

SECTION 02810 - IRRIGATION SYSTEM

PART 1 – GENERAL

1.1 SCOPE OF WORK

- A. The Contractor shall provide services, labor, materials, transportation, supervision, and equipment necessary to perform the irrigation work specified herein to include areas as defined by the Landscape Irrigation Plans. The Contractor shall modify the existing irrigation system per plans to provide a fully operable landscape irrigation system.
- B. The irrigation work shall include all work shown on plans including, locating and verification of existing equipment, trenching and backfilling, installation, testing and inspection, clean-up and maintenance of the irrigation system. New irrigation system components include, but are not necessarily limited to: piping, sleeving, refitting of existing system to support new planting, all fittings and wiring as required.

1.2 GENERAL REQUIREMENTS

- A. Applicable sections of the general requirements are mandatory except as modified by the District.

1.3 DIAGRAMMATIC DRAWINGS

- A. Due to the scale of the Drawings, it is not possible to indicate offsets, fittings, etc. which may be required. Also, for clarity and legibility, equipment cannot be drawn to scale, but is shown in its approximate location, unless otherwise stated. Irrigation lines must be field-located and size verified prior to commencing work. The Contractor shall proceed so no conflicts between the irrigation system, planting, and architectural features result from the installed system.

1.4 IRRIGATION SYSTEM

- A. See Drawings for diagrammatic irrigation design.

1.5 SUBMITTALS

- A. Submit manufacturer's data and specifications for products and materials to be installed under this Section. Where manufacturer's data is not available, affidavits and certificates of compliance which state products and materials comply with these Specifications shall be acceptable.

- B. As-Built record prints to the District upon completion of work.
- C. Manufacturers installation instructions shall be included with product and material submittals.

PART 2- PRODUCTS

2.1 MATERIALS

- A. Required products not listed by manufacturer and model number shall comply with the recommendations of the product manufacturer which this product connects to in the installation and per Section 1.5

PART 3- EXECUTION

3.1 COORDINATION

- A. Coordinate work within this section with other trades.

3.2 PREPARATION

- A. A pre-construction meeting with the General Contractor and the Architect is required for discussion and clarification of the following:
 - 1. Site and job conditions
 - 2. Safety
 - 3. Scope of work
 - 4. Trenching and backfill operations
 - 5. Pipe laying, inspection, and testing requirements
 - 6. Certification, submittals and acceptance requirements
 - 7. Protection of existing improvements and utilities
 - 8. Repair of existing improvements not scheduled for removal
 - 9. Disposal of surplus earth materials to approved disposal site(s)
 - 10. Coordination with water main Contractor
 - 11. Coordination of temporary interruption of utility service
- B. Protection of Existing Utilities: Protect existing utilities not scheduled to be removed. The Contractor shall determine the exact location and size of existing utilities before commencing work. The Contractor agrees to be fully responsible for damages which might be occasioned by the Contractor's failure to exactly locate and preserve the indicated underground utilities which are shown on the Grading and Utility plans herein.

3.3 EXCAVATION

- A. The Contractor shall do necessary excavation for the proper installation of this work.
- B. Trenches for pipes shall be straight with uniform bottom, and of sufficient width and depth to allow installation of fittings, and equipment as specified by the manufacturer.
- C. Boulders and other debris shall be entirely removed or cut out to the width and depth of the trench. No rocks, pebbles or finds larger than 1/4" in diameter shall be allowed.
- D. Trenching at hardscape elements: Use caution where trenches and piping cross existing roadways, sidewalks, hardscape, paths, or curbs.

3.4 PIPE AND FITTINGS

- A. Main line Schedule 40 PVC sizes to 1 1/2", Class 315 PVC for 2" or larger.
- B. Threaded Pipe: Schedule 80 PVC.
- C. Fittings: Schedule 40.
- D. Pipe shall be installed per manufacturers written installation instructions.
 - 1. Piping shall be laid accurately to the line and grade required, with full bearing on the trench bottom.
 - 2. No pipe shall be laid on soft fill or other unstable material.
 - 3. Pipe interiors shall be clear of foreign matter before installation and shall be kept clean by means of plugged or capped ends after lowering into the trench.
 - 4. For solvent welded joints use only cements and primers recommended for specific plastic being installed.

