

G2050– Landscaping

G2050 Landscaping	MasterFormat No.	Title
G2057	32 84 00	Irrigation System

G.2050 LANDSCAPING

32 84 00 IRRIGATION SYSTEM

A. Purpose

1. This Section describes the guidelines necessary to provide an irrigation system. The purpose of an irrigation system is to provide supplemental water when rain is not sufficient to maintain turf and landscape for its intended purpose. A quality irrigation system and its proper management are required to distribute supplemental water in a way that adequately maintains plants while conserving and protecting water resources and the environment, maintaining a healthy and functional landscape without exceeding the water requirements of the landscape. The design team should discuss the possibility of using grey water for the irrigation system with the UAB Project Manager, Manager of Energy Management, and Manager of Campus Services and Grounds during the early phases of design. It is the responsibility of the architect/engineer/contractor to apply the principles of this section such that the University may achieve a level of quality and consistency in the design, operation, and construction of their facilities.

B. Requirements

1. Systems shall include design features that promote efficiency and uniform distribution of water, including drip systems.
 - a. Sprinkler spacing shall be “head to head”
 - b. There shall be separate station zones for turf/lawn areas and for shrubs/flowerbed/tree areas
 - c. Design features should incorporate components or controls that keep water off paved areas, fences, the sides of buildings, and adjoining properties
 - d. There shall be separate station zones for sprinklers at the top and toe of sloped areas.
2. All irrigation plans shall state existing static pressure at meter or point of connection. All irrigation plans shall include a System Performance Information Chart that provides the following information for each control valve;
 - a. Valve brand
 - b. Model number and size
 - c. Irrigation head brand and model number
 - d. Irrigation nozzle size
 - e. Irrigation head spacing
 - f. Irrigation head gallons-per-minute
 - g. Total gallons-per-minute
3. At the time of final acceptance, the contractor shall provide a set of “as-built drawings”. These drawings shall be accurate and to scale. The contractor shall also provide and install (in the controller enclosure) a legible reduction of as-built drawings, laminated in plastic.
4. All items must meet City of Birmingham regulations.
5. Pipe sizing shall be designed so that the velocity of water moving through the irrigation pipes does not exceed state and local requirements, or the industry standard of five (5) feet per second. Pipe sizing shall ensure that the variation of

- operating pressure among heads within any station zone does not exceed 10%.
6. The irrigation system shall be designed to minimize installation and maintenance difficulties. The selection and placement of sprinkler components should be guided by the expected size of larger specimen plants through the three-year establishment period. The irrigation designer should obtain direct knowledge of site conditions and not rely solely on plot plans to generate design. Designs should place a high priority on avoiding surface runoff. Ideally, sprinkler components shall be selected to keep the sprinkler precipitation rate below the infiltration rate of the soil.
 7. The following water-conserving concepts and equipment should be studied and incorporated to mitigate the effects of wind:
 - a. Low-trajectory sprinkler nozzles along with the appropriate modified head spacing
 - b. Check valves or heads equipped with check valves to minimize low head drainage
 - c. Pressure regulators or pressure compensating screens
 - d. Stem nozzles to control high pressure
 - e. A controller that has a minimum multi-program capability with at least four (4) start/run time adjustments in one-minute increments, and soil moisture monitoring
 - f. A controller that allows scheduling and advanced water management features such as water budgeting.
 8. From the final acceptance of the system, the contractor will guarantee all parts, materials, and workmanship for a minimum of one year.
 9. A master valve shall be utilized.
 10. A flow sensor shall be installed after the master valve.
 11. Independent sites shall not share a backflow with another independent property unless approved by the Manager of Campus Services and Grounds.

C. Products

1. This All materials shall be new and of best quality available. Manufacturers shall be clearly marked on all materials. The selection of all irrigation products, brands and models shall be approved by the UAB Campus Services and Grounds Manager. See Grounds Manager for a list of products, brands and models that are approved.
2. Any isolation or point of connection valves greater than 2 inches shall be brass ball valves smaller than 2 inches may be plastic ball valve; gate valves shall not be used. Fittings on PVC lines as well as cements and primers shall conform to American Society of Testing Materials (ASTM) requirements. Threaded PVC nipples shall be schedule 80 molded PVC pipe. Thread sealing compound shall not be used on threaded connections between sprinkler head and nipple. Sprinkler heads with ½" or ¾" bottom inlet may use swing pipe with appropriate fittings. Heads with 1" or larger inlets will use unitized swing joints. Mainline pipe from point of connection to zone valves shall be schedule 40 PVC. Zone lines shall be Class 200 PVC pipe unless otherwise required by code.
3. Control wire shall be two wire solid copper, PVC insulated, minimum size not to exceed acceptable voltage drop, UL approved for irrigation control use.
 - a. Omit shall be green
 - b. Common shall be white

- c. Control wires shall be of any color other than white 18 AWG multi strand control wire

Two wire shall be fed into the controller to facilitate easier wiring of the controller. The multi strand two wire is to be spliced to primary control wire in a valve/splice box as close to the controller as is practical. All wire splices shall be made watertight using 3M DBR/Y-6 Direct Bury Splice Kit..

