

**LEHIGH ACRES COMMUNITY PARK BALL FIELD
IRRIGATION RENOVATIONS
LEHIGH ACRES, FLORIDA**

SECTION 328020 -IRRIGATION

1.0 SCOPE OF WORK:

- 1.01 Provide an assembled and installed automatic irrigation system, including connection to the existing well, pump and controller, which will efficiently irrigate 100% of all areas to be covered and shall prove satisfactory in all aspects to the Owner.
- 1.02 The work contemplated by these specifications consists of the provisions of labor, materials, equipment, and services required for all work as described herein.
- 1.03 Unless otherwise specified, the plans and specifications are intended to include everything obviously requisite and necessary for the proper installation and completion of the work whether each necessary item is mentioned herein or not.
- 1.04 The plans and specifications are intended to be cooperative, and any item called for in one and not the other shall be as binding as if called for in both.
- 1.05 All work herein specified or called for on the drawings will be executed in accordance with all governing ordinances, laws and regulations that meet all local conditions. Additionally, any changes and/ or additions in the work necessary to meet these ordinances, laws, regulations and/or conditions will be made without additional cost to the Owner. It is understood that no additional compensation is to be made by the Owner for any items omitted from the plans that may be required to irrigate the areas indicated on the plans. The intent of the contract is for a complete finished job including all labor and materials.
- 1.06 The alignment of the waterline, as shown on the plans, is only approximate and may be changed at the time of construction to avoid trees, shrubs, plantings and/or other obstacles.
- 1.07 Provide record drawings as specified in Section 1400 and in paragraph 14.01 of this Section.
- 1.08 Construction sequencing to include temporary connections as required to maintain field irrigation during construction. Fields shall not be without irrigation more than 5 consecutive days without providing irrigation coverage.

2.0 DESCRIPTION OF THE SYSTEM:

- 2.01 Layout and details of the system shall be as shown on the accompanying drawings.

3.0 UTILITIES AND PROTECTIONS:

- 3.01 The Owner shall make available to the Contractor all the available information regarding the location of existing utilities and shall mark the location of such utilities and/or any underground obstructions. The Contractor shall be responsible for obtaining utility locations. The Contractor shall be liable for the damages to

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and the cost of repairing or replacing any buried conduit, cables, or piping encountered during the installation of the work, unless they were not marked, or he was not previously informed of such underground utilities. If the Contractor is aware of such buried lines, he shall immediately have the incurred damages repaired at his own expense.

4.0 ELECTRICAL INSTALLATION:

- 4.01 The Contractor will be required to maintain connections to the electrical systems as is required for the proper operation of the automatic control system and pumps.
- 4.02 All control circuitry, whether electrical or hydraulic, passing through a wall or slab or beneath a sidewalk, road, or drive, shall be installed in a suitable sleeve; whereas in all other locations they shall be installed in the pipe trench and protected by the pipe whenever possible.
- 4.03 Sleeves shall be installed by the irrigation contractor.
- 4.04 The joining of all underground wires shall be by the use of wire nuts, covered with Snap Tite and PT-S5 sealer per installation instructions provided by manufacturer or approved equal.
- 4.05 Power for the existing pump station and existing automatic control system is existing.

5.0 GROUNDING OF SYSTEM:

Surge protection of the existing pump and controller shall remain in place.

6.0 EQUIPMENT, TOOLS AND LABOR:

- 6.01 The Contractor shall furnish all such equipment, tools, and labor necessary to install work in an acceptable manner and to a speedy completion. This Contract is based on the Contractor furnishing equipment, tools and labor which are suitable to carry out this contract in a professional manner, unless otherwise herein specified.

7.0 CODES AND INSPECTIONS:

- 7.01 The entire installation shall fully comply with all local and state laws and ordinances, and with all the established codes applicable there to.
- 7.02 The Contractor shall take out all required permits, arrange for all necessary inspections and shall pay any fees and expenses in conjunction with the same as a part of the work under this contract.

8.0 CLEANING THE PREMISES:

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8.01 The Contractor shall always keep the premises on which the work is being done, and the adjoining premises, clean of rubbish caused by his work. Upon completion of the job, the Contractor shall clean up all debris caused by his work and leave the job in a neat and clean condition. All debris removed from the job will be taken away daily from the premises. Trenches shall not be left open overnight in areas outside of the fields. Fields shall be locked at the end of each day. Coordinate with the County.

