

SECTION 131200 - FOUNTAINS

PART1 - GENERAL

1.1 SUMMARY

- Work included - Provide and install fountain equipment mechanical and electrical package in accordance with the Contract Documents. Furnish all labor, materials, apparatus, tools, equipment, transportation, temporary construction, and special or occasional services as required to make a complete working fountain installation, as shown on the drawings or described in these specifications. The work of this Section shall include, but not be limited to the following:

Fountain Display System including pumps, valves, and specialties (nozzles, pool fittings, etc.) as hereinafter described, listed and shown on the drawings.

Fountain Electrical Control System including control panel, water level and PLC controller, time switches, relays, motor starters, grounding system, PLC if required, and other circuits and accessories as required, U.L. 508 Listed.

Fountain Submersible Lighting System accessories and controls.

Filtration and Water Treatment System, media, accessories, and controls.

Drain, water makeup and overflow equipment, and controls.

All special tools for proper operation and maintenance of equipment provided under this section.

1.2 REFERENCE STANDARDS

- This installation shall comply with all applicable and the most stringent provisions of the latest edition of the following codes.

BOCA - National Building Code

UPC - Uniform Plumbing Code

NE C- National Electrical Code

- Materials furnished hereunder shall, where applicable, comply with the latest edition of applicable standard specifications published by the following organizations:

ASTM - American Society for Testing and Material

ANSI - American National Standards Institute

IEEE - Institute of Electrical & Electrical Eng.

IPCEA - Insulated Power Cable Engineers Assoc.

NEMA - National Electrical Manufacturers Assoc.

ASME - American Society of Mechanical Engineer

UL - Underwriters Laboratories, Inc.
NSF - National Sanitation Foundation
ASSE - American Society of Sanitary Engineers
AWWA - American Water Works Association
CS - Commercial Standards

1.3 QUALITY ASSURANCE

All workmanship and materials shall conform and comply with the requirements of building ordinances, codes, rules and regulations of all departments of Federal, State, county, and city having lawful jurisdiction over the work in this section.

When these specifications and/or drawings call for or describe materials, workmanship, or construction of a better quality, higher standard, or larger size than is required by the above mentioned rules and regulations, the provisions of these specifications and/or drawings shall take precedence over the requirements of said rules and regulations.

The Contractor shall furnish, without extra charge, any additional material and/or labor required for compliance with these rules and regulations although not mentioned in these specifications or indicated on the drawings.

All materials shall be new and shall conform with applicable standards in every case where such standards have been established for the particular material in question.

All work shall be executed by workmen skilled in the craft to which they are assigned.

Adequate supervision shall be provided to maintain high quality workmanship.

The Roman Fountains name and catalog numbers are used to establish a high standard of quality and utility for the specified items and to provide a dimensional reference for installation plans that are drawn to scale.

- Roman Fountains Corporation
- 9875 Medlock Bridge Pkwy, Suite 250
- Johns Creek, Georgia 30022 U.S.A.
- Phone: (770) 300-0041 FAX: (770) 300-0074
- Contact: Tom Hanson
- E-mail: tomh@romanfountains.com
- www.romanfountains.com

Any proposal for substitution of materials or equipment shall be submitted 10 calendar days prior to the final bid date; otherwise, no substitutions will be permitted. Submittal for equivalent items shall, where applicable, include the following data which are not necessarily required for specified items:

Performance Characteristics and hydraulic and electrical load data.

Materials of construction, fabrication, and manufacture.

Certification of Conformance with specific codes, standards, and specifications.

Submittal of substituted equipment may be rejected if the component alters the design in a manner that affects other trades or if it impairs accessibility or critical clearances.

No substitutions shall be made unless authorized in writing by the Architect/Engineer. Should a substitution be accepted, and should the substitute material prove defective or otherwise unsatisfactory for the service intended within the guarantee period, the Contractor shall replace this material or equipment with material or equipment specified, at its own expense, and to the satisfaction of the Architect/Engineer/Owner.

Contractors submitting bids on substitute materials and equipment must also submit a bid on the "as specified" materials and equipment.

