"Green Building Benefits" of Specifying and Constructing Decorative Architectural Fountains and Water Features By Roman Fountains

* Fountains use re-circulated water, minimizing water waste and run-off, providing for site water use reduction and water efficient landscaping.
* Fountains serve as sound masks and barriers to lessen urban environmental noise pollution.
* Fountains serve as air filters, removing dust, dirt, allergens and other pollutants, thereby improving air quality.
* Fountains serve as nature's air conditioners, reducing ambient temperatures surrounding the water feature, and providing thermal comfort at the fountain site.
* Fountains use less water on a per square foot basis than the same planted area requiring sprinkler and drip irrigation, providing for water efficient landscaping.
* Fountains reduce the 'heat island effect' generated by paved or concreted landscape and hardscape surfaces.
* Fountains enhance the 'urban livability' of the building environment and convey a positive quality of life to occupants and visitors.
* Fountains offer opportunities to optimize energy performance, efficiency and sustainability using energy efficient motors and LED lighting products.
* PVC pipe saves energy, reduces CO2 emissions and takes less energy to produce than many competing products. PVC pipe saves fossil fuels; the principal raw material (nearly 60%) is chlorine derived from common salt, one of the most plentiful natural resources on earth. PVC is 100% recyclable.

NOTICE OF STATED AND INTENDED USE FOR DECORATIVE ARCHITECTURAL VIEWING PURPOSES ONLY UNLESS SPECIFICALLY REPRESENTED, IDENTIFIED, OR OTHERWISE SPECIFIED AND DESIGNED AS A "WATERPLAY" FOUNTAIN

It is hereby acknowledged, agreed and understood by specifier / purchaser / owner/ operator of this equipment and/or system that its stated and intended use is for decorative viewing purposes only, and not for public bathing, swimming, public entry or public recreational use. As such Roman Fountains Corporation assumes no responsibility or liability whatsoever for personal injury, sickness, illness, disease, or other accidents which may occur as a result of the equipment/system being used, operated or otherwise maintained in a manner inconsistent with its stated and intended purpose. Specifier/Purchaser/Owner/Operator is solely responsible for determining whether any specific codes, rules, regulations or guidelines for fountains apply to this project prior to construction, installation and operation and for notifying the public of the stated and intended use and operation of this decorative architectural fountain and for lawful enforcement thereof, including posting any and all signs, notices, warnings, instructions and barriers and providing personnel as necessary to enforce compliance with its intended use.

NOTICE

ANY ALTERATIONS, ADDITIONS, DELETIONS, CHANGES, MARKINGS, OR MODIFICATIONS TO ROMAN FOUNTAINS NOTES, NOTICES, INSTRUCTIONS, WARNINGS, CAUTIONS, LISTED INSTALLER RESPONSIBILITIES, TERMS, CONDITIONS, ETC. ARE NULL & VOID' AND SHALL NOT BE CONSIDERED, ACCEPTED OR RECOGNIZED BY ROMAN FOUNTAINS AS PART OF THE REVIEW OR APPROVAL PROCESS.

U.S. GREEN BUILDING COUNCIL MEMBER

AMERICAN SOCIETY OF LANDSCAPE ARCHITECTS CORPORATE MEMBER

AIA Allied Member

APSP The Association of Pool & Spa Professionals®

ROMAN FOUNTAINS

PREPARED FOR: Barge Waggoner Sumner & Cannon / Kingsport, TN

PROJECT NAME: KINGSPORT CENTENNIAL PARK / Kingsport, TN

DATE: February 23, 2016

PROJECT LEAD: Tom Hanson, Atlanta Office

IMPORTANT SCHEDULING NOTICE TO CLIENT

In accordance with Roman Fountains standard quotation and published terms and conditions of sale, orders for components and/or systems are not released for fabrication and shipment until one (1) set of submittals/shop drawings clearly marked "REVIEWED" by customer is received at our offices in Albuquerque, New Mexico.

Delivery times quoted in written proposals commence from the date one (1) complete set of reviewed submittal/shop drawings is received with no changes or revisions required.

This is a company policy requirement, to insure accurate client/manufacturer communication pertaining to scope of work & responsibility. Thank You.

DRAWING "REVIEWED" FOR SCOPE BY: _____
SIGNATURE OF AUTHORIZED INDIVIDUAL/COMPANY NAME

DATE:

NOTE: The proper design, operation, and performance of this system is based on the selection and use of equipment manufactured and/or selected by Roman Fountains Corporation, Albuquerque, New Mexico, USA, (505) 343-8082. Substitution of equipment, other than that selected and furnished by Roman Fountains, voids the system warranty and performance guaranty and installer assumes full responsibility for system installation, operation and performance.

ATTENTION: In accordance with Roman Fountains standard quotation and terms and conditions of sale, components and systems are not released for fabrication and shipment until approved submittals and shop drawings are received at factory.

IMPORTANT NOTICE TO CONTRACTOR AND OWNER: Certain events beyond the reasonable and foreseeable control of Roman Fountains Corporation can cause certain fountain system equipment damage or failure.

Control and removal of foreign objects entering the fountain such as coins, plastic and paper products, wrappers lint, dust, dirt, container lids and caps, pull tabs, glass, metal, surrounding landscape coverings such as leaves, twigs, soil, seeds, bark, wood chips, gravel cover, wood products, insects, vermin, animal wastes, vegetation, plant matter, algae, chemicals, detergents, fertilizers, or other objects either as a result of natural, willful or forced occurrence is the responsibility of the contractor and owner, and Roman Fountains shall not be held responsible or liable for any incidental or consequential equipment, component, structural or any other direct or indirect damage as a result of foreign objects or debris entering the fountain system by any means, including water quality and sanitation issues.

Contractor and owner shall take any and all precautions necessary in order to prevent damage to equipment and components, including providing adequate screening/grating devices and performing periodic inspection and cleaning of fountain pool, without impairing proper equipment operation, regardless of whether such devices are required per specification, or shown in manufacturers shop/installation drawings and details.

NOTICE: Roman Fountains Standard Warranty terms & conditions apply to all product/system sales. Contact factory for complete warranty form. Any and all terms to the contrary are "NULL & VOID".

CORPORATE OFFICE, MANUFACTURING & DISTRIBUTION FACILITY
Phone #: (800) 794-1801 Fax #: (505) 343-8086
P.O. Drawer 10190, Albuquerque, N.M. 87184
http://www.romanfountains.com

EASTERN ENGINEERING & SALES OFFICE
Phone #: (877) 794-1802 Fax #: (770) 300-0074
9875 Medlock Bridge Parkway
Suite 250
Johns Creek, GA. 30022

DRAWING SUBMITTAL
NOT FOR CONSTRUCTION
FOR CLIENT REVIEW.

IMPORTANT NOTICE TO FOUNTAIN CONTRACTOR/INSTALLER (MECHANICAL AND ELECTRICAL):
NOTWITHSTANDING THE CONTRACT DOCUMENTS, INCLUDING ARCHITECT'S FINAL "FOR CONSTRUCTION" PLANS AND SPECIFICATION DATA, THE FOUNTAIN SYSTEM MUST BE INSTALLED IN ACCORDANCE WITH ROMAN FOUNTAINS FINAL AND APPROVED SET OF SHOP/INSTALLATION DRAWINGS, DETAILS AND INSTRUCTIONS, AND MAINTAINED IN STRICT ACCORDANCE WITH ROMAN FOUNTAINS OPERATION & MAINTENANCE MANUALS AND INSTRUCTIONS, OR ROMAN FOUNTAINS PRODUCT WARRANTY AND SYSTEM PERFORMANCE GUARANTEE IS VOID.

ELECTRICAL NOTES (RESPONSIBILITY OF INSTALLER) AS APPLICABLE TO THE SYSTEM

1. The installation of electrical equipment and wiring in water can produce extreme hazards. It is the responsibility of the installing contractor to consult and comply with all electrical codes and safety regulations prior to installation of electrical equipment. Local codes take precedence over the general notes where discrepancies or conflicts exist.

2. It is the responsibility of the installing contractor to verify all field dimensions critical to fountain equipment installation and performance and report any discrepancies, in writing, to Roman Fountains and the Architect/Engineer.

3. It is the responsibility of the installing contractor to insure that all electrical equipment is installed and wired by a QUALIFIED, LICENSED ELECTRICIAN experienced in fountain system wiring. Roman Fountains assumes no responsibility or liability whatsoever for installations not carried out by a qualified, licensed electrician in accordance with the approved shop drawings, and all provisions of the latest edition of NEC in general, Article 680 specifically, and local safety codes and regulations.

4. A Class 'A' ground fault circuit interrupter (GFCI) must be installed in each branch circuit supplying fountain equipment. Equipment operating at 15 volts or less must be protected by suitable transformer U.L. Listed and marked for the application.

5. Submersible lighting fixtures must be installed for operation at 150 volts or less between conductors. Submersible pumps must operate at 300 volts or less between conductors.

6. Submersible lighting fixtures must be installed with the top of the fixture lens a minimum of 2" below the normal operating water level and must have the lens adequately guarded to prevent contact by any person.

7. All electrical equipment which depends on submersion for safe operation must be protected against overheating by an independent low water cutoff device if the water level drops below normal operating level.

8. Per code, maximum length of exposed cord in the fountain is limited to 9 feet. Cords extending beyond fountain perimeter must be enclosed in approved wiring enclosures. Customer is responsible for any and all inspection issues resulting from requests or requirements for additional cord lengths.

9. All submersible niche lights must have sufficient cord length to allow removal from the water for relamping and normal maintenance. Fixtures cannot be permanently embedded in the fountain structure so that the water level must be reduced or the fountain drained for relamping, maintenance, or inspection.

10. Submersible equipment must be inherently stable or be securely fastened in place with non-corrosive fasteners suitable for the purpose (by installer).

11. Underwater junction boxes must be filled with an APPROVED RE-ENTERABLE ELECTRICAL POTTING COMPOUND (wax or paraffin is not acceptable) prior to filling pool and after all circuits have been checked to prevent the entry of moisture and be firmly attached to supports or directly to the fountain surface and bonded as required. All conduit stubbed up through pool floor must be red brass pipe, "Everdur", stainless steel or hard copper. PVC is not acceptable as a conduit support stub for submersible junction boxes. All conduit entries must be completely sealed prior to potting to prevent compound from entering conduit system.

12. All electrical conduit and conduit fittings between submersible light fixture niches, junction boxes and control panels shall be U.L. Listed rigid, nonmetallic, PVC Nema TC-2 max. 90°C, sunlight resistant for above and below ground use. All conduits shall be protected at all times from possible water ingress. Use only approved primer and PVC glue suitable for joining all PVC conduits and fittings per manufacturers instructions.

13. All underwater junction boxes must be equipped with threaded conduit entries and compression type cord connectors for cord entry. Strain relief connectors serving niche-mounted underwater lights shall be capable of sealing both the fixture cord and an AWG #8 insulated bonding wire which may be required by some local codes.

14. All electrical equipment must be properly bonded and grounded for safety, per the latest code requirements.

15. Use good quality thread sealant or PVC glue as required for conduit connections to eliminate all leaks. All conduit shall be sealed to prevent entry of moisture and to prevent water from draining into the fountain control panel.

16. All conduit connections between dissimilar metals must be made with dielectric fittings, and sealed with dielectric thread compound to prevent galvanic degradation.

17. Pull correct quantity and size conductors, wired with separate ground, through conduit into junction box. Make all splices and connections tight and well insulated. Connect ground wire to ground lug in junction box, or other suitable grounding location.

18 Insert each submersible cord through the brass cord seals provided on the junction box and tighten completely.

19. Do not operate submersible lights or pumps more than ten seconds unless completely submerged or damage will result and warranty will be void.

20. All starting and control equipment such as load centers, motor starters, GFCI's, conduit, fittings, brackets, pull boxes/condulets, etc. will be furnished by the installing contractor unless specifically quoted for and clearly labeled on blueprints as being furnished by Roman Fountains.

NOTE: Any & all costs associated in complying with the above are the responsibility of installer.

NOTE
CONDUITS ENTERING FOUNTAIN SYSTEM CONTROL PANELS SHALL BE INSTALLED INTO BOTTOM OF ENCLOSURE IN THE EVENT WATER ENTERS CONDUIT AND FLOWS INTO PANEL THROUGH CONDUIT OPENINGS. DO NOT INSTALL ANY WATER LINES ABOVE THE CONTROL PANEL. A DRAIN OPENING MUST BE MADE IN BOTTOM OF ENCLOSURE PAN TO ALLOW DRAINAGE OF WATER FROM ENCLOSURE IN THE EVENT OF WATER INGRESS.

NOTE: WHERE CONFLICTS EXIST, WRITTEN DIMENSIONS SHALL TAKE PRECEDENCE OVER SCALED MEASUREMENTS.

NOTE
DUE TO OUR CONTINUING PRODUCT IMPROVEMENT, ROMAN FOUNTAINS RESERVES THE RIGHT TO CHANGE PRODUCT AND SYSTEM SPECIFICATIONS WITHOUT NOTICE.

NOTICE TO CLIENT:
ROMAN FOUNTAINS SHALL NOT BE RESPONSIBLE FOR WATER QUALITY AND WATER CHEMISTRY ISSUES WHICH MAY RESULT IN HARDWATER SCALING, HIGH IRON CONTENT, STAINING OR ANY OTHER CHEMICAL ACTION OR REACTION TO EQUIPMENT OR STRUCTURES THAT MAY OCCUR AS A RESULT OF WATER CHEMISTRY ISSUES.

CLIENT SHALL BE SOLELY RESPONSIBLE FOR PERFORMING ANY AND ALL TESTING DEEMED NECESSARY TO ASCERTAIN FOUNTAIN WATER QUALITY AND CHEMISTRY ISSUES PRIOR TO CONSTRUCTING THE FOUNTAIN, AND FOR SELECTING AND PROVIDING ALL WATER TREATMENT EQUIPMENT AND/OR CHEMICAL ADDITIVES WHICH MAY BE REQUIRED TO RENDER THE WATER SUITABLE FOR THE FOUNTAIN APPLICATION, INCLUDING HEALTH, WATER QUALITY AND SANITATION ISSUES.

WATER CHEMISTRY FOR ALL CHEMICALLY TREATED WATER FEATURES SHALL BE MAINTAINED AS FOLLOWS

Free Chlorine: 1.0-3.0 ppm
Combined Chlorine: None
Bromine: 2.0-4.0 ppm (If used in lieu of Chlorine)
pH: 7.4-7.6
Total Alkalinity: 80-100 ppm
TDS: 1000-2000 ppm
Calcium Hardness: 200-400 ppm
Cyanuric Acid: 20 ppm MAX (0 ppm in Spas and Indoor Features)

ROMAN FOUNTAINS SHALL NOT BE RESPONSIBLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES, DETERIORATION OR ANY OTHER ADVERSE EFFECTS TO SURROUNDING LANDSCAPE OR HARDSCAPE, FOUNTAIN STRUCTURE, PIPING OR ANY EQUIPMENT AS A RESULT OF WATER QUALITY AND CHEMISTRY ISSUES AND ASSUMES THAT PROPER WATER ANALYSIS AND APPROPRIATE TREATMENT HAS BEEN IMPLEMENTED PRIOR TO OBTAINING AND INSTALLING FOUNTAIN EQUIPMENT.

PIPING NOTES (RESPONSIBILITY OF INSTALLER) AS APPLICABLE TO THE SYSTEM

1. It is the installing contractor's responsibility to verify all field dimensions critical to fountain equipment installation and performance and report any discrepancies, in writing, to Roman Fountains and the Architect/Engineer.

2. It is the responsibility of the installing contractor to check and comply with all plumbing and building codes prior to installation of equipment, Local codes take precedence over general notes where discrepancies or conflicts exist.

3. All piping penetrations through any concrete wall or floor must be made with red brass, copper or Sch. 80 PVC pipe as specified for the installation, and must be flashed or fitted with waterstop flanges to prevent leakage.

4. Interconnecting piping between the pool and pump room must be PVC, copper or brass as suitable for the working pressure of the system specification requirements and local codes.

5. All pipe connections between dissimilar metals must be made with dielectric fittings, and dielectric thread sealing compound to prevent galvanic degradation.

6. Suction center line of pump must be located at or below lower pool floor elevation if flooded-end-suction type, and no more than 4 ft. above pool floor elevation if self-priming type. All reducing fittings must be concentric type on discharge line and eccentric type on suction line.

7. Suction line must be installed as a straight run into the pump suction connection of a least eight pipe diameters with no loops, high points or traps.

8. Use long radius elbows on all directional changes on suction and discharge lines where indicated on installation drawings. In some instances, piping diagrams are exaggerated for purposes of clarity. Make all suction and discharge pipe runs using the most direct routes possible and using the minimum number of fittings possible. Slope all lines down to pump, in all cases, with no loops, traps, or high points.

9. On suction lines use only butterfly, full-port or gate type valves. Never regulate or adjust flow from suction side of pump. Use suction valves for equipment isolation purposes only.

10. On discharge lines use only butterfly, globe, ball, plug or other low loss infinitely adjustable valves, for isolation and flow regulation (by installer unless otherwise specified).

11. An in-line basket strainer is recommended on the suction side of pumps, with basket perforations properly sized to protect the pump impeller, and fountain nozzle/jet orifices (by installer unless otherwise specified).

12. Provide adequate overflow drain and fill line capacity for the fountain system.

13. The piping system shall be water pressure tested for 4 hours prior to backfilling and shall then be buried and/or supported as required to protect the integrity of mechanical system. (Refer to PVC Installation Notes.)

14. Installer shall provide adequate access, lighting, drainage and ventilation in pump room to prevent flooding, condensation or overheating of equipment, and comply with all OSHA confined space regulations and requirements, before, during and after system installation.

15. Any pressurized city water lines supplying the fountain system shall be of Type K copper and shall be protected by an approved backflow prevention device and pressure reducing valve (by installer) set at 50 PSI maximum pressure and minimum of 30 PSI.

16. 'P' traps and vents shall be installed on any drain line connected to a sanitary sewer system, where and when required by plumbing code, regardless of whether shown on installation drawings (by installer).

