SECTION 02810 - IRRIGATION SYSTEM

PART 1 - GENERAL

1.1 DESCRIPTION

A. Provide complete landscape irrigation system as shown on drawings as described herein.

1.2 RELATED SECTION

A. Landscaping

B. Lawns and Grasses

1.3 QUALITY ASSURANCE

A. Substitutions:
1. Time: To be considered, submit substitution request in writing 7 days prior to bid opening.
2. Required Submittal Material:
a. Sample proposed substitute sprinkler.
b. Manufacturer's data on sprinkler discharge rates(GPM), minimum allowable operating pressure, maximum allowable spacing and distance of throw.
c. Detailed pressure loss computations if proposed substitute differ from those specified.
d. If proposed substitute requires a change in head and piping layout as designed, submit detailed drawings showing design changes and proposed layout.
3. Approval: Approval of proposed substitute will not relieve responsibility for providing a system that will operate according to intent of originally designed system.

B. Installer: System installation must be supervised by an irrigator licensed in State with a minimum 5 years continuous experience installing systems of this size and complexity.

C. Testing: Perform required testing under observations of Architect. Give 48 hours notice that such tests are to be conducted.

D. Assembly Procedures: Do not alter design hydraulics by installing additional tees or elbows unless approved by Architect.

1.4 REFERENCES STANDARDS:

A. American Standard for Testing and Materials (ASTM) - Latest edition.
1. D2241 Poly (Vinyl Chloride) (PVC) Plastic Pipe (SDR-PR)
2. D2464 Poly (Vinyl Chloride) (PVC) Plastic Pipe Fittings, Thread, Schedule 80
3. D2466 Poly (Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 40
4. D2467 Poly (Vinyl Chloride) (PVC) Plastic Pipe Fittings, Socket Type, Schedule 80
5. D2564 Solvent Cements for Poly (Vinyl Chloride) (PVC) Plastic Pipe and Fittings
6. D2287 Flexible Poly Vinyl Chloride (PVC) Plastic Pipe
7. F656 Poly Vinyl Chloride (PVC) Solvent Weld Primer

B. D2855 Making Solvent - Cemented Joints with Poly (Vinyl Chloride) (PVC) Pipe and Fittings

1.5 SUBMITTALS

A. Procedure: Comply with Division I requirements.

B. Product Data: Submit copies of equipment manufacturer's specifications and literature for approval.

C. Project Record Documents

1. Comply with Division I requirements.
2. Locate by written dimension, routing of mainline piping, remote control valves and quick coupling valves. Locate mainlines by single dimensions from permanent site features provided they run parallel to these elements. Locate valves, intermediate electrical connections, and quick couplers by two dimensions from a permanent site feature at approximately 70 degrees to each other.
3. When dimensioning is complete, transpose work to mylar reproducible tracings. Tracings will be provided by Architect.
4. Submit completed tracings prior to final acceptance. Mark tracings 'Record Prints Showing Significant Changes'. Date and sign drawings.
5. Provide three complete operation manuals and equipment brochures neatly bound in a hard back three-ring binder. Include product data on all installed materials. Include warranties and guarantees extended to the Contractor by the manufacturer of all equipment.

D. Water Pressure: Prior to starting construction, determine if static water pressure is as stated on drawings. Confirm findings to Architect in writing. If static pressure varies from pressure stated on drawings, do not start work until notified to do so by Architect.

E. Quick Coupler Keys: Provide 3 coupler keys with boiler drains attached using brass reducer.

F. Controller Keys: Provide two sets of keys to controller enclosure(s).

1.6 COORDINATION

A. Complete sleeve installation (not otherwise provided) in coordination with paving and other concrete pours.

B. Coordinate to ensure that electrical power source is in place.

C. Coordinate system installation with work specified in other Sections and coordinate with landscape installer to ensure plant material is uniformly watered in accordance with intent shown on drawings.

1.7 WARRANTY AND MAINTENANCE

A. Extend to the Owner warranties and guarantees provided by the manufacturer of all equipment used.

B. Fully warrantymaterials and workmanship for a minimum of one year after final acceptance.

C. Limit warranty to repair and replacement of defective materials and workmanship, including repair of backfill settlement.

1.8 CONNECTION TO DOMESTIC WATER SUPPLY

A. Complete connection to water supply in accordance with governing codes and regulations.

B. Secure any required permits which will be supplied by the City of Dallas at no cost to the Contractor.

PART 2 PRODUCTS

2.1 DEFINITIONS:

A. Mainline: Piping from water source to operating valves. Hydrant lines and lines supplying quick coupling valves (QCV) are considered mainlines.

