water meters and taps on the property.
 - f. Copy of the as-built irrigation plans showing the potable and non-potable irrigation lines, valves, and controllers.
3. The testing plan shall be submitted to the City of Surprise Water Resource Management Department, Environmental Division for review and approval prior to implementation.

4. The City of Surprise Water Resource Division shall be notified of the date, time, and location where the test will be conducted. City of Surprise staff or their representative may observe the testing at any time.