

**LANDSCAPE AND IRRIGATION REGULATIONS FOR
THE CITY OF SAN MARINO**

DEFINITIONS:

APPLIED WATER: The portion of water supplied by the irrigation system to the landscape.

AUTOMATIC IRRIGATION CONTROLLER: An automatic timing device used to remotely control valves that operate an irrigation system. Automatic irrigation controllers schedule irrigation events using either evapotranspiration (weather-based) or soil moisture data.

BACKFLOW PREVENTION DEVICE: A safety device used to prevent pollution or contamination of the water supply due to the reverse flow of water from the irrigation system.

CERTIFICATE OF COMPLETION The documents required under Sections 23.16.05A, 23.16.05B and 23.16.05C of this Ordinance.

CHECK VALVE OR ANTI-DRAIN VALVE: A valve located under a sprinkler head, or other location in the irrigation system, to hold water in the system to prevent drainage from sprinkler heads when the sprinkler is off.

DRIP IRRIGATION: Any non-spray low volume irrigation system utilizing emission devices with a flow rate measured in gallons per hour. Low volume irrigation systems are specifically designed to apply small volumes of water slowly at or near the root zone of plants.

EMITTER: A drip irrigation emission device that delivers water slowly from the system to the soil.

ET ADJUSTMENT FACTOR: a factor of 0.7, that, when applied to reference evapotranspiration, adjusts for plant factors and irrigation efficiency, two major influences upon the amount of water that needs to be applied to the landscape.

EVAPOTRANSPIRATION RATE: the quantity of water evaporated from adjacent soil and other surfaces and transpired by plants during a specified time.

FLOW RATE: the rate at which water flows through pipes, valves and emission devices, measured in gallons per minute, gallons per hour, or cubic feet per second.

HARDSCAPES: For the purpose of Section 23.16 of the San Marino City Code, hardscape shall refer to any durable material. Durable material shall refer to a material that does not require water usage.

INFILTRATION RATE: The rate of water entry into the soil expressed as a depth of water per unit of time (e.g., inches per hour).

LANDSCAPE AREA: The entire lot, including, water features such as pools, spas, ponds, and fountains. “Landscaped Area” shall not include the building footprint, driveways, non-irrigated portions of parking lots, hardscapes such as decks and patios, and other nonporous areas.

LANDSCAPE DOCUMENTATION PACKAGE: The documents required under 23.16.06

LATERAL LINE: the water delivery pipeline that supplies water to the emitters or sprinklers from the valve.

LOW VOLUME IRRIGATION: The application of irrigation water at low pressure through a system of tubing or lateral lines and low-volume emitters such as drip, drip lines, and bubblers. Low volume irrigation systems are specifically designed to apply small volumes of water slowly at or near the root zone of plants.

MAIN LINE: The pressurized pipeline that delivers water from the water source to the valve or outlet.

MAXIMUM APPLIED WATER ALLOWANCE (MAWA): The upper limit of annual applied water for the established landscaped area as specified in these regulations. It is based upon the area’s reference evapotranspiration, the ET Adjustment Factor, and the size of the landscape area.

MULCH: any organic material such as leaves, bark, straw, compost, or inorganic mineral materials such as rocks, gravel, and decomposed granite left loose and applied to the soil surface for the beneficial purposes of reducing evaporation, suppressing weeds, moderating soil temperature, and preventing soil erosion.

OPERATING PRESSURE: the pressure at which the parts of an irrigation system are designed by the manufacturer to operate.

OVERHEAD SPRINKLER IRRIGATION SYSTEMS: Systems that deliver water through the air (e.g., spray heads and rotors).

OVERSPRAY: The irrigation water which is delivered beyond the target area.

PERVIOUS: surface or material that allows the passage of water through the material and into the underlying soil.

RAIN SENSOR OR RAIN SENSING SHUTOFF DEVICE: A component which automatically suspends an irrigation event when it rains.

RECYLCED WATER OR RECLAIMED WATER: Treated or recycled waste water of a quality suitable for non-potable uses such as landscape irrigation and water features. This water is not intended for human consumption.

RUNOFF: Water which is not absorbed by the soil or landscape to which it is applied and flows from the landscape area. For example, runoff may result from water that is applied at too great a rate (application rate exceeds infiltration rate) or when there is a slope.

SOIL MOISTURE SENDING DEVICE: A device that measures the amount of water in the soil. The device may also suspend or initiate an irrigation event.

SPECIAL LANDSCAPE AREA: An area of the landscape dedicated solely to edible plants, areas irrigated with recycled water, water features using recycled water and areas dedicated to active play such as parks, sports fields, golf courses, and where turf provides a playing surface.
SPRINKLER HEAD: A device which delivers water through a nozzle.

STATIC WATER PRESSURE: The pipeline or municipal water supply pressure when water is not flowing.

SWING JOINT: An irrigation component that provides a flexible, leak-free connection between the emission device and lateral pipeline to allow movement in any direction and to prevent equipment damage.