B. Lateral Piping: Piping from operating valves to sprinkler heads.

2.2 POLYVINYL CHLORIDE PIPE

A. Polyvinyl Chloride Pipe (PVC):Manufactured in accordance with standards noted.

1. Marking and Identification: Permanently marked with SDR-21, Class 200, ASTM standard number, and the NSF (National Sanitation Foundation) seal. Provide pipe free of blisters, internal striations, cracks, or other defects.
2. Mainline - Schedule 40
3. PVC Pipe Fittings: Schedule 40.
4. Sleeves and laterals - Class 200.

B. Pipe Connection Materials:

1. General: Do not use cross fittings. Separate fittings at least 12 inches. Use reduction tees, not reducer bushings. Allow 1'-6" outside of sleeves before first fitting.
2. Slip fittings: Use primer and adhesive solvent. Cans of primers and solvents to have labels intact and stamped with date of manufacture. Cans dated over two years old will not be permitted. . Do not thin primer or solvent.
3. Threaded fittings: PVC to PVC, or PVC to copper, use Teflon tape.
4. Flexible PVC: Use only solvents made for flexible pipe such as Uni-fuse #20 by Sureguard Corporation.

2.3 COPPER PIPE MATERIALS

A. Copper Tubing: Hard, straight length of Type 'M' only. Provide pipe free of internal striations, cracks, or other defects. Copper tube of foreign extrusion or irrigation tubing (thin wall) will be rejected.

B. Copper Tube Fittings: Cast brass of wrought copper, sweat-solder type.

C. Pipe Connection Materials: Threaded fitting, copper to copper, copper to brass, copper to PVC. Teflon tape.

2.4 MISCELLANEOUS MATERIALS

A. Wire: Type UF with 4/64 inches insulation, Underwriters Laboratory (UL) approved for direct underground burial in National Electrical Code Class II Circuit (30 volts AC or less). Size according to controller manufacturer's recommendations and consideration of length of run, but no smaller than #14. Use red for control wire and white for ground.

B. Nipples:
1. For lawn heads: Threaded polyethylene, nominal 1/2 inch by+ 6 inches.
2. For rotary heads: Use Lasco T 222-312, 3/4 in. swing joints.

C. Pea Gravel: Washed native aggregate graded 3/4 to 1-1/2 inches.

2.5 IRRIGATION EQUIPMENT: Refer to drawing notes and legend.

PART 3 EXECUTION

3.1 INSPECTION

A. Examine areas to be sprinkled and conditions under which irrigation sprinkler system is to be installed.

B. Verify that interfacing work specified elsewhere is complete.

C. Notify Architect in writing of conditions detrimental to proper irrigation coverage and timely completion of Work.

D. Do not proceed until conditions are satisfactory.

3.2 INSTALLATION

A. General

1. Compliance: Complete installation in strict accordance with manufacturer's recommendation which shall be considered a part of these specifications.
2. Staking: Stake location of each sprinkler for approval of Architect before proceeding. Do not exceed manufacturer's maximum spacing limits.
3. Piping Layout: Piping layout is diagrammatic. Route piping around trees and shrubs to avoid damage to plantings. Do not dig within balls of newly planted trees and shrubs.
4. Discrepancies
a. Point out any discrepancy between the drawings and the field conditions that may affect uniform coverage. Do not proceed until any design change made necessary by such discrepancy is approved.
b. Should such changes create extra cost, approval for extra compensation shall be obtained in writing before commencing work.
c. Should such changes create a savings in cost, a written reduction in the contract price shall be approved in writing before commencing work.
d. If Contractor fails to comply with a. above, and proceeds with the installation, then the Contractor assumes responsibility for cost of subsequent system modifications to assure that uniform water coverage is achieved.

B. Excavations: Excavations are unclassified and include earth, loose rock, or combinations, in wet or dry state. Backfill trenches with material removed except if rock is encountered, haul this material off site and backfill to ensure a minimum of 3 inches of rock free soil surrounding pipe.

C. Water Meter and BackFlow Prevention:Refer to drawings.

3.3 PIPE INSTALLATION

A. General: Do not place more than two pipes in each trench.

B. Mainline Piping: Install in 4 inch wide trenches with minimum of 24 inches of cover over pipe.

C. Lateral Piping: Install in 4 in. wide trenches with minimum 24 inches of cover over pipe.

D. Trenching: Provide firm, uniform bearing for entire length of pipe to prevent uneven settlement. Wedging or blocking of pipe is not permitted. Remove foreign matter from inside of pipe before welding. Keep inside of piping clean during and after layout.

E. Inspection: Prior to trench backfill, arrange for the city inspector to review piping.

F. Backfill: Water jet and compact to prevent after settling. Hand rake trenches and adjoining areas to leave grade in condition equal to before installation.

PVC PIPE AND FITTINGS ASSEMBLY

A. Solvent: Use solvent and procedures recommended by manufacturer to make solvent-welded joints. Thoroughly clean pipe and fittings before applying solvent.