17. When installing suction piping for self priming pump systems, the piping shall be installed in such a manner as to maintain a flooded suction pipe condition at all times until piping connects to the pump.

18. All piping is assumed to be buried below ground in all cases, and not installed on or above grade where an air trap, loop or high point could be created.

NOTE: Any & all costs associated in complying with above are responsibility of installer.

NOTICE TO CLIENT: ELECTRONIC FILE TRANSFER POLICY

As a courtesy, drawing files and other documents may be furnished to client, at clients request, in electronic format. Electronic file drawings and documents shall be used for general reference purposes only. The transfer and receipt of an electronic file from Roman Fountains does not constitute delivery of our work product. Only a printed/plotted hard copy issued from our office, as prepared by our staff for the specific project, and identified as such constitutes our work product, and shall be the operative document for all design, product detailing, product specification, layout and installation information and warranty and performance guaranty obligations.

Roman Fountains Corporation shall not be liable or responsible in any manner whatsoever for any modifications, revisions, alterations or other changes to electronic files not specifically originating from our company and our employees, or for any products, components, systems, equipment or services obtained through use of electronic files for which a printed hard copy has not been delivered, reviewed, formally approved under clients signature and on file at Roman Fountains Corporation, Albuquerque, New Mexico, prior to delivering any products, systems or services.

The recipient of any electronic file or document issued by Roman Fountains Corporation unconditionally agrees to and accepts this policy and further agrees to indemnify and hold harmless Roman Fountains Corporation for any and all irregularities, incomplete or illegible transfers, transcription defects, incidental or consequential damages or costs incurred in the use, misuse, revision, alteration or other manipulation of electronic files issued from Roman Fountains Corporation.

DEFINITIONS OF TERMINOLOGY APPEARING IN DOCUMENTS

The term "furnish" shall mean "to obtain and deliver to the jobsite". The term "install" shall mean "to fix in position and connect for use". The term "provide" shall mean "to furnish and install".

Where language indicates that one trade is to "install" and another trade is to "connect", the term "install" shall mean "to fix in position", and "connect" shall mean "to make plumbing, mechanical and electrical connections" as indicated on the construction plans.

Roman Fountains Corporation shall by definition "furnish" equipment, components, materials and documents to the job site.

DANGER

FATAL ELECTRICAL SHOCK CAN OCCUR IF FOUNTAIN ELECTRICAL EQUIPMENT IS NOT INSTALLED PROPERLY. THIS EQUIPMENT SHOULD ONLY BE INSTALLED BY QUALIFIED ELECTRICIANS WITH PROPER GROUNDING AND GROUND FAULT INTERRUPTION CIRCUIT BREAKERS IN ACCORDANCE WITH NATIONAL ELECTRICAL CODE, SECTION 680, AND ALL OTHER APPLICABLE SECTIONS OF THE CODE.

DANGER

FATAL SUCTION ENTRAPMENT CAN OCCUR IF FOUNTAIN MECHANICAL EQUIPMENT & PIPING IS NOT INSTALLED CORRECTLY AS SHOWN. ANTI-VORTEX PLATES MUST BE SECURELY FASTENED TO SUMPS AND/OR POOL FLOOR USING SUITABLE VANDAL RESISTANT SAFETY FASTENERS AND ANCHORS AT ALL TIMES DURING OPERATION OF FOUNTAIN SYSTEM.

NOTE: CONTRACTOR/INSTALLER IS RESPONSIBLE FOR CONFIRMING AND CORRELATING ALL DIMENSIONS AT JOBSITE. ROMAN FOUNTAINS IS NOT RESPONSIBLE FOR CONSTRUCTION/INSTALLATION MEANS, METHODS, TECHNIQUES, SEQUENCES, STEPS OR PROCEDURES, OR FOR ANY SAFETY REQUIREMENTS, CODES, PRECAUTIONS, RULES, REGULATIONS OR PROGRAMS PERTAINING TO THE CONSTRUCTION PROJECT, INCLUDING BUT NOT LIMITED TO OSHA CONFINED SPACE REQUIREMENTS FOR PUMP ROOMS, VAULTS OR PITS.

SYSTEM PERFORMANCE (RESPONSIBILITY OF INSTALLER) AS APPLICABLE TO THE SYSTEM

TESTING

1. Perform tests in the presence of the owner, architect, or authorized representative for designated duration with no pressure loss or noticeable leaks.

2. Do not include equipment in tests which could be damaged by high pressure.

3. Flush out all pipes with clean water prior to performing leak tests.

4. Perform tests as follows:

System	Test Pressure	Medium
Water	75 psi	Water
Drainage	10 ft.	Water

5. Automatic make-up water systems shall be thoroughly tested and operative at the time of final observation. Do not exceed 50 PSI line pressure.

6. After the system has operated for one week, contractor and owner's representative shall inspect water make-up rates and agree that water usage is appropriate for system of this type, are within local ordinances or codes, and that such rates are not indicative of excessive leakage from system. A water meter shall be placed on the fill line for this purpose, if necessary to document precise water usage.

PVC INSTALLATION NOTES

1. Unless architects or fountain designers specifications, or building codes indicate otherwise, the suggested minimum piping and fitting standard recommended for this installation is Type 1 Schedule 80 PVC to ASTM #D-1784, D-2464 and D-3467. Schedule 40 PVC pipe may be substituted if it is acceptable to mechanical/civil engineer and does not conflict with any specifications or building codes. Installer is responsible for any/all interconnecting piping, fittings and connections between equipment.

2. Use only clear PVC cleaner meeting NSF, UPC, and ASTM standards for cleaning and repairing PVC pipe and fitting surfaces for solvent cementing (IPS Corporation "Weld-On" Type C-65 or equivalent). Follow all directions and instructions appearing on product label.

3. Use only purple PVC primer meeting NSF, UPC, and ASTM #F-656 standards for softening and preparing pipe and fitting surfaces for solvent cementing (IPS Corporation "Weld-On" Type P-70 or equivalent). Follow all directions and instructions appearing on product label.

4. Use only gray, heavy bodied, medium setting PVC cement meeting NSF, UPC and ASTM #D-2564, standards for solvent cementing PVC plastic pipe and fittings (IPS Corporation "Weld-On" Type 711 or equivalent). Follow all directions and instructions on product label.

5. Pressure test all water piping prior to commencing backfill operations. (See #4 above) Hydrostatic (water) testing shall be the only approved method. DO NOT PRESSURE TEST WITH COMPRESSED AIR as severe pipe damage and bodily injury can occur. Do not exceed the rated operational pressure of the piping and/or fittings carrying the lowest pressure rating. Locate and repair any leaks and retest (per #4 above) prior to completion of backfill operations.

6. Concrete "thrust" blocking is recommended at all directional changes (tee's, elbows, etc.), reducer fittings and line terminations (bushings, end caps, plugs, etc.).

7. Perform adequate trenching and backfill operations when installing PVC piping below grade. Trench width should be minimum of "pipe O.D. plus 12 inches" and deep enough to allow piping to be buried minimum 12" below the maximum expected frost penetration line to avoid freeze damage. Lay piping in horizontal, parallel and perpendicular manner and allow for expansion and contraction. Avoid vertical stacking of pipes. Space minimum of 3" apart on all parallel runs.

8. Use only clean, free-flowing, non-expansive backfill material (naturally rounded 1/4" pea gravel or sand) and backfill in 8"-12" lifts with adequate and complete compaction between lifts to 90% of maximum density per ASTM 1557-70. Compaction to excessive loads shall not be permitted. A second pressure test on the piping system must be made at this time to insure that piping has not been damaged during backfill operations (see #4 above).

NOTE: Any & all costs associated in complying with above are responsibility of installer.

LIABILITY DISCLAIMER NOTICE

Roman Fountains shall not be responsible or liable for any civil or structural design drawings, details, notations or any other aspects of the project regarding fountain layout, structure or construction/building practices, including, but not limited to, concrete design, specifications and slab pour methods, concrete reinforcements such as rebar type, size and locations, or concrete structural waterproofing specifications, materials and methods, etc.

Any structure depicted or appearing on our plans shall be shown solely for dimensional reference and general structural orientation in order to adequately identify, coordinate, orient, locate and install our equipment package, and shall not be relied on for any other purposes.

Client is advised to enlist the services of a licensed professional engineer familiar and experienced with such work when designing/constructing any fountain pool or pump room structure, who shall accept complete responsibility and liability for all structural and civil engineering details pertaining to the project.

REQUEST TO PHOTOGRAPH, RECORD AND PUBLISH

ROMAN FOUNTAINS RESERVES THE RIGHT TO TAKE (OR CAUSE TO HAVE TAKEN) PHOTO AND/OR VIDEO IMAGES OF ITS FOUNTAIN SYSTEM EQUIPMENT AND/OR FOUNTAIN OPERATING EFFECTS (PRINT FILM, DIGITAL IMAGES, VIDEOTAPE OR OTHERWISE) AND TO PUBLISH SAID IMAGES IN ANY OF ITS SALES AND MARKETING BROCHURES, ADVERTISEMENTS, PRESENTATION AND SEMINAR HAND-OUTS, NEWSLETTERS, TRADESHOW EXHIBITS, WEBSITES, OR USE FOR LEGAL DOCUMENTATION PURPOSES. THIS RIGHT INCLUDES PRE-INSTALLATION IMAGES, INSTALLATION SEQUENCE IMAGES, START-UP AND COMMISSIONING IMAGES AND POST INSTALLATION IMAGES. ROMAN FOUNTAINS MAY, BUT SHALL NOT BE OBLIGATED TO IDENTIFY THE PROJECT, OR ANY OF THE PARTICIPANTS IN THE PROJECT, INCLUDING BUT NOT LIMITED TO OWNERS, PARTNERS, CORPORATIONS, ARCHITECTS, ENGINEERS, LANDSCAPE ARCHITECTS, CONSULTANTS, SPECIFIERS, DEVELOPERS, ETC. ALL IMAGES AND RECORDINGS SHALL REMAIN THE PROPERTY OF ROMAN FOUNTAINS CORPORATION, ITS SUCCESSORS OR ASSIGNS.

08/07/03

WATERPROOFING NOTICE OF RESPONSIBILITY

ROMAN FOUNTAINS RECOMMENDS ALL FOUNTAINS BE PROPERLY WATERPROOFED AND ALL FOUNTAIN COMPONENTS BE PROPERLY SEALED WITH A SUITABLE WATERPROOF CAULKING COMPOUND TO INSURE A WATERTIGHT FOUNTAIN INSTALLATION.

ANY WATERPROOFING DETAILS OR SPECIFICATIONS THAT MAY APPEAR ON ROMAN FOUNTAINS PLANS OR EQUIPMENT DETAILS ARE FOR GENERAL REFERENCE ONLY AND SHALL NOT BE INTERPRETED OR RELIED UPON AS A FORMAL SPECIFICATION OR RECOMMENDATION. CONVERSELY, THE ABSENCE OF WATERPROOFING DETAILS OR SPECIFICATION ON ROMAN FOUNTAINS PLANS, DETAILS OR PRODUCT SHEETS DOES NOT IMPLY THAT WATERPROOFING IS NOT A PROJECT REQUIREMENT.

IT IS THE RESPONSIBILITY OF THE PROJECT ARCHITECT/ENGINEER TO SPECIFY ANY AND ALL WATERPROOFING REQUIREMENTS, PRODUCTS, INSTALLATION/APPLICATION METHODS, PROCEDURES AND OTHER DETAILS AS MAY BE NECESSARY AND REQUIRED FOR THE FOUNTAIN STRUCTURE AND FOUNTAIN COMPONENTS.

IT IS THE RESPONSIBILITY OF THE WATERPROOFING CONTRACTOR TO REVIEW THE PROJECT SPECIFICATIONS FOR WATERPROOFING REQUIREMENTS FOR THE FOUNTAIN AND RELATED COMPONENTS AND PROVIDE THE SPECIFIED WATERPROOFING PRODUCTS AND SYSTEMS TO INSURE WATERPROOF INTEGRITY OF THE FOUNTAIN SYSTEM.

IT IS THE RESPONSIBILITY OF THE FOUNTAIN EQUIPMENT INSTALLER TO COORDINATE ALL WATERPROOFING MATERIALS, SYSTEMS, APPLICATIONS, PROCEDURES AND METHODS WITH THE WATERPROOFING CONTRACTOR, IN STRICT ACCORDANCE WITH THE PROJECT SPECIFICATIONS.

ROMAN FOUNTAINS ASSUMES NO RESPONSIBILITY OR LIABILITY WHATSOEVER FOR ANY WATERPROOFING ISSUES RELATED TO ITS DESIGN PACKAGE, SCOPE OF WORK OR EQUIPMENT SUPPLY UNDER ANY CIRCUMSTANCES. IF THE FOUNTAINS CONTRACTOR/INSTALLER/WATERPROOFER HAS QUESTIONS PERTAINING TO WATERPROOFING, THE SHALL BE DIRECTED TO THE PROJECT ARCHITECT/ENGINEER WHO IS SOLELY RESPONSIBLE FOR SUCH MATTERS.

NOTE: DRAWINGS, NOTES, DETAILS, EQUIPMENT LISTS, SPECIFICATIONS, INSTALLER REQUIREMENTS AND CALL-OUTS ARE "COMPLIMENTARY". WHAT IS INDICATED/REFERRED TO ON ANY DRAWING IN THE SET SHALL BE BINDING AS IF INDICATED/REFERRED TO ON ALL DRAWINGS IN THE SET, AS APPLICABLE.

NOTICE OF STATED AND INTENDED USE FOR DECORATIVE ARCHITECTURAL VIEWING PURPOSES ONLY UNLESS SPECIFICALLY REPRESENTED, IDENTIFIED, OR OTHERWISE SPECIFIED AND DESIGNED AS A "WATERPLAY" FOUNTAIN

It is hereby acknowledged, agreed and understood by specifier / purchaser / owner/ operator of this equipment and/or system that its stated and intended use is for decorative viewing purposes only, and not for public bathing, public entry or public recreational use. As such Roman Fountains Corporation assumes no responsibility or liability whatsoever for personal injury, sickness, illness, disease, or death which may occur as a result of the equipment/system being used, operated or otherwise maintained in a manner inconsistent with its stated and intended purpose. Specifier/Purchaser/Owner/Operator is solely responsible for notifying the public of the stated and intended use and operation of this decorative architectural fountain and for lawful enforcement thereof, including posting any and all signs, notices, warnings, instructions and barriers and providing personnel as necessary to enforce compliance with its intended use.

PURCHASER/OWNER INSTALLATION, MAINTENANCE & SERVICE RESPONSIBILITY

THIS FOUNTAIN SYSTEM IS DESIGNED, SPECIFIED, OFFERED AND SOLD UNDER THE ASSUMPTION AND UNDERSTANDING THAT THE PURCHASER/OWNER HAS REVIEWED, AND IS FAMILIAR WITH, THE FOUNTAIN PROJECT AND UNDERSTANDS THE COMPLEXITIES OF THE EQUIPMENT AND HAS, OR WILL CONTRACT WITH, COMPETENT AND EXPERIENCED INSTALLERS, AND THE PURCHASER/OWNER HAS, OR WILL CONTRACT WITH, COMPETENT AND EXPERIENCED OPERATION, MAINTENANCE AND SERVICE PERSONNEL FAMILIAR WITH SUCH EQUIPMENT TO PROPERLY CARE FOR THE EQUIPMENT. ROMAN FOUNTAINS SHALL IN NO WAY BE HELD RESPONSIBLE FOR DETERMINING WHETHER OR NOT PURCHASER/END USER HAS ADEQUATE KNOWLEDGE, RESOURCES, ABILITIES OR EXPERIENCED TRADES AND PERSONNEL TO INSTALL, MAINTAIN AND OPERATE THIS FOUNTAIN SYSTEM AND ITS ASSOCIATED EQUIPMENT PRIOR TO OFFER/PURCHASE AND AFTER SALE & INSTALLATION.

NOTICE TO INSTALLER

ALL FOUNTAIN SYSTEM EQUIPMENT & COMPONENTS FURNISHED BY ROMAN FOUNTAINS IS DESIGNED AND MANUFACTURED FOR USE IN FRESH WATER APPLICATIONS ONLY. DO NOT INSTALL OR OPERATE ANY EQUIPMENT IN SALT, BRINE OR BRACKISH WATER OR WARRANTY IS VOID.

RESPONSIBILITY FOR SPECIAL LABELING OR CERTIFICATION REQUIREMENTS

ALL COMPONENT ITEMS USED IN THE PRODUCTION OF OUR PRODUCTS ARE U.L. LISTED WHENEVER SUCH LABELING IS AVAILABLE FROM THE SOURCE EQUIPMENT OR MATERIAL.

SHOULD ANY PRODUCT REQUIRE A 'THIRD PARTY' LABEL OR CERTIFICATION AS AN ASSEMBLY (E.G. N.E.C., U.L. OR E.T.L. LISTING) SUCH REQUIREMENTS SHALL BE DETERMINED, CONTRACTED FOR, AND PAID BY OTHERS.

ROMAN FOUNTAINS SHALL NOT BE RESPONSIBLE OR LIABLE IN ANY MANNER WHATSOEVER FOR SPECIAL LABELING OR CERTIFICATION REQUIREMENTS, INCLUDING THIRD PARTY PRODUCT TESTING UNLESS SPECIFICALLY INCLUDED IN IT PROPOSALS, QUOTATIONS, DRAWING DESCRIPTIONS AND DETAILS, REGARDLESS OF PROJECT SPECIFICATION OR CODE REQUIREMENTS.

