

## Irrigation System Installation

### Description

Install the irrigation system according to the design specifications, which should be in accordance with manufacturer’s specifications, local code requirements and sound principles of efficient and uniform water distribution.

*This BMP is based directly on practice guideline 3 from “Turf and Landscape Irrigation Best Management Practices” (The Irrigation Association 2001).*

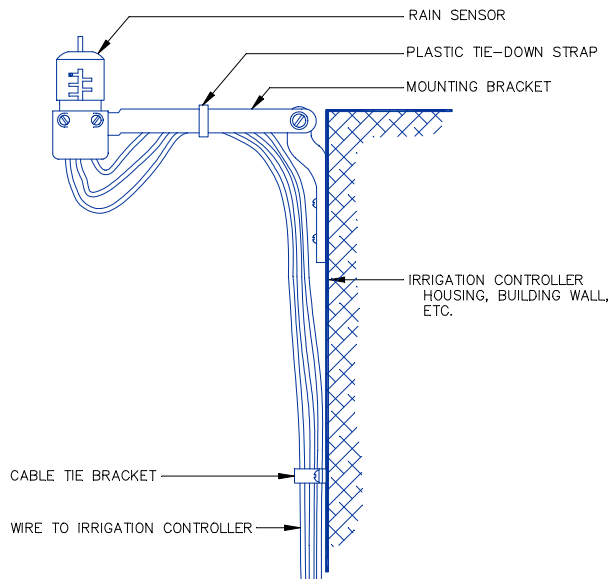
### Basic Practice Guidelines

1. Install the irrigation system to meet the design criteria.
2. Contract with a licensed, experienced and reputable irrigation professional to complete the installation.
3. Before commencing installation, verify that water tap, flow rate and pressure meet design criteria.
4. Ensure that the site drainage has not been altered for existing plant communities that are not planned to receive supplemental irrigation.
5. Install the irrigation system’s components according to the design specifications and manufacturer’s published performance standards.
6. Where deviations from the design are required (e.g., running pipe around a tree or other structure or adding sprinkler heads to an area larger than the plan shows), consult with the designer prior to making the change to ensure that the change is within design performance specifications.
7. Require that the architect, irrigation designer or local water district representative perform one or more field observations during system installation to check for adherence to the design. The purpose of the observation is to check for proper installation and function of the backflow prevention assembly, main line, pipes, valves, sprinkler heads, control wire, controller and water conserving devices.
8. Furnish “as-built” record drawings to the owner of the system. The record drawings should describe the system layout and components including all changes from the original design.
9. Test the irrigation system to verify that the system meets the design criteria.
10. Create an irrigation schedule to meet the needs of the plants. Review the irrigation schedule, specifically its rationale and how to set irrigation days, zone run times and start times.

BMP Type			
Design			
Installation		X	
Maintenance/Operations			
Green Industry Relevance			
ASLA		GCC	X
ALCC	X	ISA	X
CALCP	X	RMSGGA	X
CGGA	X	WFC	
CNA	X		

Review advanced programming features such as multi-cycle irrigation to prevent run-off and the use of the percentage water increase/decrease function.

11. Explain to the end user (or owner) the location and operation of the controller, valves, sensors, pressure regulators, backflow prevention device and sprinkler heads. Educate the owner on features and capabilities of the system including the maintenance requirements.
12. Provide the end user (or owner) with recommendations for landscape water conservation.
13. Provide the end user (or owner) with product warranties and operating instructions for all equipment.
14. Within 60 days of installation of a new system and periodically as set by local standards, a field performance audit should be conducted using an accepted procedure such as the Certified Landscape Irrigation Audit technique from the Irrigation Association. The audit should check the performance of the system for conformance with local requirements including meeting the minimum precipitation rate and distribution uniformity (DU) standards and installation of all system components including appropriate sensors. The audit should also verify that the programmed irrigation schedule meets the water needs of the plants without wasting water. Provide the end user (or owner) with system specifications and a zone performance summary report that includes individual zone precipitation rates in inches per hour. The measured DU should be at least 90 percent of the design DU. A reference of each zone's precipitation rate should be retained at the controller.



**Ensure owners and operators understand the function and operation of water saving devices such as this rain sensor.**

Source: Stephen Smith, Aqua Engineering.

### **Regional or Industry Considerations/Adaptations**

1. Additional equipment protection may be necessary depending on site conditions. Extreme UV exposure, heat, wind or sub-zero temperatures may affect the equipment's service life.
2. Do not over-tighten a plastic-cased sprinkler onto the riser: it can crack the sprinkler body.
3. Be sure to "flush-out" the irrigation system after installation to ensure that rocks, debris and soil are removed so that the system functions efficiently.
4. When installing reclaimed water irrigation systems, be sure to provide appropriate cross-connection prevention devices and obtain appropriate inspections in accordance with the Colorado Department of Public Health and Environment Water Quality Control Commission *Regulation No. 84: Reclaimed Domestic Wastewater Control Regulation*.

### **Key References**

- Associated Landscape Contractors of America. 2003. *Landscape Irrigation Training*. Herndon, VA: ALCA.
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- City and County of Denver. 2000. *Denver Landscape Design and Maintenance Guidelines for Water Conservation on City Owned and Operated Properties*. Denver, CO: City.
- City of Colorado Springs City Planning. 1998. *Landscape Code and Policy Manual*. Colorado Springs, CO: City.
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- Colorado Nursery Association. 2001. *Colorado Certified Nursery Professionals Manual*. Denver, CO: CNA.
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- Smith, S.W. 1997. *Landscape Irrigation: Design and Management*. New York: John Wiley and Sons.