9.0 EXCAVATION AND BACKFILLING:

9.01 The Contractor shall perform all necessary excavating and backfilling required for the proper installation of the work unless otherwise noted in the plans.

9.02 On sodded areas, the Contractor will replace field sod in the trench area to the necessary width and depth required to facilitate his installations.

9.03 When backfilling, all backfill material shall be free from rock, large stone or other unsuitable substances to prevent damage to the pipe. Backfilling of trenches containing plastic pipe and copper pipe shall be done when the pipe is cool to avoid excessive contraction in cold weather. And, all backfill material will be compacted to 6" layers as it is brought up to finish grade so as to insure that no settling results.

10.0 EXISTING PROTECTION:

10.01 Protect existing fencing and other improvements throughout construction.

11.0 ROCK EXCHANGE:

11.01 If rock is encountered in the alignment and depth shown on the plan, the alignment and/or depth shall be adjusted to avoid its excavation. If alignment and depth adjustment cannot be made and it becomes necessary to remove the same, the Contractor shall not receive additional compensation in the handling of it.

12.0 DEPTH OF COVER:

12.01 Minimum depth of cover over piping used as lateral water distribution piping down stream of a control valve, shall be 18" in sports fields, 12" in common areas; whereas, control wires and main water distribution piping under continuous pressure, shall be 24".

13.0 TESTING THE MAINLINE:

13.01 The entire system shall be tested at the 100 psi pressure and upon visual inspection of the ground, should any leak be found, it shall be promptly repaired. The line shall then be re-tested until satisfactory.

14.0 RECORD DRAWINGS:

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14.01 After completion of all the piping installation and prior to substantial completion inspection, the Contractor shall furnish a record drawing showing all sprinkler heads, valves, drains, and pipelines to scale with dimensions where required. Instruction sheets and parts lists covering all operating equipment will be bound into a folder. One set to be furnished to the Landscape Architect for review and one set shall be provided to the Owner.

15.0 INSTRUCTION:

15.01 After completion and final inspection of the system, the Contractor will instruct the Owner's personnel in the proper operation and maintenance of the system.

16.0 MATERIALS:

16.01 The materials chosen for the design of the sprinkler system have been specifically referred to by the manufacturer to enable the Owner to establish the level of quality and performance required by the system design. Equipment by other manufacturers may be used only if approved by the Owner to allow him to evaluate the proposed substitution to assure that it is equal to the specified equipment.

17.0 PVC PIPE:

17.01 All PVC pipe specified on plan shall be virgin, high impact, polyvinyl chloride (PVC) pipe. All PVC pipe shall be continuously and permanently marked with manufacturer's name, material, size, and schedule or type. Pipe shall conform to U.S. Department of Commerce Commercial Standard CS 207-60, or latest revision. Material shall conform to all requirements of Commercial Standard (CS 256-63), or latest revision.

17.02 All PVC pipe specified on the plans which shall be under constant pressure shall be Schedule 40 according to plan. All laterals and other distribution lines down stream of control valves shall be Schedule 40. All sleeves shall be Schedule 40.

18.0 STEEL PIPE AND FITTINGS:

18.01 Steel pipe shall be new, scale free, mild steel pipe and shall be standard weight schedule 40 galvanized pipe. Steel pipe fittings shall be heavy pattern, banded, galvanized malleable iron, threaded pipe fittings. All nipples shall be of the same material as the pipe and galvanized. Bushings, close nipples and crosses are not to be installed. Street elbows may be installed only as a part of the valve assembly.

18.02 Pipe shall be carefully cleaned before installation. The ends of all threaded pipe shall be reamed out full size. Joints in all screwed piping shall be made by applying an approved oil base thread lubricant on the male thread only.

19.0 POLYETHYLENE PIPE FITTINGS:

Not Used.

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20.0 PVC PIPE FITTINGS:

20.01 PVC solvent weld, all Schedule 40 belled pipe fittings, PVC saddles or compression type fittings as specified on plan.

21.0 SPRINKLER RISER OFF POLYETHYLENE PIPE:

Not Used.

22.0 SPRINKLER RISER OFF PVC PIPE:

Not Used

23.0 MANUAL VALVES:

23.01 Manual valves shall be as specified on plan.

24.0 ELECTRIC REMOTE CONTROL VALVES:

24.01 Valves for use in electrically controlled automatic control systems shall be diaphragm actuated and hydraulically operated solenoid valves as specified on the plans and as manufactured by the Rainbird or approved equal.