ELECTRONIC MEDIA USER ACCEPTANCE AGREEMENT

No warranties express or implied are made with respect to the electronic form of these drawings, including any implied warranties of merchantability or fitness for a particular purpose. It is understood the USER makes use of the electronic form of these drawings at USER's sole risk and that the drawings in electronic form are provided "as is" and "as received" without warranties of any kind. Roman Fountains shall have no obligation to or through the USER for use of the electronic form of these drawings, including any obligation or liability for the accuracy of the information furnished through the electronic form. In addition to and not withstanding the foregoing, in no event shall Roman Fountains be liable for any incidental, consequential or special damages or for any loss of profit sustained by user in connection with or arising out of the use of the electronic form of these drawings. January 1, 2003

OWNERS MAINTENANCE RESPONSIBILITY

For purposes of issuing this proposal and/or drawing package, Roman Fountains Corporation assumes client will commit the necessary manpower, equipment & financial resources necessary to properly, adequately & routinely maintain the fountain system in accordance with the Operation & Maintenance Manuals furnished by equipment supplier/manufacturer. Fountain system maintenance is the sole responsibility of the owner, not the fountain designer or system/equipment manufacturer/supplier.

NOTICE TO DRAWING RECIPIENT

Due diligence, good faith and care has been exercised in the preparation and production of these drawings, with reasonable and customary precautions, document quality control and redundant checking procedures having been taken to insure production of an accurate, informative, high quality drawing package.

However, in spite of these precautions and procedures, the possibility of errors and/or omissions always exists, as can be reasonably expected in the preparation of any complex technical drawing or document, regardless of circumstances. Therefore, the recipient is cautioned, and otherwise assumed to have carefully, completely and thoroughly examined all such drawings, including all details and notations incorporated herein, and shall immediately notify Roman Fountains Corporation in the event any errors or omissions are discovered or otherwise presumed.

All drawings are produced, prepared and submitted under the express condition and understanding that our contractual liability and responsibility is strictly limited to the correction and/or incorporation of information that has been determined or otherwise presumed to have been omitted, in error or otherwise excluded.

No liability or responsibility is assumed or otherwise accepted whatsoever by the company or its employees for any incidental or consequential damages or losses that occur as a result of possible, presumed or actual errors or omissions, whether we are notified or not.

NATURAL DISCOLORATION OF METALS

Discoloration of brass or copper fittings and components in fountains is a natural occurrence and is not considered by the company to be a product defect or warranty item. Water chemistry may turn the metal green or brown in appearance. Removal of the discoloration can be accomplished using a soft wire wheel brush and brass or copper cleaner if so desired. To minimize this natural occurrence, the material can be treated by owner with a clear epoxy spray coating or sealant.('Plasti-Kote' Clear Lacquer by Valspar or similar) prior to being installed into the fountain basin.

HUMIDITY, MOLD AND MILDEW

Roman Fountains is not responsible for any humidity, mold or mildew that may occur as a result of operating the fountain. Requirements for air dryers, de-humidifiers, and HVAC issues are the sole responsibility of others.

NOTICE REGARDING LINERS AND MEMBRANES

Equipment manufactured, supplied and otherwise furnished by Roman Fountains is primarily designed for embedment or casting directly into concrete or gunite structural material. It is not designed for natural or synthetic liner or membrane installation including fiberglass or metal liners, shells, covers or cladding. Any such requirement for liner or membrane installation or adaptation is the responsibility of the specifier, purchaser and installer, including but not limited to flanges, clamping devices, gaskets, fastening devices, coatings, adhesives or bonding agents.

CODE COMPLIANCE ISSUES ARE "BY OTHERS"

Sole responsibility and cost for ascertaining whether the fountain system design incorporated in this drawing package meets any/all building, civil, structural, mechanical, electrical or health/sanitation codes is "by others".

QUALIFICATIONS FOR BIDDERS/INSTALLERS

It is presumed that any/all entities bidding on this project are fully qualified and experienced to perform such work. It is not Roman Fountains responsibility to qualify bidders, or furnish installation instructions beyond what is furnished in these drawings. Architect/Owner is responsible for all contractor/installer qualifications and determinations as to suitability of bidders to perform the required work.

RESPONSIBILITY FOR OBTAINING PERMISSION AND PAYING ROYALTIES TO USE COPYRIGHTED MATERIALS IN MUSICAL FOUNTAIN SYSTEMS IS 'BY OTHERS'

Responsibility for obtaining any and all legal music licensing agreements, copyright permissions, royalty payments, playback or performance rights, etc. for the selection and use of any musical or other sound track recordings for use in musical fountain systems as may be required by BMI, ACSCAP, SESAC, by the artist or composer directly, or by any other permission or license granting body or organization is the sole responsibility of customer/client/owner of the fountain system. Roman Fountains does not quote, buy or sell music titles or licenses and bears no responsibility whatsoever, legally or finacially, for their use by owner. Roman Fountains accepts all music selections sent to us for programming into the musical fountain system with the sole understanding they are legally acquired, purchased, obtained and/or licensed by owner prior to sending them to Roman Fountains for incorporation into the fountain system. Roman Fountains accepts such material as "owners property".

LIMITED WARRANTY

THIS WARRANTY IS NOT IN FORCE UNTIL PAYMENT IS RECEIVED IN FULL FOR ALL MATERIALS ORDERED PER THE PURCHASE ORDER, INCLUDING CHANGE ORDERS AND/OR ADDENDUMS, AND FINAL APPROVED SHOP DRAWINGS.

Roman Fountains Corporation warrants its complete systems orders (systems designed and specified by Roman Fountains) to be free from defects in materials and workmanship, when properly installed and maintained, under normal use and service, for a period of one year from date of installation or eighteen (18) months from date of shipment, whichever occurs first. Component only (non-system) orders are warranted for a period of one year from date of sale. Equipment, components and items used by Roman Fountains, but manufactured by others, shall be warranted to the extent of the original manufacturer's warranty.

If any equipment furnished by Roman Fountains is found defective under this warranty, the Buyer must notify Roman Fountains, in writing, within the warranty period. After receipt of shipping advice and Return Materials authorization (RMA) number, the Buyer may return the product directly to Roman Fountains Corporation, Customer Service Dept., 8600 Paseo Alameda Dr. N.E., Albuquerque, New Mexico, U.S.A., 87113.

All equipment returned to Roman Fountains must be carefully and properly packed and freight and insurance charges must be prepaid. Replacements or repaired equipment will be returned to the sender freight prepaid, F.O.B. Factory. This Warranty does not cover, and Roman Fountains is not responsible for, the removal or replacement of equipment on the job site and will not honor charges for such work. This Warranty does not cover, and Roman Fountains is not responsible for, any loss of use, time, incidental, or consequential damages should any of the equipment fail during the warranty period, but agrees only to put into proper operating condition or at Roman Fountains' option replace such equipment, free of all charges except transportation. The correction of any defects by repairs or, at Roman Fountains' option, replacement by Roman Fountains shall constitute fulfillment of all obligations and liability of Roman Fountains to the buyer under this Warranty and the contract of sale. Warranty on replaced or repaired equipment shall be 90 days from date of return shipment or expiration of the original warranty period, whichever comes last.

Roman Fountains is not responsible for damage to its equipment through improper installation, maintenance, use, or attempts to operate equipment above its rated capacity or voltage, intentionally or otherwise, or for unauthorized repairs, or damage due to flooding due to mechanical, electrical, or structural failure.

Failure to notify Roman Fountains of unsatisfactory operation or any improper installation, unauthorized installation, maintenance, use, repairs, or adjustments shall terminate this Warranty and shall relieve Roman Fountains from any further responsibility or obligation.

Buyer's exclusive and sole remedy under this Warranty is limited to repair or replacement of defective equipment returned "freight pre-paid" to Roman Fountains. Roman Fountains shall not be liable for special, consequential, incidental or other damages in any claim, action, suit or proceeding arising under this Warranty or the contract of sale, nor shall there be any liability thereunder for claims for labor, loss of profits or goodwill, repairs or other expenses incidental to replacement. This Warranty does not cover lenses, lamps, ballasts, batteries, or other equipment that may be supplied or warranted directly to the user by their manufacturers.

EXCEPT AS SPECIFICALLY PROVIDED ABOVE, ROMAN FOUNTAINS MAKES NO OTHER WARRANTY OF ANY KIND WHATSOEVER, EXPRESS OR IMPLIED, AND NO IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE ARE MADE, AND THERE ARE NO WARRANTIES WHICH EXTEND BEYOND THE FACE OF THIS DOCUMENT. NO REPRESENTATIVE OR EMPLOYEE OF ROMAN FOUNTAINS IS AUTHORIZED TO EXTEND, EXPAND, OR AMEND THIS WARRANTY IN ANY MANNER WHATSOEVER.

NOTICE

All shipments, unless otherwise noted, are sold F.O.B. factory, Albuquerque, New Mexico, U.S.A., freight collect.

The Buyer is advised to immediately inspect for shipping damage, apparent and /or hidden. If detected, notify the transportation company immediately and file your claim. The freight company is responsible for paying claims.

Buyer agrees that installation of all equipment shall be performed in strict accordance with Article 680 of the latest version of the NEC and in accordance with all national, state and local codes, by a licensed and experienced contractor / electrician qualified to perform such work.

01-01-13
(SUPERSEDES ANY AND ALL PRIOR WARRANTIES.)

SCOPE OF RESPONSIBILITY AND PERFORMANCE GUARANTEE

Roman Fountains will guarantee the decorative fountain system to perform to the specified operating heights, spray patterns, and water volumes, and to create the designed lighting effects, provided the entire equipment package as listed on our final submittal documents is supplied by Roman Fountains, and the installation, operation and maintenance of the equipment is in strict accordance with Roman Fountains installation and operating instructions, submittals, shop drawings and installation blueprints.

Roman Fountains will provide consultation and design services as they pertain to the fountain equipment package supplied, including the fountain display system, filtration system, water treatment system, overflow and drain system, water makeup and low level protection system, pump and lighting control system, lighting fixture and electrical junction box system, pump selection and pump room layout, electrical conduit and conductor sizing as it pertains to our equipment package, and suction and discharge sump design, as applicable.

The consultation and design information will be detailed on schematic, installation and submittal blueprints showing correct orientation and installation of Roman Fountains equipment as coordinated with the contract drawings. Upon receipt and acceptance of a bona-fide written purchase order with all terms and conditions satisfied, final installation drawings will be furnished to the owner/architect/engineer/contractor, as required by Roman Fountains as an integral part of its fountain equipment package. Any drawings or documents marked "preliminary" shall not be used for installation purposes.

Roman Fountains will not install, or accept responsibility for (1) the actual installation of the system equipment, (2) the design of the power distribution system, or (3) any other portion of the project not specifically enumerated, such as pool structure, hardscape design and construction and equipment room structural design and construction, or health code requirements.

Equipment not included in this scope of work: interconnecting piping, misc. plumbing and electrical fittings, filter media, water treatment chemicals, conduit, wiring, electrical load centers, electrical transformers, pipe hangers, pump and strainer supports or housekeeping pads, companion flanges, gaskets, fasteners, reducers, increasers and other equipment required to complete the installation unless specifically enumerated and identified as being furnished by Roman Fountains. This scope further does not include provisions for specially designed or fabricated waterstop equipment or penetrating sleeves, clamping or flashing rings, special sumps or other similar items unless specifically included in Roman Fountains system equipment lists and/or shop/installation drawings.

Engineer stamped or sealed drawings are not included in this scope and it shall be the responsibility of the client to obtain and pay the cost of such engineering certifications if so required.

DRAWING SUBMITTAL
NOT FOR CONSTRUCTION
FOR CLIENT REVIEW.

ROMAN FOUNTAINS

Sample Drawing
Anywhere, USA
SplashPad

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Scale:	None
Drawn By:	W. Pierce
Checked By:	C. Bascas
Date:	02/23/2016

Revisions:

No.	Date	By	Comments

GENERAL INSTALLATION NOTES

Drawing Number:

WFN-1

FOUNTAIN PERFORMANCE CRITERIA

The fountain for the Sample Splashpad project consists of an exterior, 28'-0" diameter interactive splash pad area. Water is introduced through a series of thirty flush mounted nozzle assemblies located on an inner and outer ring. The inner ring is 10'-0" in diameter and contains (10) ten evenly spaced nozzles assemblies. The outer ring is 18'-0" in diameter and contains (20) twenty evenly spaced nozzle assemblies. Each unit contains a drain fitting to allow collected water to flow back to a common reservoir tank.

Each assembly contains a jet cluster nozzle producing a vertical spray of water with a maximum spray height of 8'-0". Each nozzle is operated by an independently controlled water switch. This switching mechanism allows the nozzles to turn on and off individually in a programmed sequence as desired. In addition, the inner ring and outer ring operate on independent pump systems both utilizing variable frequency drives (VFD). These drives allow the inner ring and outer ring to rise and fall independently of one another. The combination of the VFD and the independent nozzle control allow for various shows and sequences to be generated.

At night, each of the flush nozzle assemblies utilize a color changing LED/RGB light fixture. Both rings operate in an even/odd configuration. Example, the inner ring contains (10) nozzles. The odd nozzle lights operate as a group and the even nozzle lights operate as a group. The same applies to the outer (20) nozzles. The even nozzle lights operate as a group and the odd nozzle lights operate as a group.

A wind control system is included in this feature to compensate for high wind conditions. When wind conditions increase, the display pumps will automatically reduce in height of the spray effects and return to normal operation when the wind conditions return to normal.

All of the fountain pumping and filtration equipment is located in a remote equipment room located adjacent t the fountain area. This room contains a common filter pump to recirculate the reservoir tank water. The water is filtered and treated using a chemical controller. The inner and outer rings are operated by an individual display pump. Each display pump utilizes UV sterilizers providing 100% sterilized water to the nozzles.

The fountain's U.L. listed electrical control panel is also located within the equipment room. The panel includes all the necessary breakers, disconnect switches, PLC programming hardware and digital time clocks required for the fountains operation..

CLIENT NOTE

PLEASE READ THIS CRITERIA CAREFULLY. IF THIS IS NOT YOUR UNDERSTANDING AND EXPECTATION OF THE AESTHETICS, OPERATION AND PERFORMANCE OF THIS FOUNTAIN FEATURE, PLEASE NOTIFY US IN WRITING IMMEDIATELY, OTHERWISE THIS DESCRIPTION WILL BE THE BASIS FOR THE DESIGN, MANUFACTURE AND SUPPLY OF THIS SYSTEM.

FOUNTAIN PERFORMANCE CRITERIA

All information shown below is approximate. Final dimensions and calculations may differ.

Area of Fountain:	616 Square Feet
Inner Ring	
RDJG- Flush Nozzle Requirement:	16.09 Gallons per minute (GPM)
Total Nozzles (10):	161 GPM Total
Pump Requirement:	161 GPM @ 45' Head Pressure (FH)
5 HP Pump Delivers:	200 GPM @ 55' FH
Outer Ring	
RDJG- Flush Nozzle Requirement:	16.09 Gallons per minute (GPM)
Total Nozzles (20):	322 GPM Total
Pump Requirement:	322 GPM @ 45' Head Pressure (FH)
7-1/2 HP Pump Delivers:	360 GPM @ 55' FH
Reservoir Tank Requirements:	2,000 operating gallons (2,500 with shutdown gain capacity)
Filtration requirements (Reservoir):	2,000 gallons
Filtration Requirement:	67 GPM at 60 Feet of Head (30 min. turnover)
Filtration Type:	4.91 Sq. Ft. Sand Filter (74 GPM max.)
Dedicated Reservoir Filtration Rate:	67 GPM at 60 Feet of Head
Maximum Filtration Rate Available:	74 GPM at 60 Feet of Head (~ 27 min. turnover)
1HP Filter Pump Delivers:	75 GPM @ 60' FH

CLIENT NOTE

PLEASE READ THIS CRITERIA CAREFULLY. IF THIS IS NOT YOUR UNDERSTANDING AND EXPECTATION OF THE AESTHETICS, OPERATION AND PERFORMANCE OF THIS FOUNTAIN FEATURE, PLEASE NOTIFY US IN WRITING IMMEDIATELY, OTHERWISE THIS DESCRIPTION WILL BE THE BASIS FOR THE DESIGN, MANUFACTURE AND SUPPLY OF THIS SYSTEM.