B. PVC to Metal Connections: Use Teflon tape.

C. Threaded PVC Connections: Use threaded PVC adapters into which pipe may be welded. Use Teflon tape on threads.

3.5 COPPER PIPE AND FITTINGS ASSEMBLY

A. Clean pipe and fittings thoroughly and buff connections with sand paper to remove residue from pipe.

B. Flux pipe and fitting and solder connection using 'No-Lead' solder.

3.6 REMOTE CONTROL AND GATE VALVES

A. Provide valves in accordance with materials list and size according to drawings.

B. Install valves in a level position in accordance with manufacturer's specifications.

C. Center a plastic valve box, over valve, flush with finish grade. Provide valve box extensions as required.

D. Install 0.5 cubic feet washed pea gravel in bottom of valve box.

3.7 SPRINKLERS

A. General: Provide in accordance with materials list, with nozzling in accordance with Drawings. Change nozzle degree and trajectory if wind conditions affect coverage. Receive approval from the Architect prior to any change. Install heads adjacent to walks and curbs 2 inches clear of paving.

B. Lawn Heads: Attach sprinklers to lateral piping with flexible PVC nipples. Firmly tamp soil around base plate and leave head plumb. Set top of sprinkler 1/4" above finish grade. Refer to drawing details.

C. Rotary Heads: Attach to lateral piping with pre-manufactured Lasco swing joint assemblies and schedule 80 PVC. Refer to drawing details.

3.8 QUICK COUPLING VALVES (QCV)

A. Provide in accordance with materials list and as detailed on Drawings. Stake with galvanized pipe securely attached to QCV with two stainless steel worm gear clamps.

3.9 WIRING

A. No conduit shall be required for U.F. wire, unless otherwise noted on Drawings. Tuck wire under piping.

B. Make wireconnections with King connectors according to manufacturer's recommendations.

C. Provide a separate wire from controller to each electric valve. Provide a common neutral wire from controller to valves served by a particular controller, color coded white.

D. Provide a 36-inch long wire coil at valves.

E. Bundle wires together with waterproof electrical tape at ten foot intervals.

F. Do not splice wire between valve boxes unless approved by the Owner. If approved, complete splices within 10 in. around valve boxes.

3.10 TEMPERATURE SENSOR

A. Exterior Controller: Securely mount sensor on bottom of controller. Remove bracket usually supplied with unit and reuse bolts.

3.11 CONTROLLERS

Controllers are to be installed on the appropriate pedestal affixed to a permanent concrete pad via (4) bolts. All wiring is to enter the pedestal via gray PVC sweep elbows extending through the pad. Control wiring and 120-V services are to be separated with each having its own access elbow. Check Town's electrical codes for proper 120-V service installation. All controllers are to be permanently wired for quick attachment of Irritrol RVC unit use Irritrol cable AUP-1. All controllers are to be properly and permanently wired with a miniclick freeze sensor or equal.

3.12 TESTING

A. Notify Architect to review work 48 hours prior to testing pipe and fittings for leaks.

B. Test laterals and mains for a period of four hours under static pressure. If leaks (or pressure drops) occur, correct defect and repeat test.

3.13 FINAL ADJUSTMENT

A. Make final adjustments of sprinkler system prior to Architect's final inspection.

B. Flush system by removing nozzles from heads.

C. Adjust sprinklers for proper operation and proper alignment for direction of throw.

D. Adjust each section for operating pressure and balance to other sections by use of flow adjustment on top of each valve. Correct operating pressure at last head of each section - 50 psi for rotary heads and 20 to 25 psi for spray heads.

E. Adjust nozzling for proper coverage. Prevailing wind conditions or slopes may indicate that arc of angle or trajectory of spray should be other than as shown on drawings. Change nozzles to provide correct coverage.

3.14 CLEANUP

A. Keep premises clean and neat.

END OF SECTION

ISSUED FOR CONSTRUCTION
3/30/00

THE ASHTON
ADDISON • TEXAS

Owner/Developer:
AMICUS PARTNERS, LIMITED
15601 DALLAS PARKWAY, SUITE 525
ADDISON, TEXAS 75001
PHONE (972) 361-5476
FAX (972) 361-5914

HUITT ZOLLARS
3131 McKinney Avenue, Suite 600
Dallas, Texas 75204
Phone (214) 871-3311
Fax (214) 871-0757

Revisions

No.	Date	Items
1		
2		
3		
4		
5		

Drawn: SH
Appr.: MS
Scale: AS NOTED
Date: 1/24/2000
Project No.: 01-2617-01

Sheet Title

IRRIGATION SPECIFICATIONS

Sheet No. IR.3

I:\proj\012617\01\landscap\PROD\dwg\261703.dwg Mon Jan 24 12:30:43 2000 SusanHall