24.02 All valves shall be installed in valve boxes of an appropriate size and type as detailed on the plan.

25.0 PRESSURE REGULATOR VALVE:

25.01 Pressure Regulating Valve as specified on the plans and as manufactured by the Rainbird or approved equal.

25.02 All valves shall be installed in valve boxes of an appropriate size and type per details.

26.0 VALVE BOXES:

26.01 Valve boxes shall be Ametek heavy duty plastic valve pit with evergreen cover or approved equal.

27.0 VALVE OPERATING KEYS:

27.01 The Contractor shall provide two sets of all the valve operating keys required to properly operate the system.

28.0 COMMUNICATION CIRCUITRY:

28.01 Electric: 24 volt 14 gauge electric control lines from controller to automatic valves shall be direct burial UF wire of a different color than the 110 volt service

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to controllers. The 24-volt common ground shall be of one continual color and a different color than the other 24 volt lines and the 110 volt service. All wire shall be furnished in minimum 2500' reels and splicing shall be minimized, with such splices made water proof with the use of waterproof Snap Tite and PT-S5 sealer. All 24 volt wiring shall be done in accordance with existing codes and sized to properly operate valves.

Two wire irrigation system shall not be used without Owner's approval prior to bidding.

29.0 POP UP SHRUB AND LAWN SPRINKLER HEADS:

A. All full and part circle sprinklers shall be of the fixed spray or gear driven variety as is specified on the plans. These sprinklers shall be of the pop-up type with spring retraction. The body of the sprinkler shall be constructed of Cypolac Material and the sprinkler shall be easily serviced from the top. It shall have an accessible screening device and shall perform to the manufacturer's specifications with regard to the diameter of throw and gallons at a given pressure. Spacing of heads shall not exceed the manufacturer's maximum recommendation.

B. Matched precipitation will be required on all full and part circle sprinklers on a zone.

30.0 EMITTER PIPE:

Not Used.

31.0 FIXED SHRUB SPRINKLER HEADS:

Not used.

32.0 CONTROL EQUIPMENT:

32.01 Automatic controllers are existing. Contractor shall make connections to existing controllers. All connections to be approved by the County.

33.0 QUICK COUPLING VALVES AND KEYS (If Applicable):

33.01 Quick coupling valves and keys shall be specified on the drawings.

34.0 GROUNDING DEVICES:

34.01 Grounding of the irrigation controller is existing and shall be maintained.

35.0 EXECUTION:

35.01 System Design:

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1. Location of Heads: Design location is approximate. Make minor adjustments as necessary to avoid plantings and other obstructions.
2. Minimum Water Coverage:
 - a. Turf areas, 100% as shown on plans.
3. Layout may be modified, if necessary to obtain coverage, to suit manufacturer's standard heads. Do not decrease number of heads indicated unless otherwise acceptable to the County.
4. All head locations shall be approved by the County.

35.02 Trenching and Backfilling:

1. General: Excavate straight and true with bottom uniformly sloped to low points.
2. Trench Depth: Excavate trenches to a depth of 3" below invert of pipe, unless otherwise indicated. Do not pull pipe as method of installation.
3. Minimum cover: Provide the following minimum cover over top of installed piping:
 - a. PVC Piping: Mainline 24"
Lateral Lines 12"
Lateral lines in Bermuda Fields 18"
4. Backfill: Backfill with clean material from excavation. Remove organic material, as well as rocks and debris larger than 1" diameter. Place acceptable backfill material in 6" lifts, compacting each lift.

35.03 Installation:

1. General: Unless otherwise indicated, comply with requirements of Standard Plumbing Code.
2. Circuit Valves: Install in valve box, arranged for easy adjustment and removal.
 - a. Provide union on downstream side.
 - b. Adjust automatic control valves to provide flow rate of rated operating pressure required for each sprinkler circuit.
3. Pipe Sleeves: Shall be taped at the ends prior to installation. Following installation of the irrigation lines the end cavities shall be filled with self expanding foam spray to prevent excessive soil from washing into pipe

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sleeve. The Irrigation Contractor shall be responsible for the proper placement of sleeving necessary for the installation of the system.