Contractors submitting bids on substitute materials and equipment must also provide a written performance guarantee certifying that the substitute materials and equipment will produce the specified water effects.

1.4 MATERIAL SUPPLIER'S RESPONSIBILITY

Design Responsibility: The Equipment Supplier shall accept complete design responsibility for the hydraulic and electrical system, provided that all equipment required for the fountain installation is procured from the specified equipment Manufacturer as itemized in its proposals and materials list on the final, approved installation drawings.

The Contractor shall be responsible for installation of all equipment required for the fountain installation in accordance with fountain supplier's drawings and instructions.

Performance Guarantee: The Equipment Supplier shall guarantee the fountain to perform to the designed water heights and spray patterns, provided that installation of the equipment is in strict accordance with the supplier's recommendations, instructions, details, and approved drawings.

Warranty: All materials and component parts, excluding lamps, supplied by the Manufacturer, shall be guaranteed to be free from defects of materials and/or workmanship for a period of one year from date of substantial completion or 18 months from shipment, whichever comes first. (Complete warranty form available from material supplier on request.)

1.5 SUBMITTALS AND DRAWINGS

The Contractor shall submit complete shop drawings to the Architect for approval, in quantities required for proper distribution and in accordance with the requirements of the General Conditions.

Shop drawings shall include or incorporate those final drawings furnished by the Equipment Supplier, as specified herein, together with all additional information and drawings required to show the proper installation of fountain equipment. "Preliminary" or "schematic" drawings provided by the Equipment Supplier shall not be used for installation purposes.

The Contractor shall deliver drawings for approval, after the signing of the contract, so as not to delay the construction required under other sections.

Submittals shall include the following:

Materials list for all materials and equipment furnished.

Shop drawings and product data for all materials and equipment furnished.

Shop drawing of the equipment space layout showing all mechanical and electrical equipment in addition to all piping and conduit. Include pipe elevations and dimensions between pipe centerlines where relevant. Provide layout drawings of all pipe runs and pool fitting locations.

Shop drawings shall include outline dimensions, operating and maintenance clearances required, and sufficient technical data to indicate compliance with the Specification.

Shop drawings may not include details reproduced from the Contract Documents except when submitting "as specified" materials and equipment.

Submittals may be rejected if they are difficult to read due to insufficient scale, poor image quality, or poor drafting quality; or if the required information is not included.

Work shall not proceed until submittals have been approved by the Architect.

The Contractor shall provide labeled equipment certifying approval, as hereinafter specified, by Underwriters Laboratories (UL) whenever available.

1.6 COORDINATION

The Contractor shall coordinate the work with all trades and appropriate sections of the construction specifications as necessary to ensure proper provisions for the work of this section.

The Contractor shall be responsible for the protection of the Owner's property from injury or loss due to its work. All damage to existing property (building, utilities, pavement, etc.) or planting (trees, shrubs, lawn or ground cover) caused by the Contractor during its operation or as a result of malfunction of installed work during the guarantee period shall be repaired at the Contractors expense.

The Contractor shall fully inform itself regarding any available space limitations and unusual requirements, for the installation of all materials and work furnished under this section. Although the location of equipment may be shown on the drawings in certain positions, the Contractor shall also be guided by the Architectural details and conditions at the job, correlating its work with that of the other sections and other trades, with discrepancies and interferences being brought to the attention of the Architect for resolution prior to proceeding with the work.

1.7 PERMITS AND FEES

Permits: The Contractor shall secure and pay for all permits, inspections, and certificates of inspection of any governmental and inspection body having jurisdiction over all or any part of the work included under this section and/or such inspections etc., required by these specifications.

Fees: The Contractor shall secure and pay for all fees and assessments in connection with the work under this contract and shall include this cost in its bid and contract price.

1.8 CONTRACTOR GUARANTEE AND EQUIPMENT WARRANTY

In entering into a contract covering this work, the Contractor accepts the specifications and drawings and guarantees that the work will be performed in accordance with the requirements of the specifications and drawings, as may be made in the contract documents.

The Contractor further guarantees that the workmanship and material will be of the best quality procurable and that only experienced workers, familiar with each particular class of work, will be employed.