- 4. All systems shall include a reduced pressure backflow prevention device and a secondary water meter of sufficient size to handle the designed irrigation system. Pressure regulators shall be installed as needed.
- 5. All irrigation controllers shall be central computer and smart phone controllable.

D. Execution

- 1. The protection of all water sources shall be in accordance with state and local requirements.
- 2. All mainline pipe and valves shall be installed at a depth between 12" and 18". All zone line pipes shall be installed at a depth of 12". Pipes sharing the same trench shall have a minimum horizontal and vertical separation of 4".
- 3. All valves shall be installed in valve boxes of sufficient size to cover the ball valve and electric valve in order to be able to perform routine maintenance on valves. Valve connectors shall include a 24" wire expansion coil to facilitate raising splices to ground level without cutting wires. All electric valves shall have ball valves before the electric valve in order to facilitate zone isolation.
- 4. Trench backfill materials shall be free from rocks, large stones, brush, sod, frozen materials, pipe debris, trash, or other unsuitable substances that may damage pipe during backfilling operations. Backfill shall be placed in horizontal layers not exceeding 6" in depth, and shall be thoroughly tamped to near original density or so that no settling will occur. Unless otherwise noted, any sleeves used shall be piped two (2) sizes larger than the pipe being 'sleeved'. Wires shall be 'sleeved' separately.
- 5. Sprinkler heads shall be installed with a 2" space between the edge of the head and curbs, walls, sidewalks, driveways, etc. All heads must be spaced for head-to-head throw. Unless noted otherwise, all heads shall be set at a perpendicular to finish grade. The top of all valve boxes shall be flush with the finish grade.
- 6. Control valve wiring shall be a two wire system and installed in the same trench as the irrigation main line. All wire shall be laid below the pipe. The wire shall be laid loose in the trench. Wire splices, other than at valve box locations, shall be kept to a minimum and placed in a wire splice box using watertight connectors and 24" expansion coils. Irrigation controller shall not be installed inside of buildings.
- 7. Concrete thrust blocks shall be provided where necessary to resist system pressure; at all direction changes, size changes, valves, and termination, and any other points that result in a unbalanced thrust line for equipment 2 1/2" or larger.
- 8. Dripline systems must be filtered (preferably with stainless steel filters) and have pressure regulators. Flush caps shall be placed at the end of each lateral line. Use dripline systems for shrubs, bubblers for trees, spray heads for flowers, and spray and rotor heads for turf. Xeri pop micro spray head should be installed beside each and every dripline zone valve box. Reduced pressure backflow prevention devices shall have a ball valve installed between the potable water supply and the reduced

pressure assembly, unions at minimum of 4 inches above grade on both legs of the reduced pressure assembly, and freeze protection to include a freeze protection enclosure, a GFI plug 18 inches above grade used for a heat tape application to the reduced pressure assembly.

9. Controllers must be two wire systems, installed outdoors, be integrated with computer software and smart phone technology, have soil moisture sensor capability, have a raincheck shut off, have flow control sensors at each master valve, and be connected to a weather station.
10. Before execution is complete, all installed irrigation is to be visually inspected and approved before backfilling. Inspection shall be performed by the Grounds Manager or Supervisor.

Revision Request Form - Electrical Construction Standards

Date: _____

Requestor: _____

Department/Consultant: _____

Project Number & Name: _____

EXISTING ELECTRICAL STANDARD

Section Number & Name: _____

Section Revision Number: _____ Section Paragraph: _____

(ENTER CURENT SECTION LANGUAGE BELOW)

REQUESTED REVISION REQUEST

(ENTER REVISION SECTION LANGUAGE BELOW)- **Identify if request will be permanent to standards or for the referenced project.**

JUSTIFICATION FOR REVISION

FOR UNIVERSITY OF ALABAMA AT BIRMINGHAM USE ONLY

UAB Staff Requestor: _____

Authorized UAB Approval Personnel: _____ Date: _____

Status: Rejected Accepted

Revise and Resubmit (see attachment)