SECTION 32 80 00

IRRIGATION

PART 1 - GENERAL

1.01 DESCRIPTION

- A. This Section includes irrigation piping, valves, sprinklers, specialties, controls, and wiring required by Code and the County / City of Los Angeles.
- B. Provide complete irrigation system in accordance with Landscape conceptual design.

1.02 SYSTEM PERFORMANCE REQUIREMENTS

- A. Minimum Water Coverage: 100-percent of turf and planting areas.
- B. Location of Sprinklers and Specialties: As determined by the Developer Design/Builder.

1.02 SUBMITTALS

- A. Product Data: Include pressure rating, rated capacity, settings, and electrical data for water regulators, water hammer arresters, valves, valve boxes, sprinklers, specialties, and controllers.
- B. Shop Drawings: Show irrigation sprinkler piping, including plan layout and locations, types, sizes, capacities, and flow characteristics of piping components. Include water meters, backflow preventers, valves, piping, sprinklers and devices, accessories, controls, and wiring. Show areas of sprinkler spray and overspray.
- C. Maintenance Data: Include data for water regulators, automatic control valves, sprinklers, specialties, and controllers.
- D. Record and As-Built Drawings: Show location of connection to existing water lines, connection to existing electrical power, gate valves, routing of sprinkler pressure lines, sprinkler control valves, routing of control wiring, and quick coupling valves. Include controller charts showing the area controlled by the automatic controller.

1.03 QUALITY ASSURANCE

A. Irrigation system shall be in compliance with applicable requirements of local, municipal and state ordinances, rules, and regulations.

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Protect flanges, fittings, and specialties from moisture and dirt.
- B. Store plastic piping protected from direct sunlight. Support to prevent sagging and bending.

1.05 PROJECT CONDITIONS

A. Investigate and determine available water supply water pressure and flow characteristics.

1.06 SEQUENCING AND SCHEDULING

- A. Maintain uninterrupted water service to existing buildings during normal working hours. Arrange for temporary water shutoff with the County's Representative.
- B. Coordinate piping with site utility work.

PART 2 - PRODUCTS

- 2.01 MATERIALS
 - A. PVC Pressure Main Line Pipe and Fittings: NSF approved Schedule 80 PVC pipe with solvent-weld fittings.
 - B. PVC Non-Pressure Lateral Line Piping: NSF approved Schedule 40 PVC pipe with solvent weld fittings.

- C. Copper Pipe and Fittings: Type K copper pipe, hard temper, cold drawn, with wrought copper or cast brass solder sweat type fittings.
- D. Quick Coupling Valves: Brass two-piece body designed for working pressure of 150-psi operable with quick coupler.
- E. Electrical Control Valves: Equip with manual flow adjustment.
- F. Check Valves: Anti-drain valves shall be of heavy duty PVC construction with F.I.P. thread inlet and outlet. Internal parts shall be stainless steel.
- G. Backflow Prevention Unit: Provide as required by code.
- H. Control Wiring:
 - 1. Wiring in Soil: Connections between the automatic controllers and the electric control valves shall be made with direct burial copper wire AWG-U.F. 600 volt. Install in accordance with valve manufacturer's specifications and wire chart. In no case shall wire size be less than #14.
 - 2. Wiring in Conduit: Copper TW wire with UL approval, size 14 AWG-1.
- I. Automatic Controllers: Size and type required. Final location as approved by the County's Representative.
- J. Control Valve Boxes: Carson Industries 1419-12B or approved equal with green bolt down cover.
- K. Sprinkler and Bubbler Heads: Provide heads of size, type, and spray pattern as required for full coverage.

PART 3 - EXECUTION

3.01 EXCAVATION

- A. Exercise care in excavating and working near existing utilities.
- B. Trenching: Dig trenches straight and support pipe continuously on bottom of trench. Provide 24-inch minimum cover for pressure supply lines under paving and 18-inch cover in planted areas. Provide 12-inch minimum cover for non-pressure lines. Provide 18-inch minimum cover for control wiring.
- C. Backfilling: Do not backfill trenches until required tests are performed. Backfill trenches with the excavated materials.
 - 1. Trenching and Backfill in Landscape Areas: Mechanically compact backfill in landscaped areas to a dry density equal to adjacent undisturbed soil in planting areas. Backfill will conform to adjacent grades without dips, sunken areas, humps or other surface irregularities.
 - 2. Trenching and Backfill under Paving: Backfill trenches located under areas where paving, asphaltic concrete or concrete will be installed with sand (a layer 6-inches below the pipe and 3-inches above the pipe) and compact in layers to 95% compaction. Compact trenches for piping to equal the compaction of the existing adjacent undisturbed soil and leave in a firm unyielding condition. Set in place, cap and pressure test piping under paving prior to the paving work. Provide a minimum 18-inch cover between the top of the pipe and the bottom of the aggregate base for pressure and non-pressure piping installed under asphaltic concrete paving.

3.02 INSTALLATION

- A. Installation of Piping: Clean PVC pipe and fittings of dirt, dust and moisture before installation. Installation and solvent welding methods shall be as recommended by the pipe and fitting manufacturer. Lines shall have a minimum clearance of 6-inches from each other and from lines of others. Do not install parallel lines directly over one another.
- B. Automatic Controller: Install in accordance with manufacturer's instructions.
- C. Remote Control Valves: When grouped together, allow at least 12-inches between valves. Install each remote control valve in a separate valve box. Label each controller and station number at the valve with yellow polyuret-hane I.D. tag attached to the control wire of the valve.

- D. Control Wiring: Wiring shall occupy the same trench and shall be installed along the same route as pressure supply or lateral lines wherever possible. Provide an expansion curl within 3-feet of each wire connection of sufficient length so that in case of repair, the valve bonnet may be brought to the surface without disconnecting the control wires. Control wires shall be laid loosely in trench without stress or stretching of control wire conductors. Make splices with wire connectors.
- E. Flushing of System: After sprinkler pipe lines and risers are in place and connected and prior to installation of sprinkler heads, open the control valves with full head of water to flush out the system. Install sprinkler heads only after flushing of the system has been completed.
- F. Sprinkler Heads: Install the sprinkler heads, spaced as required for complete water coverage. Do not exceed the maximum spacing recommended by the manufacturer.

3.03 ADJUSTMENT AND TESTING

- A. Adjustment of the System: Flush and adjust sprinkler heads for optimum performance and to prevent overspray onto walks, roadways, and buildings. Set sprinkler heads perpendicular to finished grades.
- B. Testing of Irrigation System: Notify the County's Representative 48-hours in advance of testing and perform tests in presence of the County's Representative.
 - 1. Test pressure lines under hydrostatic pressure of 150-psi and prove watertight. Test prior to installation of electric control valves.
 - 2. Test piping under paved areas under hydrostatic pressure of 150-psi and prove watertight prior to paving.
 - 3. Sustain pressure in lines for not less than 2-hours. If leaks develop, replace joints and repeat test until entire system is watertight.
 - 4. Do not backfill pipes until it has been inspected and tested.
- C. When the sprinkler irrigation system is completed, perform a coverage test in the presence of the County's Representative.
- D. Operate the sprinkler irrigation system under full automatic operation for a period of 7-days prior to planting.

END OF SECTION