The Contractor further agrees to hold itself responsible for any defects which may develop in any part of the entire system, including equipment as provided for under this specification, due to faulty workmanship, design or material and to replace and make good, without cost to the Owner, any such faulty parts or construction which may develop at any time within one (1) year from the date of the final acceptance. Any repairs or replacements required because of defects, as outlined in this clause, are to be made promptly and approved in writing by the Architect.

Contractor shall warrant all material found defective within one (1) year of final acceptance and shall be replaced at no cost to the Owner including labor to remove and re-install any defective materials.

The warranty shall not extend to damage incurred through incorrect or improper operation and maintenance by the Owner. The Owner shall assume full responsibility for proper operation and maintenance upon final acceptance of installation from Contractor.

In the case of Manufacturer's guarantees being limited, or expiring within the specified guarantee period, the Contractor shall be responsible for purchasing and providing service contracts and additional warranty coverages to extend through the warranty period as may be required by Owner.

1.9 MAINTENANCE MANUAL

The Equipment Supplier shall deliver to the Owner three (3) copies of the Operations and Maintenance Manual, together with any additional information or manuals which would assist in the proper operation and maintenance of equipment.

The Contractor shall, at its expense, arrange and provide for the technical instruction of the Owner's maintenance personnel, by the Equipment Supplier's personnel, for such time as is reasonably required to acquaint them with the operation and maintenance of all equipment furnished and installed under this section.

PART 2 – PRODUCTS

2.1 GENERAL

Prime Contractor shall be responsible for purchasing all specialized fountain mechanical and electrical materials and tools for the fountain and shall then furnish electrical fountain components to the electrical contractor for installation and connection.

Materials not listed within these specifications or on drawings as furnished by the Equipment Supplier, but required for the complete installation of the fountain mechanical and/or electrical systems, shall be furnished by the Contractor.

Materials shown on the drawings, but not specified herein, shall be provided in accordance with information shown on the drawings and the general provisions of this part of the specification.

Substitutions in the list of equipment included in this section may be made by the Equipment Supplier only if the equipment is of better quality and more effective than that listed, improves

system design and performance or delivery times, and only if the changes are thoroughly documented and approved in writing by the Architect.

2.2 SPECIALIZED FOUNTAIN MATERIAL MANUFACTURER/SUPPLIER

- Approved Manufacturer - Subject to compliance with requirements, the following is the approved Manufacturer/Supplier for specialized fountain system equipment listed in this specification.

Roman Fountains Corporation, Johns Creek, GA, USA
Ph. (770) 300-0041 Fax # (770) 300-0074
www.romanfountains.com

All fountain equipment specified and supplied to the Contractor shall be supplied by a single fountain Equipment Supplier/Manufacturer.

The Equipment Supplier must currently be in the business of supplying fountain equipment for a minimum of twenty (20) years and shall have previously supplied fountain system design, drawing and equipment, similar in size and complexity to the specified project.

The specified supplier shall have minimum assets of \$750,000. and be able to furnish "CPA" verification of asset strength at the request of the Project Architect.

2.3 MATERIAL MANUFACTURER/SUPPLIER'S RESPONSIBILITY

Warranty: All materials and component parts, excluding lamps supplied by the Equipment Supplier, shall be guaranteed to be free from defects of materials and/or workmanship for a period of one (1) year from date of official start-up or 18 months, whichever is sooner.

Design Responsibility: The Equipment Supplier shall accept complete design responsibility for the hydraulic and electrical system, provided that all equipment is supplied by it as indicated. This does not include responsibility for the actual installation of the equipment except where the equipment is installed by the Equipment Supplier.

Performance Guarantee: The Equipment Supplier shall provide a written performance guarantee certifying that the fountain system will perform to the designed water heights and patterns and will create the designed water heights and patterns, and will create the designed lighting effects, providing the equipment is supplied by a single Equipment Supplier and the installation is in accordance with the Supplier's recommendations and drawings.

2.4 FOUNTAIN COMPONENTS

- (INSERT PROJECT SPECIFIC BILL OF MATERIALS HERE.)