3.5 CONTROL WIRES

- A. Control wiring shall be direct burial, solid copper U.F. type, of size as specified by the valve manufacturer for each run. Minimum size is 14 gauge.
- B. Common wiring shall be white. Control wiring shall be red, yellow, green, blue, orange, and black, and shall alternate between stations.
- C. A minimum loop of eighteen (18) inches shall be provided at each valve, change of direction, every five-hundred (500) feet on straight runs and at each controller.

- D. Splices shall only be allowed at valve connections and shall be watertight and leak-proof.
- E. Multiple wires in the trenches shall be taped together at ten (10) foot intervals. Where occurring in common trench with pipes, wires shall be taped to the pipe. Wires under pavement shall be placed in a PVC sleeve. Do not tape sleeved wires together or to piping.

3.6 IRRIGATION EQUIPMENT

- A. Equipment shall be installed as recommended by the manufacturer if not noted on the Drawings.
- B. Valve Boxes: Provide concrete valve boxes with locking cast iron lids for gate valves within paving. Master valves, electrical control valves, gate valves, flow sensors, and quick coupler valves in landscaped areas shall be placed in plastic valve boxes as directed in details. The controller and station number shall be embossed into the lids of remote control valve boxes. Remote control valves shall be tagged with their controller designation and station number.
- C. Back Flow Prevention Device: Reduced pressure principal back flow assembly shall consist of an approved brass or bronze body, two (2) brass check valves, hydraulically actuated relief valve, inlet and discharge shutoff ball valves, four (4) field test cocks, unions, and the required amount of piping.
- D. Irrigation Controllers shall consist of a wall mounted, weather tight, vandal resistant, stainless steel enclosure.

3.7 FLUSHING

- A. Following installation of pressure supply line, a full head of water shall be used to flush out the system.

3.8 PRESSURE TESTING

- A. With valves in place and main line capped, the system shall be brought to 150 PSI and gauged at its highest point for twenty-four 24 hours. If pressure losses occur, the leaks shall be repaired and the pressure test repeated until no leaks occur. The pressure test shall be begun with the Landscape Architect or his representative present. The Landscape Architect or his representative shall be present after the 24 hour period to validate this and subsequent tests.

3.9 BACKFILLING

- A. As soon as the work has been installed and approved, excavations shall be filled with fine earth materials, free from clods, rocks and large organic matter.
- B. Settling shall be corrected so that the excavated areas remain at the same grade as adjacent areas.
- C. Disturbed areas, whether planting or paving, shall be returned to their original condition or as directed by the Architect.

3.10 GUARANTEE

- A. The main line system shall be guaranteed by the Contractor as to material and workmanship, including settling of excavations for a period of one (1) year from the date of final acceptance of work.
- B. Warranties, either implied or written, by the manufacturer, do not relieve the Contractor of his/her responsibility for the guarantee period.

3.11 AS-BUILT DRAWINGS

- A. The Contractor shall be responsible for making a set of construction prints and recording work accomplished for that day on the prints in red ink. Prior to completion of the entire project, a final set of as-built drawings on bond paper shall be completed, (2) hardcopy sets and a scanned digital copy in PDF format of all drawings shall be provided to the District. These drawings shall indicate the following:
 - 1. Dimension from two (2) permanent points of reference (building corners, fixed hardscape corners, road intersections, permanent existing utilities) the location of the following items: Connection to existing water lines, routing of pressure supply lines at 100 ft. intervals or closer as necessary to provide accurate routing, gate valves, quick coupling valves, control wire routing (if separate from main lines), back flow prevention devices, water meters, controllers, and other equipment as directed by the Architect.
- B. Final As-Built plans shall be submitted to the District's approved representative and the Architect for review and approval.

3.12 MAINTENANCE PERIOD

- A. The Maintenance Period for the main line system shall extend to one year from the date of acceptance of work by the District's authorized representative and the Architect. The Contractor shall warrant materials against defects and guarantee workmanship for the Maintenance Period as specified and for coordinating warranty

items with the manufacturer/distributor and District. Settlement of trenches, which may occur during the maintenance period, shall be repaired by the Contractor at no cost to the District.

- B. Maintenance Walk-Through: Prior to a release of responsibility at the end of the maintenance period, the Contractor shall schedule a walk-through with the District and Landscape Architect.

3.13 QUALITY CONTROL

- A. Verify materials conformance with Landscape Architect.
- B. Verify location of equipment with Landscape Architect.
- C. Verify satisfactory completion of work with Landscape Architect, including proper operation of equipment, system coverage, and job clean-up.
- D. Verify satisfactory completion of As-Built Drawings.

END OF SECTION