Sample Splashpad (2/23/16)
Equipment List – By Roman Fountains

Item No.	Qty.	Component Number	Description
01	30	RDJG-JC-DH-LED-RGB	Flush Mounted Nozzle/LED Assembly, consisting of a high strength polypro niche with integral water-stop key flange, threaded inserts to accept eye-bolts and jamb nuts (included) for installation, stainless steel grate, fast acting waterswitch and RDHN-JC, Jet Cluster S.S. Nozzle Body. 3" F.N.PT. drain return connection, 1-1/2" F.N.P.T supply connection & two (2) 3/4" F.N.P.T conduit connections (one for LED light fixture and one for nozzle/valve assembly), one high output RFL-CG-DH-LED-RGB light fixture. Unit requires 12VDC & 24VDC.
02	1	RWST- 2500 (Special)	Water Storage/Surge Tank 2500 gallon with brown gel-coat exterior and 36" sq. hatch opening with fiberglass reinforced plastic lid with stainless steel piano hinge attachment, lock hardware **(LOCK BY INSTALLER)**. Fiberglass construction, with ladder, all required fittings per shop drawings & RCOM-RNFT level sensor installed.
03	1	RMS-075-NS	Fill Manifold System, constructed of copper and brass with 3/4" 120 VAC solenoid fill valve, manual bypass and isolation valves, union fittings, hose bibb, plugged female threaded risers on each loop side for water hammer arrestor connection (by Installer), liquid-filled inlet pressure gauge and 3/4" (F) N.P.T. connections. (right to left flow direction)
04	1	RWC-A-DUL	Molded 3-cup ultraviolet protected polycarbonate anemometer. Rotor shaft is supported by a beryllium copper shaft riding in Teflon bearings. Control wire is by installer.
04a	1	RWC-SM-DUL	U.L. Listed Wind Control, NEMA 4 polycarbonate w/clear lexan cover enclosure, solid state circuitry, 0-25 mph adjustable wind velocity control, 3-digit LED display, pilot lights and time delays, two-stage design, 120/240v., single-phase.
*05	12	RJB-5-100-F	Submersible Junction Box, Conduit-Mount, cast bronze construction with neoprene gasket, brass fasteners, one (1) 1" (F) N.P.T. bottom power conduit connection, and up to eight (8) 3/4" N.P.T. side connections with 3/4"x1/2" brass strain relief fittings (shipped loose; installed in field). Junction box has a minimum volume of 60.0 cubic inches and includes an internal grounding lug **(6 for lights, 6 for solenoid)**
05a	24	RPC-2114-D	Potting Compound, re-enterable electrical insulating and potting compound, designed for use in RJB-Series junction boxes (required by NEC 680). 21.2 oz. size. **(~2 per junction box)**
06	1	RSM-1-100 (Special)	Skid-Mounted Pump, consisting of a reinforced 11 gauge, mill finish stainless steel platform with leveling feet, measuring approximately **12" WIDE X 33" LONG**. System shall include a RWSP-100; 1 HP self-priming pump with integral strainer,(Schedule 80 PVC) piping, fittings, manual regulating/isolation valves and check valves. Unit is pre-plumbed (Schedule 80 PVC). **NOTE: 2" CHECK VALVE SHIPPED LOOSE FOR REMOTE INSTALLATION** Power requirement: 208V, 3-phase.
07	1	RSM-S-500 (Special)	Self-Priming, Skid-Mounted Pumping System, consisting of a reinforced 11 gauge, mill finish stainless steel platform with leveling feet, measuring approximately **1'-6" WIDE X 3'-2" LONG**. 5 HP Self-Priming Pump; one-piece thermoplastic housing with integral strainer basket and easy on/off two-piece see through lid; non-corrosive plastic impeller with heavy duty mechanical seal, suction and discharge are equipped with 4" quick disconnect unions for easy installation and maintenance (union & lid wrench included); heavy duty energy efficient totally enclosed fan cooled (TEFC) motor, suction and discharge manifold (schedule 80 PVC) with gauges, valves and fittings as shown (within skid footprint) **NOTE: 4" SUCTION, DISCHARGE & CHECK VALVES (ONE EACH) SHIPPED LOOSE FOR REMOTE INSTALLATION.** Power Required: 208V, 3-Phase, plus ground.
07a	1	RVFD-4-750	U.L. Listed 7.5 HP (rated for 5HP Heavy Duty) Variable Speed Drive (VFD), in a NEMA 4X/IP66 indoor/outdoor enclosure, rated for operation at 208VAC, 3-phase power. Model RX4C20075C is to be wall mounted in pump room by installer.
08	1	RSM-S-750 (Special)	Self-Priming, Skid-Mounted Pumping System, consisting of a reinforced 11 gauge, mill finish stainless steel platform with leveling feet, measuring approximately **1'-6" WIDE X 3'-2" LONG**. 7-1/2 HP Self-Priming Pump; one-piece thermoplastic housing with integral strainer basket and easy on/off two-piece see through lid; non-corrosive plastic impeller with heavy duty mechanical seal, suction and discharge are equipped with 4" quick disconnect unions for easy installation and maintenance (union & lid wrench included); heavy duty energy efficient totally enclosed fan cooled (TEFC) motor, suction and discharge manifold (schedule 80 PVC) with gauges, valves and fittings as shown (within skid footprint). **NOTE: 4" SUCTION, DISCHARGE & CHECK VALVES (ONE EACH) SHIPPED LOOSE FOR REMOTE INSTALLATION** Power Required: 208V, 3-Phase, plus ground.
08a	1	RVFD-4-1000	U.L. Listed 10 HP (rated for 7.5HP Heavy Duty) Variable Speed Drive (VFD), in a NEMA 4X/IP66 indoor/outdoor enclosure, rated for operation at 208VAC, 3-phase power. Model RX4C20100C is to be wall mounted in pump room by installer.
09	2	RBS-PVC-400 (Special)	4" In-line Strainer, includes PVC construction strainer housing **WITH #20 STAINLESS STEEL MESH BASKET INSERT. 4" SOCKET CONNECTIONS.**

SYSTEM POWER REQUIREMENT:
120/208V., THREE PHASE, 4-WIRE FEEDER + GND. @ 70 AMPS
CONTACT FACTORY IMMEDIATELY IF NOT AVAILABLE.
(NOTE: SEE SHEET WFI-1 FOR POWER DIAGRAM)

NOTE:
POWER SHALL BE VERIFIED & CONFIRMED BY CONTRACTOR WITH APPROVED DRAWINGS. IF THERE ARE NO CHANGES, THE POWER REQUIREMENT LISTED ABOVE WILL APPLY.

Sample Splashpad (2/23/16)
Equipment List – By Roman Fountains

Item No.	Qty.	Component Number	Description
10	7	RUV-T2-12	Ultraviolet Sanitizer featuring same size housing for three (3) different models, all of which are field convertible from one lamp to two, or three lamp system. Unit rated at 120 volts, 50/60 Hz. or 240 volt, single phase, 50/60Hz power and shall be equipped with a 7'-6" long power cord with 3-prong plug (120V units only), 9" diameter corrosion resistant polymeric reactor vessel, stainless steel internal lamp reflectors, electrical enclosure bonnet suitable for outdoor installation, PVC Inlet/Outlet unions with 2" socket connections, pressure switch to prevent operation when water is not flowing, dual scale (PSI/kPa) pressure gauge, 360 degrees 'Lamp On' visual ring, UV lamp(s) rated for 13,000 hours of continuous use and shall be fully replaceable without requiring special tools. Additionally, four inlet ports and four outlet ports are provided to accommodate multi-directional piping to and from the UV system and six blank caps are provided to close unused plumbing ports after inlet/outlet selection. **(three for 5HP & four for 7.5 HP)**
11	1	RSFP-TR-100	30-1/2" Dia. High Rate Sand Filter Tank, N.S.F. Listed, corrosion resistant, UV resistant, precision molded fiberglass, one-piece tank, multiple diverters for increased filtration rates, 8" opening for access to sand, ready to accept 2" multiport valve, and bottom mount drain plug. (Sand provided by Installer.)
12	1	RWTS-BECS-3	Water Chemistry Controller, for automatic maintenance of pool water PH and sanitizer (ORP) levels. System consists of dual-point controller (NSF/ANSI 50, ETL & CE Approved. Includes start-up & support by factory-trained technicians. (Model #110256-ENS1NPR0X) Unit requires 115/230 volt, single phase power and must be wall-mounted in close proximity to filtration system (by installer).
12a	2	RCMP-AD10	Single Head, Adjustable Rate Chemical Metering Pump, for acid/base injection or liquid chlorine injection, with adjustable mechanical feed rate of 0.13 to 13 gallons per day at 25 psi. Unit features heavy duty shaded pole gearmotor with lifetime lubrication, rated for 120 volt, single phase operation, with on/off switch and 10-minute solid state electronic current interrupter. Accessories include: 20 ft. of 1/4" poly tubing (installer cut to length, as required), tubing connector fittings, suction side ceramic tubing weight, feed side check valve.
12b	2	RST-7910-30	30 gallon high density polypropylene (HDPE) chemical storage tank and lid. Cylindrical, linear polypropylene tank dimensions are 18" in diameter, 29" tall, and with a 1/4" wall thickness. One tank is for acid/base solution to maintain proper water PH balance. The other tank is for liquid chlorine as required. Chemicals are provided by others.
13	1	RPCP/RLCP-(Special)	UL508 Listed Custom Control Panel. Consisting of main disconnect; power distribution breakers (Class A GFCI), pump contactors w/overload relays, lighting contactors, water level makeup/low level equipment protection circuit, (2) 7day/24hour electronic time clocks, 3-pos H.O.A. selector switches and field connection terminal blocks. The panel is pre-wired in a NEMA 4 enclosure and factory tested with all loads, circuits and switching functions verified prior to delivery. **Includes (6) RLIN-720 DMX Drivers & (6) SDR-120 power supplies & PLC Programmer.** Power requirement: 120/208V, 3-phase, 4-wire feed + GND

***NOTE: CONCRETE EMBED ITEM, REQUIRED FOR POUR.**

PANEL ID: Centennial Park LOCATION: EQ.ROOM **MOUNT:** NEMA 4
VOLTAGE: 120/208V-3P **AMPS:** 70 **TYPE:** Bolt-On, Wall

LOAD DESCRIPTION:	BKR Size	CKT No.	VA/Phase A	VA/Phase B	VA/Phase C	Duty Factor		LOAD	
Control Circuit #1: (Panel, Wind, WLC, etc)	15	CB1	150			1.25	=	188	VA
Display Pumps 7.5 HP, (208V/60/3)	50	CB2	3,067	3,067	3,066	1.25	=	11,500	VA
Display Pump 5 HP (208V/60/3)	30	CB3	2,100	2,100	2,100	1.00	=	6,300	VA
Filter Pump - 1 HP (208V/60/3):	15	MP1	500	500	500	1.00	=	1,500	VA
Lighting (30 @ 12VDC-RGB, 18W)	15	*CB4			540	1.25	=	675	VA
UV Sterlizers (4 for 7.5 HP)	15	*CB5		696		1.25	=	870	VA
UV Sterlizers (3 for 5 HP)	15	*CB6	522			1.25	=	653	VA
pH/ORP Dedicated Receptacle (120V/60/1)	15	*CB7	150			1.25	=	188	VA
Load (Continuous Duty):						1.25	=	0	VA
Load (Non-Continuous Duty):						1.00	=	0	VA
VA/Phase TOTAL:			**6,489**	**6,363**	**6,206**			**21,873**	VA

NOTE: * GFI Breaker 5mA

TOTAL LOAD:	21,873 VA	/	208 V	/	1.73	=	**60.8** AMPS
REQ'D. FEED:							**70** AMPS
FEEDER CONDUIT:							**1 1/2** inch

1. PREPARE THE EXCAVATION

EXCAVATE 6 INCHES DEEPER THAN THE DEPTH OF THE ENCLOSURE AND ADD 6 TO 8 INCHES OF GRAVEL OR CRUSHED ROCK FOR DRAINAGE.

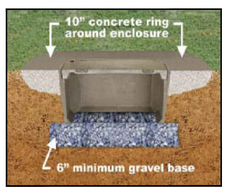
2. PLACE ENCLOSURE IN HOLE

THE TOP OF THE ENCLOSURE SHOULD BE LEVEL WITH THE FINISHED GRADE.

3. BACKFILL & GRADE ADJUSTMENT

FILL TO GRADE LEVEL AND MAKE SURE THE COVER IS ON WHEN FILLING AROUND THE ENCLOSURE. ADJUST ENCLOSURE TO FINAL GRADE AS NECESSARY.

4. FOR CONCRETE COLLAR APPLICATION



ELECTRICAL INSTALLATION NOTE: 12/10/08

INSTALLER SHALL PROVIDE AND INSTALL FLUSH-TO-FINISHED-GRADE AND APPROVED HANDHOLE SPLICE BOX CONSTRUCTED OF LIGHTWEIGHT, HIGH-STRENGTH POLYETHYLENE, OR FRP AND POLYMER CONCRETE, COLORED TO MATCH SURROUNDING AND ADJACENT SURFACES AND SPECIFICALLY IDENTIFIED FOR USE AS AN ELECTRICAL ENCLOSURE (VALVE BOXES ARE NOT ACCEPTABLE).

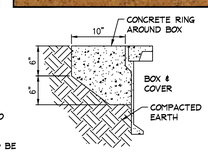
BOX(ES) SHALL BE WATER TIGHT & SIZED FOR THE REQUIRED NUMBER OF CONDUITS/CONDUCTORS SHOWN ON THE PLANS, AND MANUFACTURED BY HUBBELL/QUAZITE OR EQUAL AS APPROVED BY PROJECT ARCHITECT/ENGINEER.

INSTALLER SHALL PROVIDE AND INSTALL DIRECT BURIAL WATERPROOF CONNECTORS FOR ALL CONDUCTOR SPLICES, AS MANUFACTURED BY KING INNOVATION 'DRY-CONN' (MODEL KING 6 BLUE) OR EQUAL AS APPROVED BY PROJECT ARCHITECT/ENGINEER.

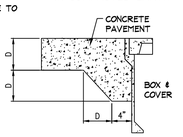
ALL CONDUCTORS FOR 12 VOLT LIGHTING, AND ALL CONDUCTORS ON LOAD SIDE OF ANY CLASS 'A' GROUND FAULT CIRCUIT BREAKER (G.F.C.I.) SHALL BE TYPE XHHW INSULATION.

INSTALLATION SHALL CONFORM TO NEC 314.30 CODE SPECIFICATIONS FOR HANDHOLE ENCLOSURES, AS WEL AS ANSI/SCTE 77 SPECIFICATIONS, AS REFERENCED IN THE NEC 2008 EDITION.

INSTALLER NOTES:
1. CONCRETE ENCASEMENT TO BE 3,000 PSI MIN.
2. CONCRETE ENCASEMENT COLLAR DIMENSION, D, TO BE EQUAL TO DESIGN PAVEMENT DEPTH.
3. PAVEMENT AND SUBGRADE TO BE AS SHOWN ON THE ENGINEERING PLANS.



IN COMPACTED EARTH



IN CONCRETE PAVEMENTS

ELECTRICAL PULL BOX INSTALLATION DETAILS

SCALE: NONE

DRAWING SUBMITTAL
NOT FOR CONSTRUCTION
FOR CLIENT REVIEW.

ROMAN FOUNTAINS

SAMPLE DRAWING
Anywhere, USA
SPLASHPAD

ROMAN FOUNTAINS CORP.
P.O. Drawer 10190
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Eastern Engineering & Sales Office
9875 Medlock Bridge Parkway
Suite 250
Johns Creek, GA. 30022
Phone #: (877) 794-1802
Fax #: (770) 300-0074

Scale:	None
Drawn By:	W. Pierce
Checked By:	C. Bascas
Date:	02/23/2016

Revisions:

No.	Date	By	Comments

FOUNTAIN EQUIPMENT LIST & PERFORMANCE CRITERIA

Drawing Number:

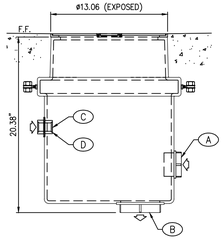
WFN-2

LED 12VDC

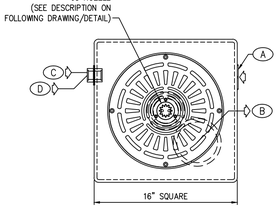
RDJG-JC-DH-LED-RGB
Grande Pod with Donut Light & JC Nozzle
Scale: NONE

NOTE: SEE FOLLOWING DRAWING DETAIL FOR NOZZLE OPTIONS AND FLOW REQUIREMENTS.

DISPLAY: 8'-0" SPRAY HEIGHT



SECTION VIEW



PLAN VIEW

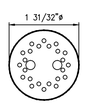
SYM.	SIZE/FUNCTION	CONNECTION TYPE
A	1-1/2" SUPPLY CONNECTION	FEMALE THREADED CONNECTION
B	3" DRAIN RETURN CONNECTION	FEMALE THREADED CONNECTION
C	3/4" LTG. CONDUIT CONN. (12VDC)	FEMALE THREADED CONNECTION
C	3/4" WTR.SWITCH. CONDUIT CONN. (24VDC)	FEMALE THREADED CONNECTION

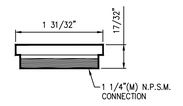
NOTES:
1. JC Nozzle (all non-APJ nozzles) requires fine screening at pump.
2. Installer to provide 1/2" all-thread rod, flat washers and nuts.
3. 12VDC power supply and DMX driver required to operate RGB light.
4. Submersible cable for light must be installer-connected to outbound circuits within internal conduit access box with cord seal fitting (pre-installed). Conduit Access Box must be potted using furnished RPC-Series potting compound, as required by the National Electrical Code.

SPECIFICATION DATA: Flush Mounted Nozzle/LED Assembly, consisting of a high strength polypro niche with integral water-stop key flange, threaded inserts to accept eye-bolts and jamb nuts (included) for installation, stainless steel grate, fast acting waterswitch and RDHN-JC, Jet Cluster S.S. Nozzle Body. 3" F.N.P.T. drain return connection, 1-1/2" F.N.P.T supply connection & two (2) 3/4" F.N.P.T conduit connections (one for LED light fixture and one for nozzle/valve assembly), one high output RFL-CG-DH-LED-RGB light fixture. Unit requires 12VDC & 24VDC.

TYP. (30) | ITEM # 01

RDHN-JC
JET CLUSTER





INTERCHANGEABLE NOZZLE COVER ELEVATION

DISPLAY: 8'-0" SPRAY HEIGHT

RDHN-JC
Stainless Steel Nozzle Assembly for RDJG-JC-DH-LED-RGB
Scale: NONE

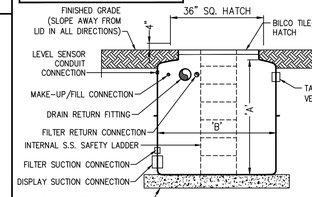
TECHNICAL DATA										
Model No.		SPRAY HEIGHT								
		2'-0"	3'-0"	4'-0"	5'-0"	6'-0"	7'-0"	8'-0"	10'-0"	12'-0"
RDHN-JC	GPM	9	10	11.5	12.5	13	14	15.5	16.5	19
	HEAD	5'	6'	8'	9'	10'	12'	13'	16'	18'

SPECIFICATION DATA: Stainless Steel Nozzle Assembly; with interchangeable cover. Manufactured from Type 303 Stainless Steel with 1" (F) N.P.S.M. bottom connection.

TYP. (30) | PART OF ITEM # 01

WARNING: FOR 'DRY HOLE' INSTALLATION ONLY.

RWST-2500 (Special)
Water Storage/Surge Tank
Scale: None



TANK ELEVATION

NOTE: SEE DWG. WFM-4 FOR SPECIFIC "TANK" DETAILS

TECHNICAL DATA				
MODEL	CAPACITY	HEIGHT 'A'	DIA. 'B'	HATCHWAY
RWST-2500	2500 GAL.	84"	96"	36x36

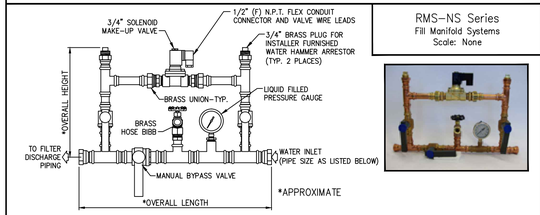
NOTE: FOLLOW ALL 'OSHA' CONFINED SPACE PROCEDURES FOR MAINTENANCE & SERVICING OF TANK.
DO NOT USE FOR DRINKING WATER
DO NOT INSTALL IN PATH OF VEHICLES
DO NOT INSTALL IN HIGH WATER TABLE AREAS.