2.5 FOUNTAIN PERFORMANCE CRITERIA

- (INSERT FOUNTAIN SYSTEM VISUAL EFFECTS. GENERAL DESIGN AND OPERATION SCOPE HERE.)

PART 3 - EXECUTION

3.1 GENERAL

Install and connect all equipment in accordance with Manufacturers' instructions and recommendations. Provide all piping, valves, and connections recommended by the Manufacturer for proper operation.

Protect all pipes, equipment, and other parts of the work against injury by exposure to the weather during construction while stored or installed in place.

Make all adjustments required for the proper operation of the mechanical system. Use Manufacturer's factory technicians where adjustments cannot be accomplished by the Contractor's personnel at Contractors' expense.

3.2 ALIGNMENT AND LUBRICATION OF ROTATING EQUIPMENT

After installation, align all pumps connected to motors by means of flexible couplings, if necessary, to within the tolerance limits recommended by the equipment and coupling manufacturers.

Before any rotating equipment is put in operation for testing purposes, properly lubricate with lubricants recommended by the Manufacturer. Further lubricate before final acceptance. Provide a complete schedule of lubrication of all rotating equipment within the equipment literature binder.

3.3 VALVE INSTALLATION

Supply all piping systems with valves arranged to provide necessary isolation and give regulating control throughout the system.

Butterfly valves used to isolate equipment or accessories shall be lug-type installed in a manner to allow servicing without draining the system.

Check valves shall close against pressure.

Do not install valve stems below horizontal line.

3.4 PIPE INSTALLATION

- **General**

Provide flanges or unions as indicated and as necessary, to allow removal and reinstallation of any item, or equipment, or accessory without cutting, welding, or soldering.

Provide discharge piping of proper size for all air vent, solenoid and relief valves. Extend to nearest drain.

Provide a readily accessible 1-1/2" hose angle valve with hose connection and hose, at all low points in the system and immediately downstream of check valves as necessary to allow the system to be completely drained.

Cut pipe to measurements established at the site. Work into place without springing or forcing.

Protect all openings in piping during construction to prevent entrance of foreign matter.

Cut pipe and tubing ends square. Remove rough edges and burrs so that a smooth and unobstructed flow will be obtained.

Close or short nipples should be used only where shown on the Drawings, or absolutely necessary to satisfy dimensional constraints.

Make changes in pipe size using reduced fittings. Use bushings only if shown on the drawings.

Unless otherwise noted, connections to equipment or accessories shall be threaded for sizes 3" and smaller, flanged for sizes 4" and larger.

Arrange exposed piping straight, parallel and perpendicular to the walls of the structure unless otherwise shown on the drawings.

Wherever two or more pipes are installed in parallel, allow sufficient space for required gluing, welding, soldering, painting, and/or the application of insulation.

- **Pipe Joints**

Grooved Pipe:

- Grooves for mechanical coupling shall be cut using tools, methods, and dimensional criteria specified by the manufacturer of the coupling.

Welded Pipe:

- Perform all welding in accordance with the requirements of ASME Boiler Pressure Piping Code or ANSI B31.1.

Threaded Pipe:

Cut all threads accurately, axis of thread coinciding with axis of pipe.

No more than two threads shall show beyond fitting.

Make up joints with Teflon tape.

Remake leaky joints with new materials.

Copper Tubing

Soldered Joints

- Use drawn temper tubing.
- Surfaces to be joined must be cleaned of all oil, grease, rust, and oxides. After cleaning, and before assembly or heating, apply an appropriate flux to each joint surface and spread evenly. Apply heat with an oxyacetylene torch.
- Apply an appropriate flux to each joint surface and spread evenly. Apply heat with an oxyacetylene torch.
- Make up all joints using non-corrosive flux and 95-5 solder, ATSM B32 Grade A.
- Provide each valve with unions for removal of valve without cutting or torching.
- Provide dielectric unions at points of connection to ferrous piping.
- Where threaded connections are used in copper systems, all nipples shall be standard weight red brass.