4. Piping: Lay pipe on solid subbase, uniformly sloped without humps or depressions.
 - a. At wall penetrations, pack the opening around pipe with non-shrink grout. At exterior face, leave a perimeter slot approximately 1/2" wide by 3/4" deep. Fill this slot with backer rod and acceptable elastomeric sealant. Repair below grade waterproofing disturbed by this work and make penetration watertight.
 - b. Install PVC pipe in dry weather when temperature is above 40°F (4°C) in strict accordance with manufacturer's instructions.
 - c. Allow joints to cure at least 24 hours at temperature above 40° (4°C) before testing, unless otherwise recommended by manufacturer.
5. Installation of Identification: During backfilling operations over all main lines, install continuous underground-type plastic line markers, located directly over buried lines of 6" to 8" below finish grade.
6. Sprinkler Heads: Flush circuit lines with full head of water and install heads after hydrostatic test is completed.
 - a. Install lawn heads at manufacturer's recommended heights.
 - b. Locate part-circle heads to maintain a minimum distance of 6" from walls and other boundaries, unless otherwise indicated.

35.04 Testing:

1. General: Notify Landscape Architect/ Owner in writing when testing will be conducted. Conduct tests in presence of Landscape Architect/ Owner.
2. Hydrostatic Test: Test water piping and valves, before backfilling trenches, to a hydrostatic pressure of not less than 100 psi for two hours. Piping may be tested in sections to expedite work. Remove and repair piping, connections, valves which do not pass hydrostatic testing. Minimal coverage can be placed over piping to hold piping in place prior to testing.
3. Operational Testing: Perform operational testing after hydrostatic testing is completed, backfill is in place, and sprinkler heads adjusted to final position.

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- a. Demonstrate to Landscape Architect/Owner that system meets coverage requirements and that automatic controls function properly.
 - b. Coverage requirements are based on operation of one circuit at a time.
4. After completion of turf restoration carefully adjust lawn sprinkler heads so that they will be flush with finish grade and excessive overthrows are corrected.

36.0 INSTRUCTIONS:

36.01 After completion and final inspection of the system, the Contractor will instruct the Owner's personnel in the proper operation and maintenance of the system.

37.0 SUBMITTALS:

37.01 Certification: Submit certificates of inspection as required by governmental authorities and manufacturers that materials comply with specified requirements.

37.02 Submit product information for all products used on the site for Owners approval.

37.02 Implementation Schedule: Submit a schedule showing times per week per zone. Coordinate this schedule with the Owner.

37.03 Maintenance Instruction: Submit typewritten instructions recommending procedures to be established by the Owner for maintenance of the system. Submit prior to the expiration of the required maintenance period(s).

38.0 PUMPS:

38.01.1 Pumps are existing. Contractor shall verify pump performance prior to irrigation operation.

39.0 GUARANTEE:

39.01 The contractor shall guarantee that all materials, equipment, structures and work performed are free from defects in workmanship or materials for a period of one (1) year after installation and acceptance and, if any part of the work shall fail within this period, it shall be replaced and restored to production at no cost to the Owner. Undue reduction in yield, cave ins or settling around the well, pumping sand from the finished well after being placed in service, will be considered a defect to be covered by this Guarantee.

40.0 QUALIFICATIONS:

40.01 Drawings and general provisions of the contract apply to the work of this Section.

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40.02 Subcontractor shall be a firm with not less than five (5) years' experience in the type of work specified in this Section, or provide satisfactory substitute evidence which the Owner, at its sole discretion, may accept.

41.0 CONCLUSIONS TO THE SPECIFICATIONS:

41.01 It has been our purpose in preparing these specifications to supplement the plans and to provide a sprinkling system which is complete in every detail. The alignment of the water line, as shown on the plans, is only approximate and may be changed at the time of construction to avoid trees, shrubs, plantings and/or other obstacles. It has not been the purpose in preparing these plans and specifications to make omissions and/or errors. Such omissions and/or errors, in either the plans or the specifications shall be corrected when called to our attention. Discrepancies of any sort shall not be taken advantage of, as harmony shall be preserved at all times so that construction can be pursued efficiently and rapidly in the letter and spirit of these specifications. The true intent and meaning of the same is that all work of every kind that may be necessary for finishing the work, rectifying failures, and delivering a complete acceptable job, be done. This is implied, although the same may not be specifically expressed.

END OF SECTION