

SECTION 02810  
UNDERGROUND IRRIGATION SYSTEM

PART 1 GENERAL

1.1 SCOPE

- A. Provide all labor, material, equipment and services required for the installation of irrigation system as described in the specifications and on the plans.
- B. Specifications are intended to include everything required and necessary for proper installation of the irrigation system whether each item is mentioned or not, and Contractor is expected to provide for a complete working system.
  - 1. Size the irrigation zones so that the irrigation pumps are able to supply a full irrigation cycle (flow and volume) for the entire area within a 12 hour period.
  - 2. Coordinate closely with the Architect and the Florida Tech Project Representative for consideration as to the Irrigation System requirements due to the up-coming availability of the City of Melbourne Re-Use Water.
- C. Execute all work in accordance with all applicable, ordinances, laws, regulations, codes, and

- B. The Contractor shall furnish copies of all parts list, trouble shooting lists, manufactures' specification or catalog sheets to the Owner and the Architect as a prerequisite to final payment.

1.7. SUPERVISION

- A. Contractor shall provide a competent superintendent and any necessary assistants on the project when work is in progress.
- B. Contractor shall notify the Owner of any change in the job Superintendent's status on the job
- C. Superintendent shall supervise Contractor's employees and is responsible for their actions and conduct on job site.

1.8. PROTECTION OF WORK AND PROPERTY

- A. Contractor shall continuously maintain adequate protection of all his work from damage and shall protect Owner's property from injury or loss arising in connection with his work.
- B. Contractor shall avoid damage to any existing construction, equipment, piping, pipe coverings, electrical systems, sewers, sidewalks, landscaping, or any other above ground or underground installations or structures on Owner's or adjacent property and is responsible for any damage that occurs as a result of his work as provided and required by law.

1.9. CLEANING PREMISES

- A. Contractor shall keep the construction area of the system neat and orderly at all times, providing continual disposal of rubbish and waste material resulting from installation.
- B. Upon completion of the system, Contractor shall remove from property, at his own expense, all temporary structures, rubbish, and waste materials resulting from installation.

1.10. SUBMITTALS

- A. Provide submittals in accordance with section 01300.
- B. The Contractor shall submit shop drawings and product data to the Architect and Owner:
  - 1. Indicating the actual layout of the well, pump pad and pumping equipment, piping, control equipment, rain sensor, and other irrigation pump station accessories.
  - 2. All technical data and installation instructions for underground system components.
  - 3. The Owner and Architect shall approve the shop drawings prior to start of work.
- C. The Contractor shall maintain an up to date set of as-built drawings.
  - 1. Showing the location of well, pump, sprinkler heads, valves, controller, piping, and any other deviations from the original Architect plans.
  - 2. Show all mainline isolation valves, splice boxes, and remote control valve locations with accurate dimensions to identifiable reference points.
  - 3. Complete set of reproducible as-builts of the installed irrigation system upon completion.

1.11. RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 specification sections, apply to work in this section.
- B. Section 02200, Earthwork.

PART 2 PRODUCTS

2.1. GENERAL

- A. Use all new materials with out flaws or defects of any type in the system, having a minimum one-year guarantee against material defects or defects in workmanship.
- B. Owner shall approve any Contractor substitution of material prior to installation.
  - 1. Contractor shall supply product specifications/data sheets and material samples, and reason for proposed substitution.

2.2. PVC PIPE AND FITTINGS

- A. Provide continuous marking on all pipes indicating manufacturer, type, class, and size.
- B. Provide pipe and fittings color coded purple when available, or standard white if not available in purple.
- C. Fittings to be Schedule 40 color coded purple when available, or standard white if not available in purple.

2.3. SWING JOINTS AND RISERS

- A. All 1/2" swing joints shall be flexible thick-walled polyethylene pipe, with inside diameter of approximately 0.490" and outside diameter of approximately 0.700", and withstand a 400 psi burst test. All fitting shall be barbed and for use with the installed polyethylene pipe.
- B. All 3/4 and larger swing joints shall be schedule 80 nipples and street elbows of the same size inlet of the sprinkler head threaded together with Teflon (TFE) tape or liquid Teflon.
- C. All swing joints nipples and elbows shall be the same size as the inlet of the irrigation head.

2.4. ELECTRIC WIRING

- A. All electrical work shall conform to applicable building and electric codes.
- B. All electrical components shall be UL listed.

2.5. CONTROL LINES

- A. Electrical control wiring:
  - 1. All control and ground wire shall be irrigation control cable of size as per manufacturer con

- 2. Acceptable substitutes for K Rain Proplus series heads are Toro S700C series or Hunter PGP series.
- B. The head type and performance of all nozzles shall be similar to those shown on the plans.
- C. All sprinkler nozzles shall perform to the manufacturer's specifications concerning diameter of throw and gallon-age at given pressure.
- D. Unless noted, adjustable pattern nozzles are not allowed.

2.7. GATE VALVES AND VALVE BOXES

- A. Gate valves and isolation valves shall be AWWA brass body 125-pound wedge disc gate valves with non-rising stems as manufactured by Nibco, Matco Products Inc, or Grinnell.
- B. Provide a rigid injection molded polyefin valve box of 3.400 psi tensile strength approximately 10" deep x 12" diameter at base and have 9" diameter opening at the top with a purple twist lock cover fitting flush with top of box to mainline gate valve.

2.8. LIGHTNING PROTECTION

- A. Install lightning protection in accordance with the controller manufacturer's requirements to protect the automatic controllers.

2.9. CONTROL EQUIPMENT

- A. Automatic controller a Rainbird, model number ESP-24SITE-P, mounted on the pump station.
- B. Automatic control valves shall be Irritrol series 100.
  - 1. Remote control valves shall be electric and compatible with irrigation controller.
  - 2. Provide a rigid injection molded polyefin valve box of 3.400 psi tensile strength approximately 12" deep x 13¼" x 18½" at base and having a 10¼" x 15½" opening at the top with a green lockable cover fitting flush with top of box for each remote control valve. Locking mechanisms shall be two acetal spring locks requiring an unlocking device to open, but not close

2.10. RAIN SENSORS

- A. The rain sensors shall be "mini-clip II", Model 502 by Glen Hilton products, Inc., Aquamiser by Glen Hilton, or Toro Rainswitch.
  - B. The Contractor shall provide all labor and materials required to install the rain sensing equipment.
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4" & larger

24"

- C. Excavate trenches to a sufficient depth and width to provide for a minimum of 6" of separation between parallel or crossing pipelines.
- D. It is the responsibility of the Contractor to determine exact location of existing underground





- A. A licensed electrical contractor having experience in the installation of similar equipment shall install all electrical work including but not limited to rain sensors, automatic controllers, and pump starter per all applicable codes and regulations.

### 3.9. RAIN SENSORS

- A. The Contractor shall install the rain sensors as per the manufacturer's recommendations.
- B. Locate the rain sensors in a position where rain will freely fall on the equipment, and are not affected by irrigation water.
- C. The Contractor shall make adjustments to the rain sensing equipment as required to properly adjust for the newly installed plant materials and <sup>after obtain</sup>

### 3.14. CHEMICAL INJECTION EQUIPMENT

- A. The Contractor is responsible for the submittal to the Architect and Owner of a water analysis showing the amount of soluble iron present in the well. The Architect and Owner will make a determination as to the necessity of the installation of the rust inhibitor equipment.
- B. If required, install the rust inhibitor unit per the manufacturer's recommendations.
  - 1. The Contractor shall provide and install the proper