Flared joints:

- Use annealed tubing.
- Cut end using tubing cutter. Ream and clean.
- Slide fitting over end. Flare tubing using standard flaring tool.

PVC Pipe

Bevel all pipe ends with a coarse file or beveling tool.

Clean surfaces to be joined of all loose dirt and moisture from the I.D. and O.D. of the pipe end and the I.D. of the fitting socket.

Apply a coating of purple primer to the entire I.D. surface of the fitting socket and to an equivalent area on the O.D. of the pipe end.

Apply heavy body gray solvent cement using an appropriate natural bristle brush as follows: Apply a liberal coating of cement around the entire perimeter of the pipe end to a width slightly more than the equivalent socket depth of the fitting. Apply a light but complete coating once around the entire depth of the socket surface, avoiding excessive cement application. Apply a second liberal coating onto the pipe end.

Immediately after cementing, insert the pipe into the fitting to the full socket depth while rotating the pipe or fitting one-quarter turn. Hold joint for at least 15 seconds after joining to make sure pipe does not back out of the socket.

Do not disturb or move the joint for at least one hour after joining.

Do not solvent weld pipe if ambient air temperature is below 40 degrees F. or above 90 degrees F., or if it is raining.

Discard cement when an appreciable change in viscosity takes place or if cement is lumpy or stringy. Do not thin. Cement must be used before expiration date shown on the container.

- **Pipe Protection**

Copper or brass piping, encased in concrete: Exterior shall be wrapped with one layer of pipe wrap at half lap.

Copper or brass piping, underground: Exterior shall be coated with two coats of coal tar mastic to a total thickness of 8 to 10 mils. Allow 12 hours drying time between applications. Clean and prepare pipe exterior in accordance with manufacturer's recommendations.

Welded steel piping assemblies: Galvanize after fabrication.

Galvanized steel piping, underground, submerged, or encased in concrete: Exterior shall be coated with two coats of coal tar mastic to a total thickness of 8 to 10 mil. Allow 12 hours drying time between applications. Clean and prepare pipe exterior in accordance with manufacturer's recommendations.

- **Penetrations**

Core drilling for pipe penetrations shall be accomplished only at locations and in a manner approved by the Architect.

Provide a metal or approved plastic sleeve or core-drilled hole for every pipe passing through a concrete wall or floor.

Provide a water stop or membrane clamp for every pipe or sleeve penetrating an exterior concrete wall or floor or the fountain wall or floor, whichever is appropriate to the waterproofing method and/or as shown on the Drawings.

Seal sleeves passing through interior walls with foam sealant, unless otherwise indicated on the Drawings.

Seal sleeves passing through exterior walls with resilient seal and foam sealant, unless otherwise indicated on the Drawings.

- **Piping Tests**

Provide all temporary piping, pumps, and gauges necessary to conduct the specified tests.

Conduct all tests before concealment of work and before any coating, wrap, or insulation is applied.

Replace or repair any part that leaks. Repeat test until criteria are met.

Do not subject any item to a test pressure greater than the pressure rating of the item.

Vent air from all piping being tested.

Underground piping shall be tested as follows:

In accordance with pipe manufacturers' recommendations and procedures, pressurize all underground piping (except for drain system) to 75 psi prior to backfilling (spot backfilling to anchor piping may be done prior to pressurizing). Piping shall remain pressurized until all backfilling, grading, planting, and concrete work in the area of the piping is completed.

In accordance with pipe manufacturers' recommendations and procedures, pressurize all underground drain piping beneath the equipment space to 15 psi until all backfilling and concrete work in the area is completed.

The completed piping system shall be tested as follows:

Conduct each test for a minimum continuous duration of eight hours.

Hydrostatically pressure test all storm and sanitary drain piping at 15 psi.

Hydrostatically pressure test all other piping and equipment at 75 psi.

Strike all solder joints with a soft-face hammer while under pressure.

Log pressure readings for all tests required above at the beginning and end of each test and on every working day between. Note the location and cause of any failures and method of repair on the daily log. Submit copy of the log to the Architect weekly.

Testing of the completed system, as specified above, shall be witnessed by the Architect.

