PART 1 - GENERAL

[Note to AE: Coordinate controls and power requirements of this Section with the Electrical Drawings.]

1.1 RELATED SECTIONS/DOCUMENTS
   A. Section 32 91 19.13 – Topsoil Placement and Grading

1.2 SUBMITTALS
   A. Samples:
      1. Submit the following to the Owner at the same time manufacturers’ brochures are submitted:
         a. 12 inch long section of each size and type PVC pipe
         b. 12 inch long section of copper tube
         c. One of each type of PVC and copper fittings
         d. One each shrub spray head, pop-up spray heads, pop-up gear drive sprinklers, remote electric control valves, quick coupler, PVC ball valve, check valve and swing joint.
   B. Shop Drawings:
      1. Submit shop drawings for underground irrigation system, including plan layout and details illustrating location and type of heads, valves, piping circuits, controls, and accessories.

PART 2 - PRODUCTS

2.1 MATERIALS
   A. Pipe, General: Comply with following:
      1. PVC plastic pipe, ASTM D 1785, Schedule 40.
      2. Seamless copper water tube, ASTM B 88, Type “M”, drawn temper.
   B. Pipe Fittings: Comply with following:
      1. For PVC plastic pipe, ASTM D 2466 socket fittings with ASTM D 2564 solvent cement.
      2. For copper tubing, ANSI B16.22 wrought copper or cast brass, recessed solder joint type fittings.
C. Valves: Manufacturer's standard, of type and size indicated, and as follows:
   1. Provide cast bronze bodies, unless otherwise indicated.
      a. Furnish 2 valve keys, 3 feet long with tee handles and key end to fit valves.
   5. Automatic Drain Valves: Designed to open for drainage when line pressure drops below 3 psi.

D. Backflow Preventer: Reduced pressure principle backflow preventer assembly shall be Ames, Wilkins, or Watts.

E. Sprinkler Heads: Manufacturer's standard unit designed to provide uniform coverage over entire area of spray shown on drawings at available water pressure, as follows [Note to AE: Include 2 additional Owner-approved manufacturers for each item]:
   1. Polyethylene Drip Tube: Laser Soaker Tube, Model LSL-6 as manufactured by Pepco
   2. Emitter/Bubbler: Quadra-Bubbler, as manufactured by Pepco.
   3. Lawn Spray Heads: No. 35P-400 by Weathermatic.

F. Valve Box: Precast concrete.

G. Valve Cover and Frame: Cast iron with provision for locking.

H. Drainage Backfill: Cleaned gravel or crushed stone, graded from 3 inch maximum to 3/4 inch minimum.

2.2 AUTOMATIC CONTROL SYSTEM

A. General:
   1. Control system shall include complete multiple station remote control package.
   2. Ground rod shall be a copper coated steel rod or as per local code. Length and diameter as per local code. Ground wire shall be 6 gauge uncoated copper Buss wire. Clamps shall be compatible with rod and wire.

B. Controller shall be electro-mechanical/solid state controller.

C. Control Enclosure: Manufacturer’s standard weatherproof enclosure with locking cover, complying with NFPA 70 (National Electric Code).
D. Interior Control Enclosure: Manufacturer’s standard with locking cover, complying with NFPA 70.

E. Transformer: To convert building service voltage to control voltage of 24 bolts.

F. Circuit Control: Each circuit variable from approximately 5 to 60 minutes. Include switch for manual or automatic operation of each circuit.

G. Connectivity: Controller to be enabled for remotely accessible and control, via wireless capability.

H. Weather related controls: Controller to have at minimum a freeze/rain shut off. Controller should also be connected to a localized weather station or have connection to an internet provided weather system. A soil moisture probe may also be incorporated if deemed beneficial by the user.

I. Timing Device: Adjustable, 24 hour and 7 or 14 day clocks to operate any time of day and skip any day in a 7 or 14 day period.
   1. Allow for manual or semi automatic operation without disturbing preset automatic operation.

2.3 MINIMUM WATER COVERAGE

A. Turf areas, 95 percent

B. Other planting areas, 85 percent

PART 3 - EXECUTION

3.1 TRENCHING AND BACKFILLING

A. Minimum Cover: Provide following minimum cover over top of installed piping:
   1. Copper tubing, 12 inches
   2. PVC piping, 20 inches

B. GPS Data Collection: The contractor shall contact the Facilities & Services project representative a minimum of 24 hours prior to backfilling any underground utility installation exterior to the building including excavation for maintenance and/or repair of an existing utility for the purpose of GPS data collection.

C. Refer to Section 32 91 19.13 – Topsoil Placement and Grading for backfill requirements.

END OF SECTION 32 84 23

THIS SECTION OF THE U OF I FACILITIES STANDARDS ESTABLISHES MINIMUM REQUIREMENTS ONLY.

It should not be used as a complete specification.