

# DESIGN AND CONSTRUCTION GUIDELINES AND STANDARDS

DIVISION 32 • EXTERIOR IMPROVEMENTS

## 32 80 00 • SITE IRRIGATION

### SECTION INCLUDES

Site Irrigation

### RELATED SECTIONS

07 45 00	Gutters and Downspouts
22 00 00	Plumbing
26 00 00	Electrical
31 00 00	Earthwork
32 12 00	Asphalt Paving
32 30 00	Site Improvements
32 90 00	Landscaping
33 00 00	Site Utilities

### INVESTIGATION

Site irrigation systems are advisable for large site improvement projects that include extensive areas of lawn and shrub/groundcover planting. Irrigation systems help ensure the survivability of plantings and help protect the owner's investment in plant materials. Site analysis and development of the preliminary site design program should include an assessment of the need for a site irrigation system.



Site analysis considerations include rainfall, wind patterns (evaporation), topography and soil characteristics (percolation and precipitation rates).

Plant selection should be made with site irrigation needs in mind. Native or drought-tolerant plant species require less water and would reduce the need for irrigation.

Identify areas on the site where irrigation would be appropriate.

Identify the water source. Explore alternative sources of water (effluent water, roof drainage and rainwater runoff, capture tanks, etc) and other means of water conservation. Develop a site water management plan.

Research local regulations governing water use. Determine permitting requirements. Some communities impose water bans or other rationing measures that may affect site irrigation during dry spells.

Obtain any signoffs that may be required by local water district board or other authorities having jurisdiction.

Determine static pressure in municipal water service lines at both high and low levels.

Note existing water meter size and the size and type of service line coming into the meter.

Calculate meter capacity and available working pressure.

Determine available electrical power supply.

Investigate local water and sewer rates based on meter readings.

Evaluate maintenance and potential vandalism considerations.

# DESIGN AND CONSTRUCTION GUIDELINES AND STANDARDS

DIVISION 32 • EXTERIOR IMPROVEMENTS

## 32 80 00 • SITE IRRIGATION

### DESIGN

Sprinkler systems (water distributed by sprinkler heads) are preferred for most areas.

Avoid drip/trickle systems (water distributed by permeable tubing, either on surface or below grade) since they require high maintenance and proper filtration to avoid clogging.



Provide separate meters for sprinkler systems.

Utilize non-potable water (roof runoff, “gray” water) whenever possible.

Design to the limit of water pressure and availability according to the most restrictive of the following criteria:

- Velocity of water in the service line should not exceed 5 fps.
- Pressure loss through the meter should not exceed 10% of the minimum static water pressure.
- Maximum gpm flow through the meter should not exceed 75% of the maximum safe flow as specified by the meter manufacturer and the American Water Works Association.

Install a pressure regulator when static pressure is greater than necessary for the sprinkler heads.

Use large radius heads and triangular spacing where possible to maximize efficiency.

Minimize areas of overthrow.

Do not mix different types of sprinkler heads on the same circuit.

Maintain consistent precipitation rates in the same sprinkler zone. Where fixed sprinkler heads are used, place fractional spray heads on different circuits from full circle heads and balance controls to equalize spray coverage. Where rotary heads are used, make sure that nozzles are sized and located appropriately to ensure consistent coverage. Rotary heads with fractional coverage will have a smaller nozzle size and a reduced radius than will full circle heads.

Locate controls in areas accessible only to maintenance staff.

Locate valves where they will be accessible for adjustment and maintenance. Avoid locations that are within spray range of sprinkler heads if possible.

Ball valves are preferred over gate valves for emergency shutoff.

Provide automatic drain valves at all low points in the system.

# DESIGN AND CONSTRUCTION GUIDELINES AND STANDARDS

DIVISION 32 • EXTERIOR IMPROVEMENTS

## 32 80 00 • SITE IRRIGATION

Allow for proper blowout of sprinkler lines at end of watering season.

Install backflow preventors at cross connections between sprinkler and potable water.

Provide rigid pipe sleeves for sprinkler lines under paved surfaces.

### MATERIALS

Use PVC pipe for subsurface distribution lines, class and size to be determined by design pressure ratings.

Polyethylene (PE) pipe may be used for lateral lines.

Use Type K copper pipe where sprinkler lines are exposed to sunlight.