NOTE:
FITTING SIZES AND LOCATIONS SHOWN 'TYPICAL' ONLY. FINAL SIZING AND LOCATIONS WILL DEPEND ON SPECIFIC JOB REQUIREMENTS.

SPECIFICATION DATA: Water Storage/Surge Tank, 2,000 gallon with brown gel-coat exterior and RBH-TS TILE-SET ACCESS HATCH that consists of an extruded aluminum frame with built in anchor flange around perimeter, 1" deep w/re-mesh fillable pan for architectural flooring material; heavy duty stainless steel hinge, compression shocks; automatic hold-open arm; and 1 1/2" drain line connection. Tank is of fiberglass construction, with stainless steel access ladder, all required fittings per shop drawings & RCOM-RNF LEVEL SENSOR pre-installed.

TYP. (1) | ITEM # 02

RMS-NS Series
Fill Manifold Systems
Scale: None



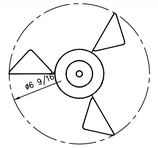
TECHNICAL DATA					
MODEL	FILL LINE PIPE SIZE	APPROX. MANUAL FILL RATE/50 P.S.I.	*OVERALL LENGTH	*OVERALL HEIGHT
RMS-075-NS	3/4"	12 GPM	1'-9 1/4"	1'-0 1/8"
RMS-100-NS	1"	25 GPM	1'-9 1/2"	1'-0 1/4"
RMS-150-NS	1 1/2"	80 GPM	2'-3 1/2"	1'-0 5/8"
RMS-200-NS	2"	120 GPM	2'-8 1/2"	1'-0 5/8"

120V. VALVE COIL
FLOW ORIENTATION
RIGHT-TO LEFT

NOTES:
1. Water supply to manifold must include a backflow preventer (specified by others) to meet local code requirements: To be provided, By Installer.
2. Regulate upstream pressure to a maximum of 50 P.S.I. for proper operation. Provide pressure regulator as required (by installer) to maintain pressure range.
3. Minimum pressure required to operate: 5 P.S.I.

SPECIFICATION DATA: Fill Manifold System,constructed of copper and brass with a 3/4" 120VAC solenoid fill valve, manual bypass and isolation valves, union fittings, hose bibb, plugged female threaded risers on each loop side for water hammer arrestor connection (by Installer), liquid-filled inlet pressure gauge and 1" (F) N.P.T. connections.

TYP. (1) | ITEM # 03



RWC-A-DUL
Anemometer
Scale: NONE

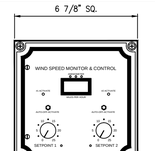
NOTE: THIS ANEMOMETER TO BE USED WITH RWC-SM-DUL, WIND CONTROL PANEL.

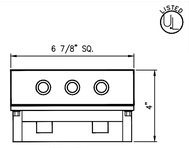
NOTE: MOUNT ANEMOMETER AT HEIGHT EQUAL TO MAXIMUM SPRAY HEIGHT AND AS CLOSE TO FOUNTAIN POOL AS POSSIBLE.

*NOTE: 18-3 shielded cable is required (by installer) to connect anemometer to control. Limit run to 200' in its own dedicated conduit.
*NOTE: Height reduction requires a control valve or variable frequency motor drive which are both available as accessory item; consult factory.

SPECIFICATION DATA: Anemometer, molded 3-cup ultraviolet protected polycarbonate anemometer. Rotor shaft is supported by a beryllium copper shaft riding in Teflon bearings. Control wire (18/3 shielded cable) is by installer.

TYP. (1) | ITEM # 04





NOTE: Mount control panel in a secure, weather protection area.

NOTE: Mount anemometer at height equal to maximum spray height and as close to fountain pool as possible.

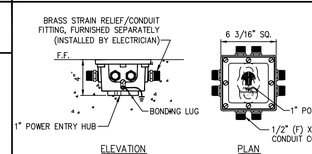
RWC-SM-DUL
Wind Control
Scale: NONE

TECHNICAL DATA						
MODEL	NO. OF STAGES	POWER	ANEMOMETER WIND SPEED	SETPOINT RANGE	POSSIBLE OPERATING METHODS	OUTPUT CONTROLS
RWC-SM-DUL	Two	120/240v. 3.5W. MAX.	0-120 MPH	0-25 MPH	HEIGHT REDUCTION AND/OR DISPLAY PUMP OFF	10 AMPS @ 240V. 1/2 HP @ 240V. 8 AMP @ 24VDC

NOTE: A minimum 18-3 shielded cable is required (by installer) to connect anemometer to control. Limit run to 1000' in its own dedicated conduit.
* NOTE: Height reduction requires a control valve or variable frequency motor drive which or both available as accessory

SPECIFICATION DATA: Wind Control; NEMA 4 polycarbonate w/clear lexan cover enclosure, solid state circuitry, adjustable wind velocity control, 3 digit LED display, pilot lights and time delays.

TYP. (1) | ITEM # 04a



RJB-5-100-F
Flush-Mount Submersible Junction Box
Scale: None

Bottom tap (power entry)
ONE 1" OR TWO 3/4" (F) N.P.T.

3/4" (F)N.P.T. CORD SEAL SIDE taps - (5) THRU (8):
Quantity: (5)

NOTE: NOT TO BE USED IN SWIMMING POOL OR SPA APPLICATIONS.

NOTE: BRASS STRAIN RELIEF FITTINGS FURNISHED BY ROMAN FOUNTAINS, INSTALLED INTO BOX BY ELECTRICIAN.

NOTE: ONCE WIRING IS COMPLETED, FLASH LIGHTING CIRCUITS TO VERIFY PROPER OPERATION. THEN CAULK OR PUTTY ALL CONDUIT CONNECTIONS IN J-BOX WITH TWO (2) OF RPC-2114-D, ITEM #05a POTTING COMPOUND.

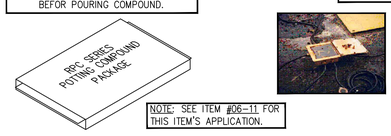
SPECIFICATION DATA: Conduit-Mounted Submersible Junction Box, cast bronze construction with neoprene gasket, stainless steel fasteners, one 1" OR, two 3/4" (F) N.P.T. bottom power conduit connection(s), and (5) 3/4" N.P.T. side connections with brass cord seal fittings (shipped loose and installed in field). Junction box has a minimum volume of 60.0 cubic inches and includes an internal grounding lug.

INSTALLATION: Roman Fountains recommends the following procedures be followed when installing underwater junction boxes.
1. Check local electrical codes before installing. Must comply with NEC article 680.
2. Use only 'Everdur' or brass pipe for conduit where exposed to water.
3. After making and verifying all connections, use putty provided to seal all conduit entries into j-box.
4. Once conduits are sealed, pot junction box with RPC-2114-D potting compound (Item #05a).
5. Use good quality thread sealant on junction boxes.
6. Test conduit system to eliminate all leaks.

TYP. (12) | ITEM # 05

INSTALLER NOTE
DO NOT OPEN AND MIX CONTENTS UNTIL READY TO POUR!!! PLUG ALL CONDUITS BEFOR POURING COMPOUND.

RPC-2114 SERIES
Potting Compound
Scale: None



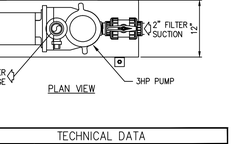
NOTE: SEE ITEM #06-11 FOR THIS ITEM'S APPLICATION.

RPC-2114-A, 2.9-oz. size		ONE PACK EQUALS 5.24 CU. IN.
RPC-2114-C, 12.3-oz. size		ONE PACK EQUALS 22.19 CU. IN.
RPC-2114-D, 21.2-oz. size	X	ONE PACK EQUALS 38.24 CU. IN.

NOTE: ARTICLE 680-52(b) OF THE NATIONAL ELECTRICAL CODE (N.E.C.) REQUIRES THAT ALL UNDERWATER JUNCTION BOXES AND ALL UNDERWATER ENCLOSURES BE FILLED WITH AN APPROVED POTTING COMPOUND TO PREVENT THE ENTRY OF MOISTURE.

SPECIFICATION DATA: Potting Compound, re-enterable, electrical insulating and poting compound, designed for use in RJB-Series junction boxes (required by NEC 680).

TYP. (24) | ITEM # 05a



RSM-1 SERIES
Skid-Mount Pump/Filter System
Scale: None

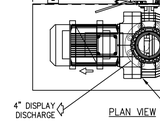
SKID SHOWN WITH CARTRIDGE FILTER & OZONE OPTION

SEE SHEET #WFM-5 FOR EQUIPMENT ROOM LAYOUT

TECHNICAL DATA			
MODEL NO.	PUMP HP	REQUIRED PUMP POWER SUPPLY	
		SINGLE PHASE	THREE PHASE
RSM-1-050	1/2	120V, 208V OR 240V	208V, 230V OR 480V
RSM-1-075	3/4	120V, 208V OR 240V	208V, 230V OR 480V
RSM-1-100	1	120V, 208V OR 240V	208V, 230V OR 480V
RSM-1-150	1 1/2	208V OR 240V	208V, 230V OR 480V
RSM-1-200	2	208V OR 240V	208V, 230V OR 480V
RSM-1-300	3	~~208V OR 240V~~	208V, ~~230V OR 480V~~

SPECIFICATION DATA: Skid-Mounted Pump; consisting of a reinforced 11 gauge, mill finish stainless steel platform with leveling feet, measuring approximately 12" WIDE X 33" LONG. System shall include a RWSP-100; 1 HP self-priming pump with integral strainer;(Schedule 80 PVC) piping, fittings, manual regulating/isolation valves and check valves. Unit is pre-plumbed (Schedule 80 PVC).
NOTE: 2" CHECK VALVE SHIPPED LOOSE FOR REMOTE INSTALLATION
Power requirement: 208V, 3-phase.

TYP. (1) | ITEM # 06



RSM-2-500 SERIES
Skid-Mount Display Pump System
Scale: None

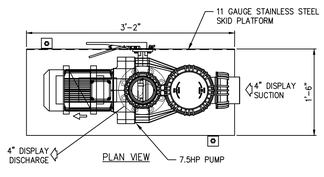
SEE SHEET #WFM-5 FOR EQUIPMENT ROOM LAYOUT

TECHNICAL DATA			
MODEL NO.	PUMP HP	REQUIRED PUMP POWER SUPPLY	
		SINGLE PHASE	THREE PHASE
RSM-2-500	5	~~120V, 208V OR 240V~~	208V, ~~230V OR 480V~~
RSM-2-750	7-1/2	~~120V, 208V OR 240V~~	208V, ~~230V OR 480V~~

NOTES:
1. Provide adequate ventilation (min. 25 CFM/HP) and floor drain at pump room.
2. Allow adequate space around entire skid system for servicing, maintenance, and electrical code clearances.

SPECIFICATION DATA: Self-Priming, Skid-Mounted Pumping System, consisting of a reinforced 11 gauge, mill finish stainless steel platform with leveling feet, measuring approximately 1'-6" WIDE X 3'-2" LONG; 5 HP Self-Priming Pump; one-piece thermoplastic housing with integral strainer basket and easy on/off two-piece see through lid; non-corrosive plastic impeller with heavy duty mechanical seal, suction and discharge are equipped with 4" quick disconnect unions for easy installation and maintenance (union & lid wrench included); heavy duty energy efficient totally enclosed fan cooled (TEFC) motor, suction and discharge manifold (schedule 80 PVC) with gauges, valves and fittings as shown (within skid footprint). NOTE: 4" SUCTION, DISCHARGE & CHECK VALVES (ONE EACH) SHIPPED LOOSE FOR REMOTE INSTALLATION. Power Required: 208V, 3-Phase, plus ground.

TYP. (1) | ITEM # 07



RSM-2-750 SERIES
Skid-Mount Display Pump System
Scale: None

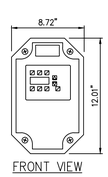
SEE SHEET #WFM-5 FOR EQUIPMENT ROOM LAYOUT

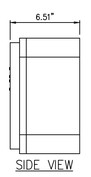
TECHNICAL DATA			
MODEL NO.	PUMP HP	REQUIRED PUMP POWER SUPPLY	
		SINGLE PHASE	THREE PHASE
RSM-2-500	5	~~120V, 208V OR 240V~~	208V, ~~230V OR 480V~~
RSM-2-750	7-1/2	~~120V, 208V OR 240V~~	208V, ~~230V OR 480V~~

NOTES:
1. Provide adequate ventilation (min. 25 CFM/HP) and floor drain at pump room.
2. Allow adequate space around entire skid system for servicing, maintenance, and electrical code clearances.

SPECIFICATION DATA: Self-Priming, Skid-Mounted Pumping System, consisting of a reinforced 11 gauge, mill finish stainless steel platform with leveling feet, measuring approximately 1'-6" WIDE X 3'-2" LONG; 7-1/2 HP Self-Priming Pump; one-piece thermoplastic housing with integral strainer basket and easy on/off two-piece see through lid; non-corrosive plastic impeller with heavy duty mechanical seal, suction and discharge are equipped with 4" quick disconnect unions for easy installation and maintenance (union & lid wrench included); heavy duty energy efficient totally enclosed fan cooled (TEFC) motor, suction and discharge manifold (schedule 80 PVC) with gauges, valves and fittings as shown (within skid footprint). NOTE: 4" SUCTION, DISCHARGE & CHECK VALVES (ONE EACH) SHIPPED LOOSE FOR REMOTE INSTALLATION. Power Required: 208V, 3-Phase, plus ground.

TYP. (1) | ITEM # 08





SIZED FOR 7.5 HP HEAVY DUTY

RVFD-4 Series
Variable Speed Drive
NEMA 4 Enclosure
Scale: NONE

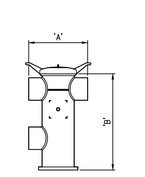
TYPICAL UNIT SHOWN

NEMA 4 ENCLOSURE

NEMA 4/4X				
HP	200-240VAC 3Ph MODEL No.	WT. (lbs.)	380-480VAC 3Ph MODEL No.	WT. (lbs.)
2	RX4C20020C	8.5	RX4C40020C	8.5
3	RX4C20030C	8.5	RX4C40030C	8.5
5	RX4C20050C	14	RX4C40050C	14
7 1/2	RX4C20075C	14	RX4C40075C	14
10	RX4C20100C	29.5	RX4C40100C	14
15	RX4C20150C	29.5	RX4C40150C	29.5
20	RX4C20200C	50	RX4C40200C	29.5

SPECIFICATION DATA: Variable Speed Device, integrated digital setting dial, safety stop function, integrated brake "chopper" circuit, frequency search function, 'dancer' control allows position signal to control roll tension, optimum excitation control, password function for parameter setting protection, MODBUS RTU standard via RJ45 port, 150% torque @ 1Hz and 200% torque at 3Hz. using general purpose magnetic flux vector control.

TYP. (1) | ITEM # 08a

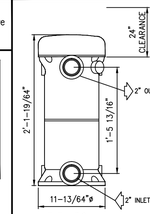


RBS-PVC-400 (Special)
4" In-Line Strainer, Butterfly Valve & Check Valve
Scale: None

TECHNICAL DATA			
MODEL	CONNECTION	DIMENSIONS	
		'A'	'B'
RBS-PVC-400 (Special)	4" SxS	1'-5 1/4"	1'-10"

SPECIFICATION DATA: 4" In-line Strainer, includes PVC construction strainer housing WITH #20 STAINLESS STEEL MESH BASKET INSERT. 4" SOCKET CONNECTIONS.

TYP. (2) | ITEM # 09



RUV-T2 Series
Ultraviolet Sanitizer
Scale: None

TECHNICAL & HYDRAULIC DATA						
MODEL	VOLTAGE	CONN. SIZE	LAMP QUANTITY	WATTS	MAX. FLOW RATE GPM	MAX. POOL VOLUME 8 HR. TURNOVER (GAL)
*RUV-T2-11	120V/50/60Hz	2"	1	58	52	24960
RUV-T2-21	240V/50/60Hz	2"	1	58	52	24960
*RUV-T2-12	120V/50/60Hz	2"	2	116	99	47520
RUV-T2-22	240V/50/60Hz	2"	2	116	99	47520
*RUV-T2-13	120V/50/60Hz	2"	3	174	140	67200
RUV-T2-23	240V/50/60Hz	2"	3	174	140	67200

Notes: 1. 240V units are provided with blunt cut cord end only, for hard wiring; plug not included.
2. An optional 'flow/no-flow' switch is available for this unit; contact factory for details

SPECIFICATION DATA: Ultraviolet Sanitizer featuring same size housing for three (3) different models, all of which are field convertible from one lamp to two, or three lamp system. Unit rated at 120 volts, 50/60 Hz, or 240 volt, single phase, 50/60Hz power and shall be equipped with a 7'-6" long power cord with 3-prong plug (120V units only). 9" diameter corrosion resistant polymeric reactor vessel, stainless steel internal lamp reflectors, electrical enclosure bonnet suitable for outdoor installation, PVC inlet/Outlet unions with 2" socket connections, pressure switch to prevent operation when water is not flowing, dual scale (PSI/kPa) pressure gauge, 360 degrees 'Lamp On' visual ring, UV lamp(s) rated for 13,000 hours of continuous use and shall be fully replaceable without requiring special tools. Additionally, four inlet ports and four outlet ports are provided to accommodate multi-directional piping to and from the UV system and six blank caps are provided to close unused plumbing ports after inlet/outlet selection. (three for 5HP & four for 7.5 HP)

TYP. (7) | ITEM # 10

DRAWING SUBMITTAL
NOT FOR CONSTRUCTION
FOR CLIENT REVIEW.