TURF: A ground cover surface of mowed grass. Annual bluegrass, Kentucky bluegrass, Perennial ryegrass, Red fescue, and Tall fescue are cool-season grasses. Bermuda grass, Kikuyu grass, Seashore Paspalum, St. Augustine grass, Zoysia grass, and Buffalo grass are warm-season grasses.

VALVE: A device used to control the flow of water in the irrigation system.

WATER FEATURE: A design element where open water performs an aesthetic or recreational function. Water features include ponds, lakes, waterfalls, fountains, artificial streams, spas, and swimming pools (where water is artificially supplied). The surface area of water features is included in the high water use hydrozone of the landscape area. Constructed wetlands used for on-site wastewater treatment or stormwater best management practices that are not irrigated and used solely for water treatment or stormwater retention are not water features and, therefore, are not subject to the water budget calculation.

LANDSCAPE DESIGN PLAN REQUIREMENTS

1. The Landscape Design Plan shall show the size, type and location of trees, shrubs, groundcovers, turf, etc.
2. Native vegetation and water-conserving plant and turf species are recommended.
3. Any type of landscaping may be proposed so long as the entirety of the proposed landscaped area does not require an amount of water in excess of the Maximum Applied Water Allowance.

- a. The Maximum Applied Water Allowance (MAWA) shall be calculated using the following equation:

$$\text{MAWA} = (\text{ET}_o)(0.62)[(0.7 \times \text{LA}) + (0.3 \times \text{SLA})]$$

Whereby:

MAWA = Maximum Applied Water Allowance (gallons per year)

ET_o = 52.3; Reference Evapotranspiration for Pasadena area

0.7 = ET Adjustment Factor

LA = Landscaped Area, includes Special Landscape Area (square feet)

0.62 = Conversion factor (to gallons per square foot)

SLA = Portion of the landscape area identified as Special Landscape Area (square feet) as defined in these regulations

0.3 = the additional ET Adjustment Factor for Special Landscape Area

4. Show Hardscape locations. Include impervious coverage calculations for the front yard area.
5. Show water features, if any.
 - a. Recirculating water systems shall be used for water features.
 - b. The surface area of a water feature shall be included as a landscaped area in the MAWA calculation.
6. Include a notation that a minimum two (2") inch layer of mulch shall be applied on all exposed soil surfaces of planting areas except in turf areas, creeping or rooting ground covers, or direct seeding applications where mulch is contraindicated.

IRRIGATION PLAN REQUIREMENTS

1. Automatic irrigation controllers utilizing either evapotranspiration or soil moisture sensor data shall be required for irrigation scheduling in all irrigation systems.
2. The irrigation system shall be designed to ensure that the dynamic pressure at each emission device is within the manufacturer's recommended pressure range for optimal performance.
3. Rain sensors, either integral or auxiliary, that suspend or alter irrigation operation during unfavorable weather conditions shall be required on all irrigation systems, as appropriate for local climatic conditions.
4. Manual shut-off valves shall be required, as close as possible to the point of connection of the water supply, to minimize water loss in case of an emergency or routine repair.

5. Backflow prevention devices shall be required to protect the water supply from contamination by the irrigation system.
6. The irrigation system shall be designed to prevent runoff, low head drainage, overspray, or other similar conditions where irrigation water flows onto non-targeted areas, such as adjacent property, non-irrigated areas, hardscapes, roadways, or structures.
7. Relevant soil information such as type and infiltration rate, shall be utilized when designing irrigation systems.
8. The design of the irrigation system shall conform to the hydrozones of the landscape design plan.
9. The irrigation system must be installed to meet the minimum irrigation efficiency criteria regarding the Maximum Applied Water Allowance.
10. In mulched planting areas, the use of low volume irrigation is required to maximize water infiltration into the root zone.
11. Sprinkler heads and other emission devices shall have matched precipitation rates, unless otherwise directed by the manufacturer's recommendations.
12. Sprinkler spacing shall be designed to achieve the highest possible distribution uniformity.
13. Check valves or anti-drain valves are required for all irrigation systems.
14. Narrow or irregularly shaped areas, including turf, less than eight (8) feet in width in any direction shall be irrigated with subsurface irrigation or low volume irrigation system.
15. Overhead irrigation is not permitted within 24 inches of any non-permeable surface. Allowable irrigation within the setback from non-permeable surfaces may include drip, drip line, or other low flow non-spray technology.

GRADING PLAN:

1. To prevent excessive erosion and runoff, it is highly recommended that project applicant:
 - a. grade so that all irrigation and normal rainfall remains within property lines and does not drain onto non-permeable hardscapes;
 - b. avoid disruption of natural drainage patterns and undisturbed soil;
 - c. and avoid soil compaction in landscape areas.
2. The grading design plan shall contain the following statement: "I have complied with the criteria of the ordinance and applied them accordingly for the efficient use of water in the grading design plan" and shall bear the signature of a licensed professional as authorized by law.