- **Flushing**

Before the fountain system is placed in operation, flush all fountain system piping with water to remove foreign matter and debris in piping.

Completely drain all piping and equipment. Re-flush as necessary until water runs clean.

Fill the system to the required capacity with clean water.

Circulate the water throughout the system for one hour, using the display pump. Install start-up screens as necessary to prevent equipment clogging and damage.

Drain, fill, and circulate (repeat previous three steps above) until the water remains clear.

3.5 HOUSEKEEPING PADS

- All floor-mounted equipment shall be erected on reinforced concrete housekeeping pads. Pads shall be 4" high with chamfered edges except where otherwise indicated or required on Architects' drawings.

3.6 SUPPORTING DEVICES

Furnish and install all required fasteners, rods, hangers, supports, bolts, nuts, washers, and steel plates and shapes.

Furnish and arrange for the installation of all required inserts and anchor bolts. Provide templates where appropriate.

Provide additional hangers or supports at all valves, strainers, and elsewhere where required to properly support any additional pipe loadings.

Where several pipes occur at the same elevation, trapeze type hangers

Provide copper plated hangers where hangers are in direct contact with copper piping.

Strap hangers are not permitted in any piping work.

Equipment may not support any of the pipe loading, nor may equipment, except valves and strainers, be supported by any of the piping.

Basket strainers larger than 3" shall be independently supported.

Piping shall not be supported by another pipe or duct.

3.7 EQUIPMENT IDENTIFICATION

Provide a securely attached permanently engraved metal nameplate for each piece of equipment containing all data required to properly identify the equipment (i.e. manufacturer, type, size, capacity, horsepower, etc.).

Provide a valve tag for each valve to provide information to correlate the valve with the outlet or fitting served.

Provide a half-size copy of the "As-built" Schematic Diagram, permanently encased in plastic, to provide the Owner's operating personnel ready correlation of each valve identified with each outlet or fitting served.

Install nameplates for gauge/control device panels as shown on the Drawings. Attach using stainless steel machine screws.

Provide flow direction arrow pipe bands on all system piping. (Seton or equal)

3.8 ADJUSTMENTS

- Make temporary and final adjustments for each system and equipment apparatus installed, using factory-trained technicians when appropriate. Refer to the Drawings and operation and maintenance manuals for system

start-up and adjustment details. Contact Manufacturer/Supplier for additional assistance as necessary.

3.9 PAINTING AND CLEANING

Clean all exposed equipment and piping to remove rust, scale, concrete, etc. before painting.

Mask off all bright metal parts and nameplates.

Paint all exposed equipment and piping (including galvanized) within the equipment space as follows:

Pretreatment, bare ferrous parts: Sand blast or treat with oil penetrant.

Primer: Previously painted or retreated equipment and piping shall receive one coat of rust inhibiting primer.

Finish: Apply two coats of white epoxy enamel.

Thoroughly clean and wipe down all equipment and piping, sweep floor and remove all debris and remaining tools and equipment from pump room, and any other loose or abandoned items which may create an operation or maintenance hazard.

3.10 OPERATING INSTRUCTIONS

- At the time of completion, a period of not less than eight hours shall be allotted by the Contractor for instruction of operating and maintenance personnel in the use of all systems. All personnel shall be instructed at one time, the Contractor making at its expense, all necessary arrangements with Manufacturer's technicians to provide instruction, product literature, and application guides for the user's reference.

3.11 THIRTY-DAY OPERATION PERIOD

Prior to acceptance of the installation by the Owner, demonstrate a thirty day, fully automated, uninterrupted daily operation of not less than eight hours, nor more than sixteen hours, for all systems provided under this Section.

Supervise the operation of the equipment and be responsible for the proper operation thereof and make no claim against the Owner for any damage to the equipment during such operation. Make such changes, adjustments, or replacement of equipment as may be required to ensure installation complies with the Specifications, and replace any defective or non-conforming parts or materials.

The costs of labor, electricity, water, and operational tools, equipment and supplies during the thirty day operation period shall be paid by the Contractor.

Coordinate the thirty-day operation period with all trades related to the fountain work.

END OF SECTION