ROMAN FOUNTAINS

SAMPLE DRAWING
Anywhere, USA
Splashpad

ROMAN FOUNTAINS CORP.
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Phone #: (877) 794-1802
Fax #: (770) 300-0074

Scale:	None
Drawn By:	W. Pierce
Checked By:	C. Bascas
Date:	02/23/2016

Revisions:

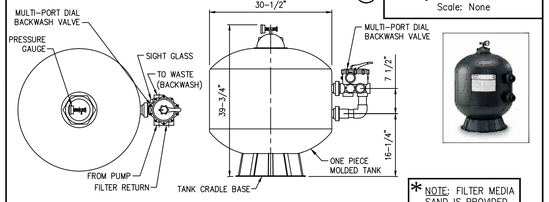
No.	Date	By	Comments

FOUNTAIN EQUIPMENT DETAILS SHEET 1

Drawing Number:

WFD-1

RSFS-TR100 (Special)
High Rate Sand Filter
Scale: None



* NOTE: FILTER MEDIA SAND IS PROVIDED "BY INSTALLER"

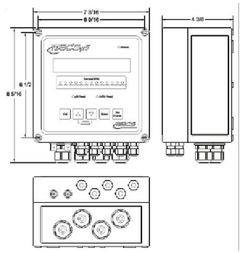
TECHNICAL DATA					
MODEL	AREA Sq. FT.	FLOW RATE (GPM)	SAND REQUIRED (Lbs)	EMPTY TANK WEIGHT	MULTI-PORT CONN.
RSFP-TR-100C	4.91	74	450	66 Lbs	2"

NOTE: UNIT ARE USED IN CONJUNCTION WITH ITEM #19

SPECIFICATION DATA: 30-1/2" Dia. High Rate Sand Filter Tank, N.S.F. Listed, corrosion resistant, UV resistant, precision molded fiberglass, one-piece tank, multiple diverters for increased filtration rates, 8" opening for access to sand, ready to accept 2" multiport valve, and bottom mount drain plug. (Sand provided by Installer.)

TYP. (1) | ITEM # 11

RWTS-BECS-3
Water Chemistry Control System
Scale: None



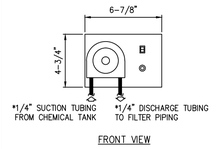
NOTE: ETHERNET REMOTE COMMUNICATIONS MODULE, SOLD SEPARATELY.

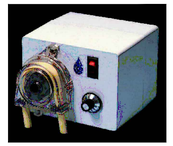
SPECIFICATION DATA: Water Chemistry Controller, for automatic maintenance of pool water PH and sanitizer (ORP) levels. System consists of dual-point controller (NEMA 4X, IP66 rated) with digital read-out, flow cell assembly with clear acrylic window & stainless hardware, pressure gauge, sample tap, two ball valves, reed flow switch, connecting PVC hardware, ORP and pH electrodes. Security includes separate Operator and Rep password protection. NSF/ANSI 50, ETL & CE Approved. Includes start-up & support by factory-trained technicians. (Model #1100256-ENSINPRIX)

Unit requires 115/230 volt, single phase power and must be wall-mounted in close proximity to filtration system (by installer).

TYP. (1) | ITEM # 12

RCMP-AD10
Chemical Metering Pump
Scale: None

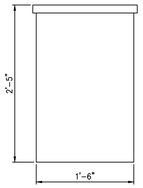




SPECIFICATION DATA: Single Head, Adjustable Rate Chemical Metering Pump, for acid/base injection or liquid chlorine injection, with adjustable mechanical feed rate of 0.13 to 13 gallons per day at 25 psi. Unit features heavy duty shaded pole gearmotor with lifetime lubrication, rated for 120 volt, single phase operation, with on/off switch and 10-minute solid state electronic current interrupter. Accessories include: 20 ft. of 1/4" poly tubing (installer cut to length, as required), tubing connector fittings, suction side ceramic tubing weight, feed side check valve.

TYP. (2) | ITEM # 12a

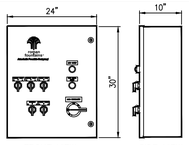
RST-7910-30
Chemical Solution Storage Tank
Scale: None



SPECIFICATION DATA: 30 gallon high density polypropylene (HDPE) chemical storage tank and lid. Cylindrical, linear polypropylene tank dimensions are 18" in diameter, 29" tall, and with a 1/4" wall thickness. One tank is for acid/base solution to maintain proper water PH balance. The other tank is for liquid chlorine as required. Chemicals are provided by others.

TYP. (2) | ITEM # 12b

RPCP/RLCP Series
Pump/Lighting Control Panel
Scale: None



*ENCLOSURE SIZE VARIES WITH FUNCTIONS & FEATURES, PLEASE CONSULT FACTORY FOR 'NOT-TO-EXCEED' DIMENSIONS FOR SPECIFIC UNIT.

'TYPICAL IMAGE'

NOTE: SEE WFN-2 FOR ELECTRICAL REQUIREMENTS

NOTE: WALL-MOUNT CONTROL PANEL IN AN AREA WHICH WILL AT ALL TIMES MEET OR EXCEED THE MINIMUM CLEARANCE REQUIREMENTS SET FORTH BY LOCAL AND THE NATIONAL ELECTRICAL CODES.

NOTE: THIS CONTROL PANEL SHALL NOT BE SIZED FOR NOR CONTAIN CIRCUITS FOR: SUMP PUMP, VENTILATION BLOWER, UTILITY LIGHT FIXTURES, CONVENIENCE OUTLET, OR ANY OTHER LOADS NOT SPECIFIED UNDER THIS CONTROL PANEL DESCRIPTION.

DANGER

FATAL ELECTRICAL SHOCK CAN OCCUR IF FOUNTAIN ELECTRICAL EQUIPMENT IS NOT INSTALLED PROPERLY. THIS EQUIPMENT SHOULD ONLY BE INSTALLED BY QUALIFIED ELECTRICIANS WITH PROPER GROUNDING AND GROUND FAULT INTERRUPTION CIRCUIT BREAKERS IN ACCORDANCE WITH NATIONAL ELECTRICAL CODE, SECTION 680, AND ALL OTHER APPLICABLE SECTIONS OF THE CODE.

NOTE: THIS REPRESENTS A "TYPICAL" PUMP CONTROL PANEL CONFIGURATION. ACTUAL PANEL WILL BE PROJECT SPECIFIC AND MAY DIFFER FROM THIS DETAIL

SPECIFICATION DATA: UL508 Listed Custom Control Panel. Consisting of main disconnect; power distribution breakers (Class A GFCI), pump contactors w/overload relays, lighting contactors, water level makeup/low level equipment protection circuit, (2) 7day/24hour electronic time clocks, 3-pos H.O.A. selector switches and field connection terminal blocks. The panel is pre-wired in a NEMA 4 enclosure and factory tested with all loads, circuits and switching functions verified prior to delivery. Includes (6) RUN-720 DMX Drivers & (6) SDR-120 power supplies & PLC Programmer.

Power requirement: 120/208V, 3-phase, 4-wire feed + GND

TYP. (1) | ITEM #13

DRAWING SUBMITTAL
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FOR CLIENT REVIEW.

ROMAN FOUNTAINS

SAMPLE DRAWING
Anywhere, USA
Splashpad

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Scale:	None
Drawn By:	W. Pierce
Checked By:	C. Bascas
Date:	02/23/2016

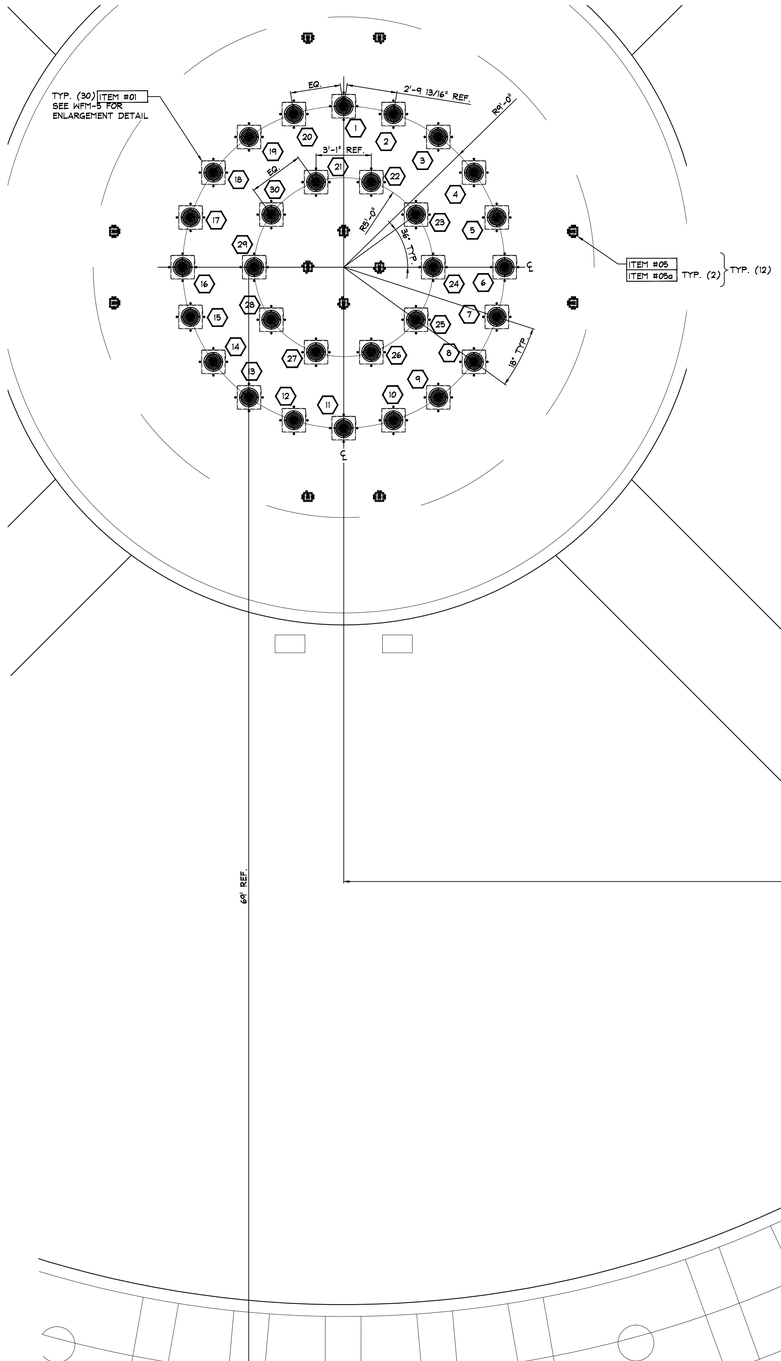
Revisions:

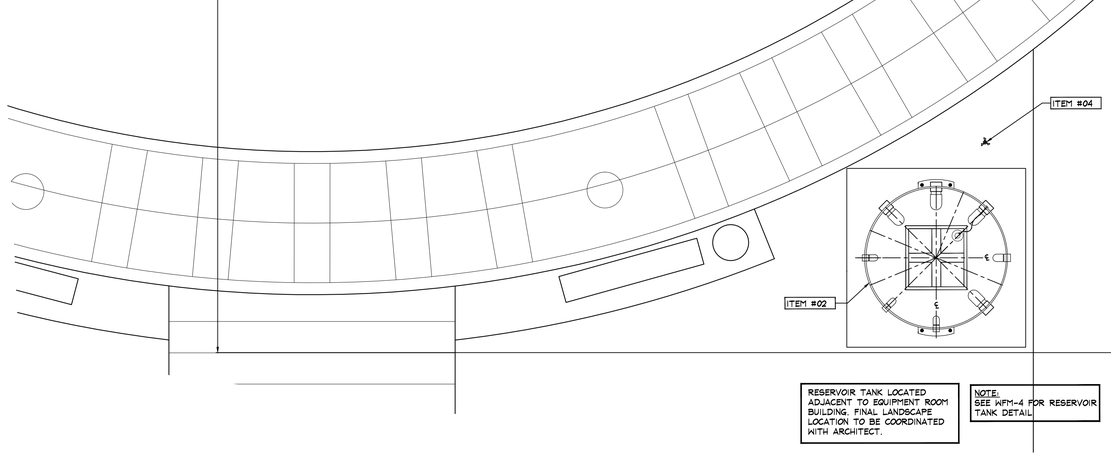
No.	Date	By	Comments

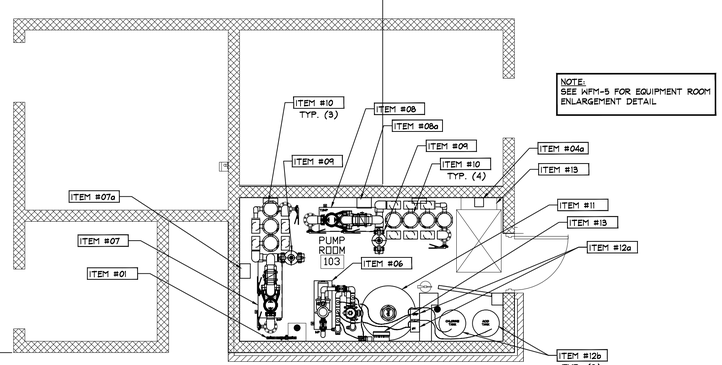
FOUNTAIN
EQUIPMENT DETAILS
SHEET 2

Drawing Number:

WFD-2







Sample Splashpad (2/23/16)
Equipment List – By Roman Fountains

Item No.	Qty.	Component Number	Description
01	30	RDJG-JC-DH-LED-RGB	Flush Mounted Nozzle/LED Assembly
02	1	RWST- 2500 (Special)	2500 Gallon Water Storage
03	1	RMS-075-NS	3/4" Fill Manifold System
04	1	RWC-A-DUL	Wind Anemometer.
04a	1	RWC-SM-DUL	Wind Control Panel.
*05	12	RJB-5-100-F	Flush Mount Submersible Junction Box. 5-hub
05a	24	RPC-2114-D	Potting Compound, 21.2 oz. size.
06	1	RSM-1-100 (Special)	1HP Skid-Mounted Pump.
07	1	RSM-S-500 (Special)	5HP Skid-Mounted Pump.
07a	1	RVFD-4-750	7.5HP VFD (rated 5HP Heavy Duty).
08	1	RSM-S-750 (Special)	7.5HP Skid-Mounted Pump.
08a	1	RVFD-4-1000	10HP VFD (rated 7.5HP Heavy Duty).
09	2	RBS-PVC-400 (Special)	4" PVC Inline Strainer.
10	7	RUV-T2-12	Ultraviolet Sterilizer.
11	1	RSFP-TR-100	30-1/2" Dia. High Rate Sand Filter
12	1	RWTS-BECS-3	Water Chemistry Controller
12a	2	RCMP-AD10	Chemical Metering Pump.
12b	2	RST-7910-30	30 Gallon Chemical Storage Tank
13	1	RPCP/RLCP- (Special)	UL508 Listed Custom Control Panel.

*NOTE: CONCRETE EMBED ITEM, REQUIRED FOR POUR.
NOTE: FOR COMPLETE ITEM SPECIFICATIONS, SEE SHEET WFN-2.

FOUNTAIN DIMENSION PLAN
SCALE: 1/4"=1'-0"

DRAWING SUBMITTAL
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SAMPLE DRAWING
Anywhere, USA
Spashpad

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Scale:	None
Drawn By:	W. Pierce
Checked By:	C. Bascas
Date:	02/23/2016

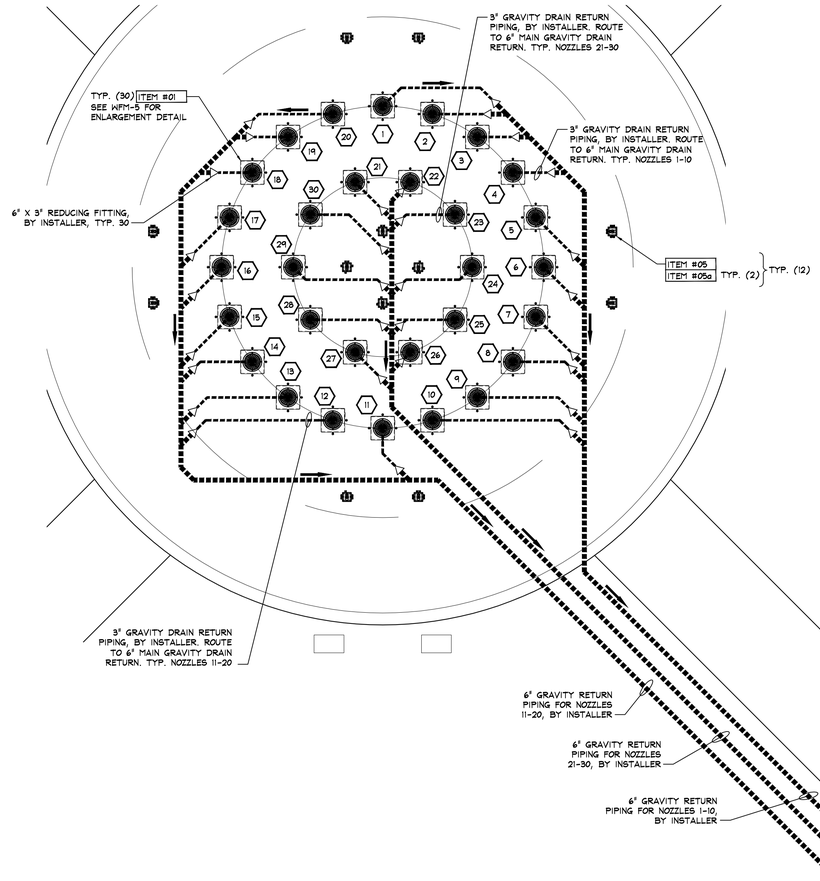
Revisions:

No.	Date	By	Comments

FOUNTAIN
DIMENSION PLAN

Drawing Number:

WFM-1



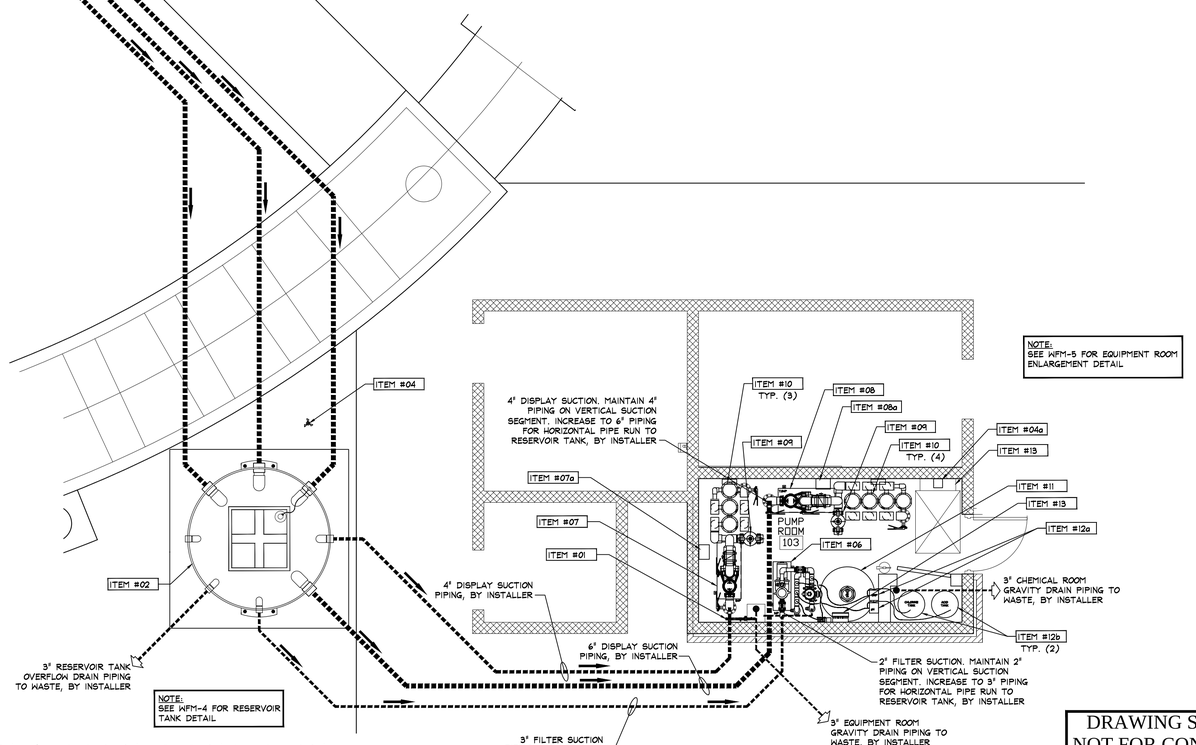
PIPING SCHEMATIC SYMBOL LEGEND

Symbol	Description
	A reducer fitting, by installer, is required at this location to change the pipe size.
	Piping turning downward in plan view via a 90 degree elbow. This allows another 90 degree elbow, located directly below the shown schematic elbow, to change the pipe direction to any angle.
	Piping turning downward in plan view or directly away from the viewer in section view via a 90 degree elbow.
	Piping turning upward in plan view or directly towards the viewer in section view via a 90 degree elbow.
	Direction of water flow.

Sample Splashpad (2/23/16)
Equipment List – By Roman Fountains

Item No.	Qty.	Component Number	Description
01	30	RDJG-JC-DH-LED-RGB	Flush Mounted Nozzle/LED Assembly
02	1	RWST- 2500 (Special)	2500 Gallon Water Storage
03	1	RMS-075-NS	3/4" Fill Manifold System
04	1	RWC-A-DUL	Wind Anemometer.
04a	1	RWC-SM-DUL	Wind Control Panel.
*05	12	RJB-5-100-F	Flush Mount Submersible Junction Box. 5-hub
05a	24	RPC-2114-D	Potting Compound, 21.2 oz. size.
06	1	RSM-1-100 (Special)	1HP Skid-Mounted Pump.
07	1	RSM-S-500 (Special)	5HP Skid-Mounted Pump.
07a	1	RVFD-4-750	7.5HP VFD (rated 5HP Heavy Duty).
08	1	RSM-S-750 (Special)	7.5HP Skid-Mounted Pump.
08a	1	RVFD-4-1000	10HP VFD (rated 7.5HP Heavy Duty).
09	2	RBS-PVC-400 (Special)	4" PVC Inline Strainer.
10	7	RUV-T2-12	Ultraviolet Sterilizer.
11	1	RSFP-TR-100	30-1/2" Dia. High Rate Sand Filter
12	1	RWTS-BECS-3	Water Chemistry Controller
12a	2	RCMP-AD10	Chemical Metering Pump.
12b	2	RST-7910-30	30 Gallon Chemical Storage Tank
13	1	RPCP/RLCP- (Special)	UL508 Listed Custom Control Panel.

*NOTE: CONCRETE EMBED ITEM, REQUIRED FOR POUR.
NOTE: FOR COMPLETE ITEM SPECIFICATIONS, SEE SHEET WFN-2.



FOUNTAIN SUCTION & DRAIN PIPING PLAN
SCALE: 1/4"=1'-0"

DRAWING SUBMITTAL
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ROMAN FOUNTAINS

SAMPLE DRAWING
Anywhere, USA
Splashpad

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Scale:	None
Drawn By:	W. Pierce
Checked By:	C. Bascas
Date:	02/23/2016

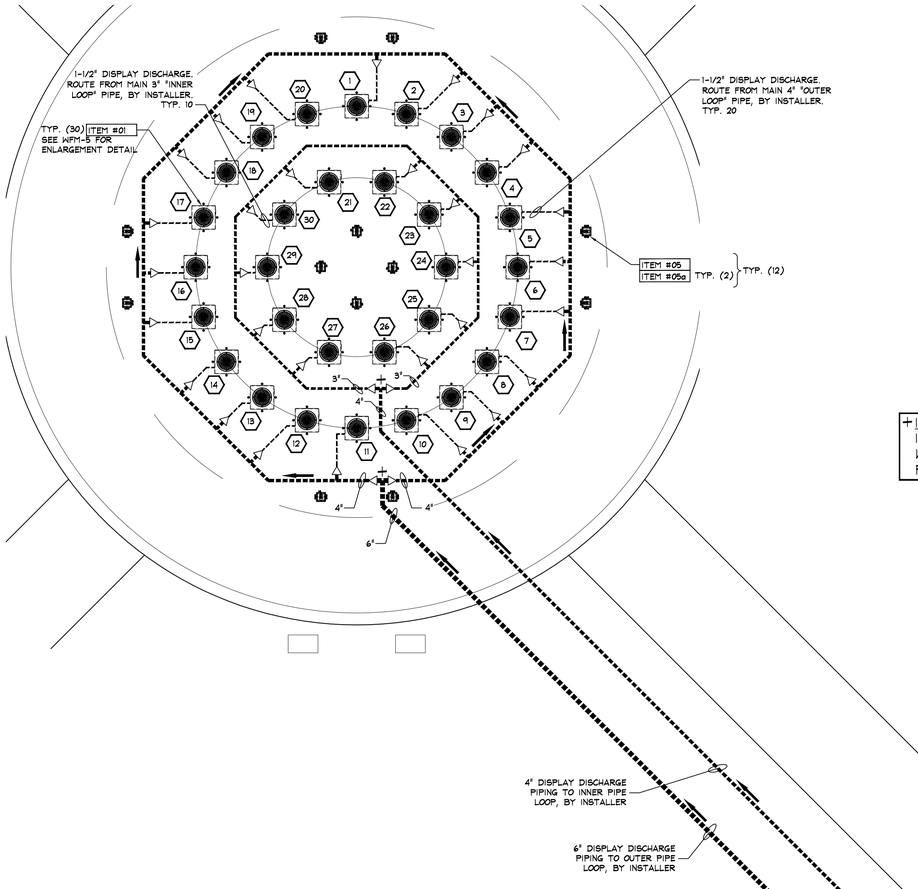
Revisions:

No.	Date	By	Comments

FOUNTAIN SUCTION & DRAIN PIPING PLAN

Drawing Number:

WFM-2



PIPING SCHEMATIC SYMBOL LEGEND

Symbol	Description
	A reducer fitting, by installer, is required at this location to change the pipe size.
	Piping turning downward in plan view via a 90 degree elbow. This allows another 90 degree elbow, located directly below the shown schematic elbow, to change the pipe direction to any angle.
	Piping turning downward in plan view or directly away from the viewer in section view via a 90 degree elbow.
	Piping turning upward in plan view or directly towards the viewer in section view via a 90 degree elbow.
	Direction of water flow.

+ IMPORTANT NOTE:
INSTALL PIPING IN EQUIDISTANT LENGTHS WHERE INDICATED, TO PROVIDE BALANCED FLOW DISTRIBUTION.

Sample Splashpad (2/23/16)
Equipment List – By Roman Fountains

Item No.	Qty.	Component Number	Description
01	30	RDJG-JC-DH-LED-RGB	Flush Mounted Nozzle/LED Assembly
02	1	RWST- 2500 (Special)	2500 Gallon Water Storage
03	1	RMS-075-NS	3/4" Fill Manifold System
04	1	RWC-A-DUL	Wind Anemometer.
04a	1	RWC-SM-DUL	Wind Control Panel.
*05	12	RJB-5-100-F	Flush Mount Submersible Junction Box. 5-hub
05a	24	RPC-2114-D	Potting Compound, 21.2 oz. size.
06	1	RSM-1-100 (Special)	1HP Skid-Mounted Pump.
07	1	RSM-S-500 (Special)	5HP Skid-Mounted Pump.
07a	1	RVFD-4-750	7.5HP VFD (rated 5HP Heavy Duty).
08	1	RSM-S-750 (Special)	7.5HP Skid-Mounted Pump.
08a	1	RVFD-4-1000	10HP VFD (rated 7.5HP Heavy Duty).
09	2	RBS-PVC-400 (Special)	4" PVC Inline Strainer.
10	7	RUV-T2-12	Ultraviolet Sterilizer.
11	1	RSFP-TR-100	30-1/2" Dia. High Rate Sand Filter
12	1	RWTS-BECS-3	Water Chemistry Controller
12a	2	RCMP-AD10	Chemical Metering Pump.
12b	2	RST-7910-30	30 Gallon Chemical Storage Tank
13	1	RPCP/RLCP- (Special)	UL508 Listed Custom Control Panel.

*NOTE: CONCRETE EMBED ITEM, REQUIRED FOR POUR.
NOTE: FOR COMPLETE ITEM SPECIFICATIONS, SEE SHEET WFN-2.

FOUNTAIN DISCHARGE & FILL PIPING PLAN
SCALE: 1/4"=1'-0"

DRAWING SUBMITTAL NOT FOR CONSTRUCTION FOR CLIENT REVIEW.

ROMAN FOUNTAINS

SAMPLE DRAWING
Anywhere, USA
Splashpad

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Scale:	None
Drawn By:	W. Pierce
Checked By:	C. Bascas
Date:	02/23/2016

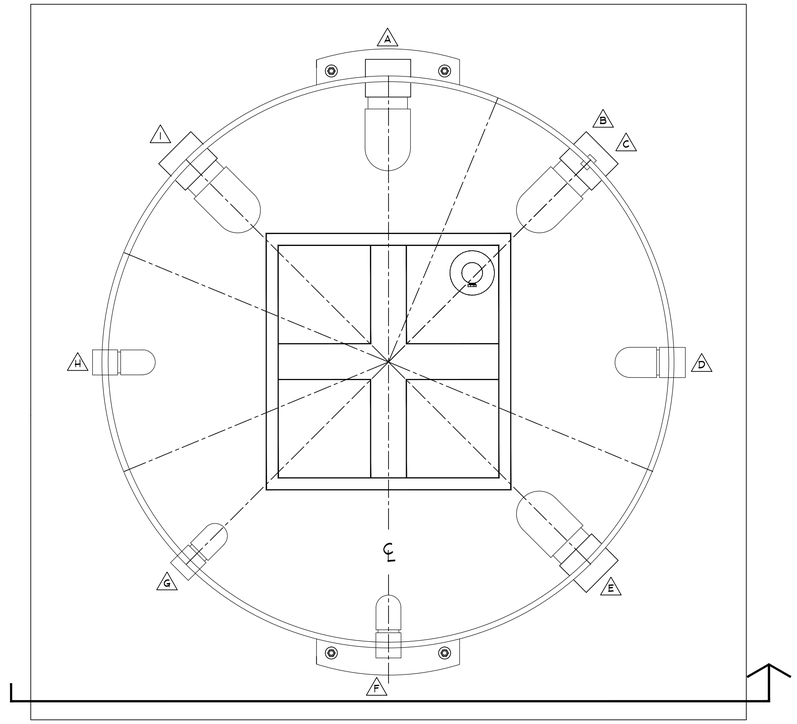
Revisions:

No.	Date	By	Comments

FOUNTAIN DISCHARGE & FILL PIPING PLAN

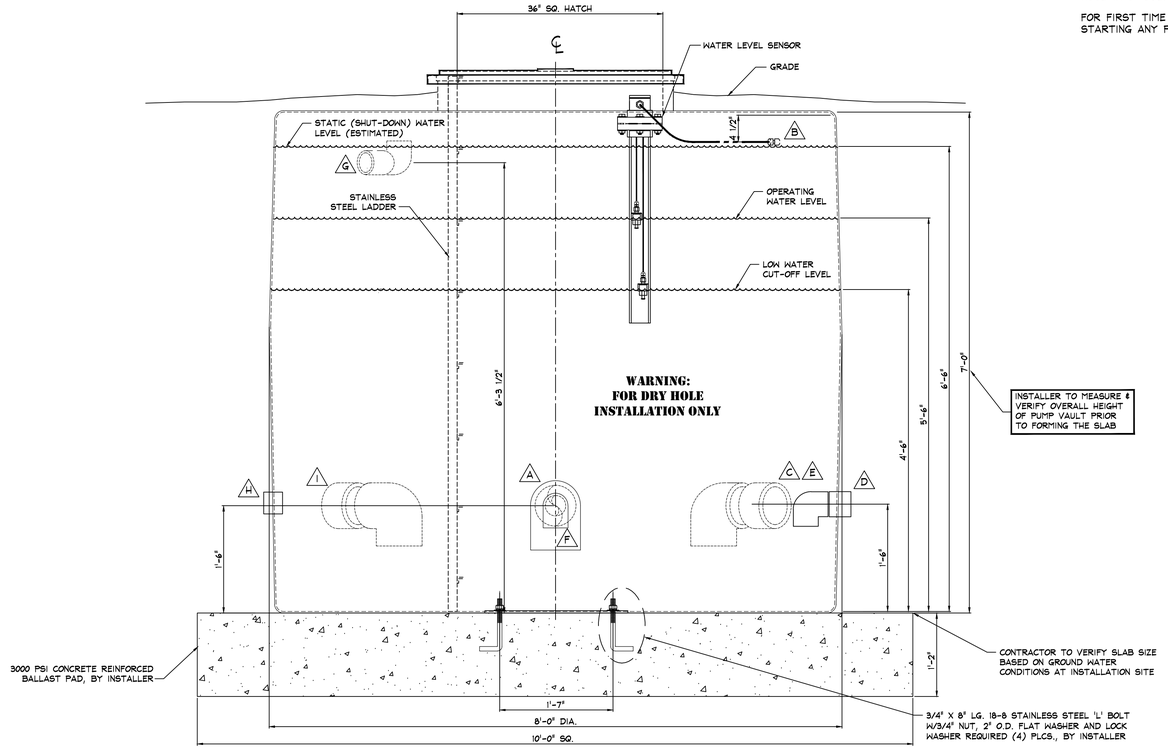
Drawing Number:

WFM-3



WATER STORAGE TANK PLAN VIEW

SCALE: 1"=1'-0"



WATER STORAGE TANK ELEVATION VIEW

SCALE: 1"=1'-0"

DANGER

FATAL ELECTRICAL SHOCK CAN OCCUR IF FOUNTAIN ELECTRICAL EQUIPMENT IS NOT INSTALLED PROPERLY. THIS EQUIPMENT SHOULD ONLY BE INSTALLED BY QUALIFIED ELECTRICIANS WITH PROPER GROUNDING AND GROUND FAULT INTERRUPTION CIRCUIT BREAKERS IN ACCORDANCE WITH NATIONAL ELECTRICAL CODE, SECTION 680, AND ALL OTHER APPLICABLE SECTIONS OF THE CODE.

THE PROPER DESIGN, OPERATION AND PERFORMANCE OF THIS SYSTEM IS BASED ON THE SELECTION AND USE OF EQUIPMENT MANUFACTURED AND/OR SELECTED BY ROMAN FOUNTAINS CORPORATION, ALBUQUERQUE, NEW MEXICO, USA, (505) 343-8082, SUBSTITUTION OF EQUIPMENT OTHER THAN SELECTED AND FURNISHED VOIDS THE SYSTEM WARRANTY AND PERFORMANCE GUARANTY AND INSTALLER ASSUMES FULL RESPONSIBILITY FOR ITS OPERATION AND PERFORMANCE.

WATER STORAGE TANK PIPING & CONDUIT PENETRATION LEGEND

SYM.	SIZE	DESCRIPTION
A	6"	DRAIN RETURN PIPING (GRAVITY WATER TRANSFER FROM FLUSH NOZZLES)
B	1/2"C	CONDUIT (PRE-ATTACHED 4-CONDUCTOR CABLE) FROM WATER LEVEL SENSOR
C	6"	DRAIN RETURN PIPING (GRAVITY WATER TRANSFER FROM FLUSH NOZZLES)
D	4"	DISPLAY SUCTION PIPING (FOR 5HP INNER LOOP DISPLAY PUMP)
E	6"	DISPLAY SUCTION PIPING (FOR 7.5 OUTER LOOP DISPLAY PUMP)
F	3"	FILTER PUMP SUCTION PIPING
G	3"	RESERVOIR TANK OVERFLOW DRAIN PIPING TO WASTE & VENT PIPING
H	3"	FILTER PUMP DISCHARGE PIPING
I	6"	DRAIN RETURN PIPING (GRAVITY WATER TRANSFER FROM FLUSH NOZZLES)

SPECIFICATION DATA: Water Storage/Surge Tank, 2,500 gallon with brown gel-coat exterior and 36" sq. hatch opening with Fiberglass reinforced plastic lid with stainless steel piano hinge attachment, lock hardware (LOCK BY INSTALLER). Fiberglass construction, with ladder, all required fittings per shop drawings & RCOM-RNFT level sensor installed.

NOTE: RESERVOIR TANK DOES NOT HAVE A MEANS TO GRAVITY DRAIN.

TO DRAIN TANK, PLACE A SUMP PUMP IN THE TANK AND PLACE END OF DISCHARGE HOSE IN 3" OVERFLOW PENETRATION.

FOR FIRST TIME FILLING, FILL TO THE ESTIMATED SHUT-DOWN WATER LEVEL PRIOR TO STARTING ANY PUMP.

OSHA DEFINED "CONFINED SPACE" INFORMATION

Certain sites contain spaces that are considered to be "confined" because their configurations hinder the activities of any individual who must enter into, work in, and exit from them. In many instances, individuals who work in confined spaces also face increased risk of exposure to serious physical injury from hazards such as entrapment, engulfment, and hazardous atmospheric conditions. Confinement itself may pose entrapment hazards, and work in confined spaces may keep an individual closer to hazards, such as machinery components, than they would otherwise. For example, confinement, limited access, and restricted airflow can result in hazardous conditions that would not normally arise in an open workplace.

The term "PERMIT-REQUIRED CONFINED SPACE" (i.e. permit space) refers to those spaces that meet the definition of a "confined space" and contain health or safety hazards, thereby requiring a permit for entry.

A confined space has limited or restricted means of entry or exit, is large enough for an individual to enter and perform assigned work, and is not designed for continuous occupancy by the individual. These spaces may include, but are not limited to underground vaults, tanks, pits and containment vessels.

A "PERMIT-REQUIRED CONFINED SPACE" is one that meets the definition of a confined space and has one or more of these characteristics: (1) contains or has the potential to contain a hazardous atmosphere, (2) contains a material that has the potential for engulfing an entrant, (3) has an internal configuration that might cause and entrant to be trapped or asphyxiated by inwardly converging walls or by a floor that slopes downward and tapers to a smaller cross section, and/or (4) contains any other recognized serious safety or health hazards.

Owner assumes all responsibility & liability for ascertaining whether direct-burial pump stations meet the definition of "PERMIT-REQUIRED CONFINED SPACE" and implementing any/all 'OSHA' requirements for identification, notification, entry and, safety, including any additional safety equipment that may be required for such entry.

RWST-SERIES, FIBERGLASS WATER STORAGE TANK INSTALLATION NOTES, PLEASE READ CAREFULLY

1. In all cases finished grade around the tank must be sloped away from the access hatchway in all directions so no water flows into the tank (see installation details this sheet). Do not allow water to "pool" around tank under any circumstances.
2. Prior to tank installation, a level smooth, steel reinforced concrete pad, as sized on this drawing sheet, must be poured, and must include the four (4) installer provided 3/4" stainless steel "L"-bolts (see installation drawing).
3. The tank must be lifted using a properly weighted and balanced fork lift with extended forks or a boom crane and girdle straps. The maximum tank weight for transportation and lifting purposes is 1,000 pounds unless otherwise indicated on the installation drawings or submittal data.
4. Lower the tank into the excavation using a two part lifting sling with padded straps to insure a true vertical lift. DO NOT LIFT FROM TOP AND DO NOT USE CHAINS FOR LIFTING AS THEY MAY DAMAGE FIBERGLASS SKIN. All off-loading and lifting equipment and labor is the responsibility of the installing contractor.
5. Lower the tank into the excavation slowly and center it on the concrete pad. Insure the concrete pad is level and thoroughly broomed and brushed free of debris that could puncture the tank prior to placing the unit on the pad.
6. Securely anchor the tank to the stainless steel anchor bolts previously installed into the concrete pad. Tank must be plumb and level prior to hook-up and backfill.
7. After the tank is securely in position, outside piping and conduits must be aligned and connected to insure a true fit without excessive lateral force applied to piping, conduits or fittings.
8. Pressure test all piping to be connected prior to backfill operations. HYDROSTATIC (WATER) TESTING SHALL BE THE ONLY APPROVED METHOD, DO NOT USE COMPRESSED AIR TO PERFORM ANY PRESSURE TESTS.
9. Once piping/conduits have all been installed and pressure tested, immediately fill tank with water to the point of overflow.
10. Backfill around the tank with 6" to 12" width of approved granular material free of trash, debris, roots, vegetation, or other deleterious material. Under no circumstances shall construction waste, large rocks, concrete waste, clay based soil or any other unsuitable backfill be used. A naturally rounded aggregate of 1/4" nominal size ranging from 1/8" to 3/4" diameter, or 1/8" to 1/2" diameter stone crushings, clean and free flowing, may be used. Insure that backfill fills all voids, especially under tank piping and fittings.
11. Spread backfill material in 6" to 8" lifts. Compact to at least 95% of maximum density as determined by ASTM 1557-70.
12. Use manual compaction equipment being careful not to damage the tank, piping or conduit due to excessive compaction. A single lift of backfill material around pump module with a final compaction to excessive loads shall not be allowed.
13. A second pressure test of piping should be made after backfilling to insure that piping has not been damaged during backfill operations.
14. CAUTION: Never allow installed tank to sit empty, as a down-pour, flood or other ground water condition may cause tank to rise out of the ground! Never drain tank if a known ground water condition exists and be sure to refill tank immediately when drained for maintenance purposes.
15. It is the responsibility of the installing contractor to insure the all electrical equipment is installed and wired by a QUALIFIED, LICENSED ELECTRICIAN, experienced in fountain/pool wiring. All electrical equipment must be installed in accordance with the NATIONAL ELECTRICAL CODE.

WARNING:

DIRECT-BURIAL PUMP VAULTS ARE DESIGNED AND CONSTRUCTED FOR 'DRY-HOLE' INSTALLATIONS ONLY AND ARE NOT DESIGNED AND CONSTRUCTED WATERTIGHT OR WATERPROOF CONTAINERS AND ARE NOT TO BE INCORPORATED INTO ANY PROJECT WHERE POTENTIAL GROUND WATER SATURATION (WHETHER TEMPORARY OR PERMANENT OR DUE TO RAIN, FLOODS OR IRRIGATION) OR NATURAL GEOLOGICAL HIGH WATER TABLE CONDITIONS MAY EXIST.

AS SUCH, ROMAN FOUNTAINS IS NOT RESPONSIBLE FOR ANY GROUNDWATER INTRUSION INTO ANY FIBERGLASS EQUIPMENT VAULT UNDER ANY CIRCUMSTANCES WHATSOEVER.

THE SPECIFIER/PURCHASER/INSTALLER/OWNER OF ANY VAULT PRODUCT SHALL MAKE ANY AND ALL DETERMINATIONS AS TO THE SUITABILITY OF SAID PRODUCT FOR THE APPLICATION, INCLUDING GROUND WATER CONDITIONS.

DRAWING SUBMITTAL
NOT FOR CONSTRUCTION
FOR CLIENT REVIEW.

ROMAN FOUNTAINS

SAMPLE DRAWING

Anywhere, USA

Splashpad

ROMAN FOUNTAINS CORP.
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Phone #: (877) 794-1802
Fax #: (770) 300-0074

Scale:	None
Drawn By:	W. Pierce
Checked By:	C. Bascas
Date:	02/23/2016

Revisions:

No.	Date	By	Comments

RWST-2500, WATER STORAGE TANK INSTALLATION DETAILS

Drawing Number:

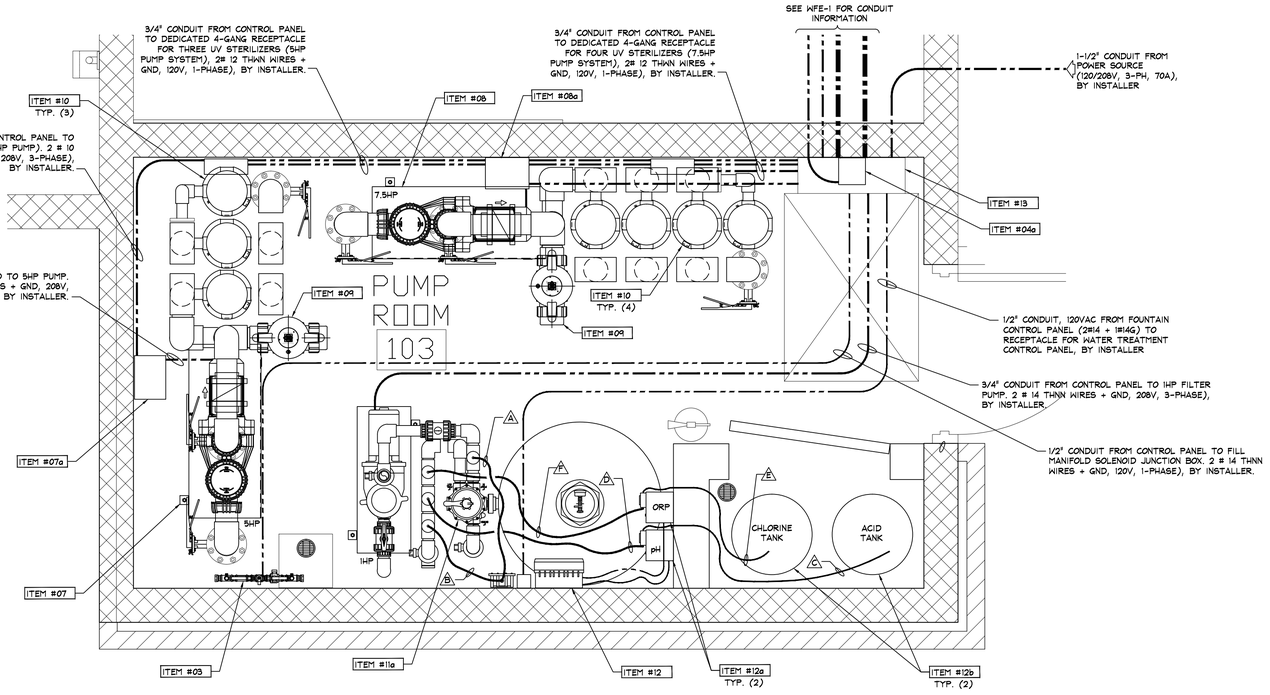
WFM-4

NOTE:
EQUIPMENT ROOM SPACE SHOWN IS MINIMUM REQUIRED FOUNTAIN WATER FEATURE EQUIPMENT. EQUIPMENT LOCATIONS MAY BE ADJUSTED TO ACCOMMODATE OTHER TRADE EQUIPMENT WITHIN THE EQUIPMENT ROOM.

ADDITIONAL REQUIREMENTS:
- PRIMARY ROOM VENTILATION= THREE TO FOUR (3-4) MIN. TURNOVER RATE.

- CHEMICAL TANK SPACE VENTILATION= ONE (1) MIN TURNOVER RATE.

ELECTRICAL NOTE:
ADDITIONAL ELECTRICAL REQUIREMENTS AND CONTROLS FOR FORCED ROOM VENTILATION, LIGHTING, ETC., HAVE NOT BEEN INCLUDED THE FOUNTAIN CONTROL PANEL ELECTRICAL CALCULATIONS. THESE COMPONENTS ARE NOT INDICATED ON THE THE FOUNTAIN DRAWINGS.



PUMP ROOM WATER TREATMENT LEGEND

A. INFLUENT SAMPLE WATER 3/8" HOSE FROM FILTER PUMP TO FLOW CELL

B. EFFLUENT SAMPLE WATER 3/8" HOSE FROM FLOW CELL TO FILTER DISCHARGE PIPING

C. 1/4" HOSE FROM ACID TANK TO METERING PUMP

D. 1/4" ACID HOSE FROM METERING PUMP TO FILTER DISCHARGE PIPING

E. 1/4" CHLORINE HOSE FROM CHLORINE TANK TO METERING PUMP

F. 1/4" CHLORINE HOSE FROM METERING PUMP TO FILTER DISCHARGE PIPING

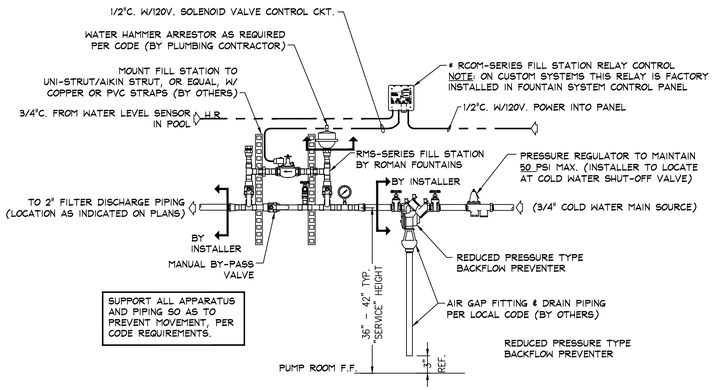
EQUIPMENT ROOM PLAN

SCALE: 3/4"=1'-0"

Sample Splashpad (2/23/16)
Equipment List – By Roman Fountains

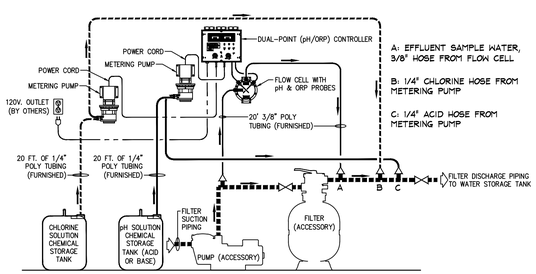
Item No.	Qty.	Component Number	Description
01	30	RDJG-JC-DH-LED-RGB	Flush Mounted Nozzle/LED Assembly
02	1	RWST- 2500 (Special)	2500 Gallon Water Storage
03	1	RMS-075-NS	3/4" Fill Manifold System
04	1	RWC-A-DUL	Wind Anemometer.
04a	1	RWC-SM-DUL	Wind Control Panel.
*05	12	RJB-5-100-F	Flush Mount Submersible Junction Box. 5-hub
05a	24	RPC-2114-D	Potting Compound, 21.2 oz. size.
06	1	RSM-1-100 (Special)	1HP Skid-Mounted Pump.
07	1	RSM-S-500 (Special)	5HP Skid-Mounted Pump.
07a	1	RVFD-4-750	7.5HP VFD (rated 5HP Heavy Duty).
08	1	RSM-S-750 (Special)	7.5HP Skid-Mounted Pump.
08a	1	RVFD-4-1000	10HP VFD (rated 7.5HP Heavy Duty).
09	2	RBS-PVC-400 (Special)	4" PVC Inline Strainer.
10	7	RUV-T2-12	Ultraviolet Sterilizer.
11	1	RSFP-TR-100	30-1/2" Dia. High Rate Sand Filter
12	1	RWTS-BECS-3	Water Chemistry Controller
12a	2	RCMP-AD10	Chemical Metering Pump.
12b	2	RST-7910-30	30 Gallon Chemical Storage Tank
13	1	RPCP/RLCP- (Special)	UL508 Listed Custom Control Panel.

*NOTE: CONCRETE EMBED ITEM, REQUIRED FOR POUR.
NOTE: FOR COMPLETE ITEM SPECIFICATIONS, SEE SHEET WFN-2.



TYPICAL FILL STATION SCHEMATIC ELEVATION

SCALE: NONE



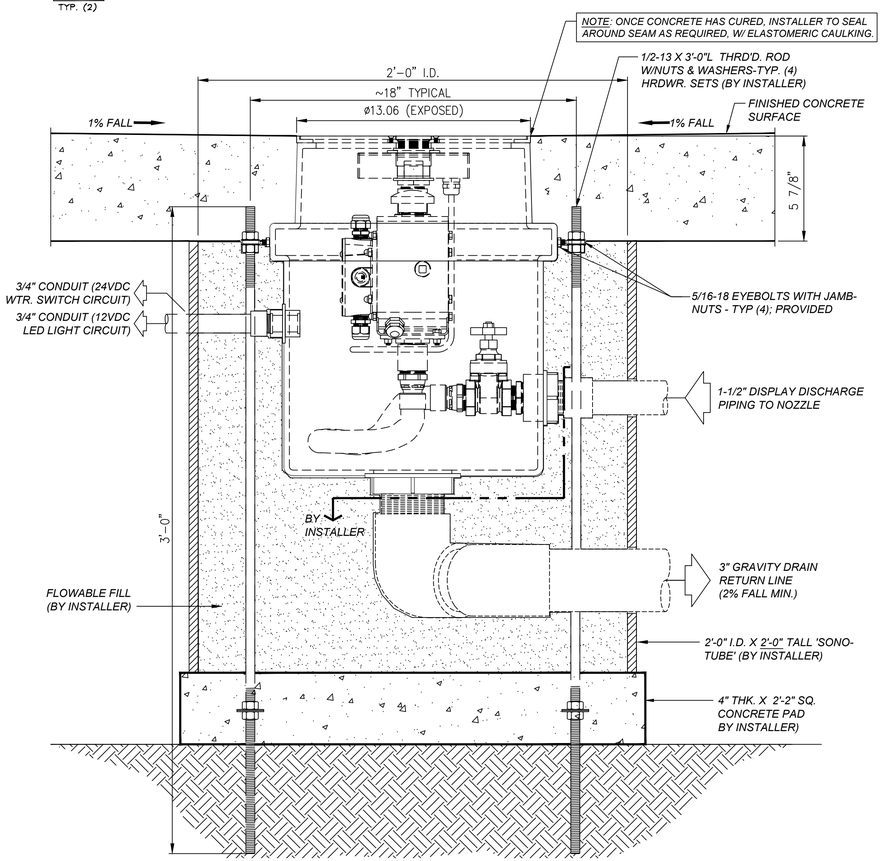
NOTE: FILTER PUMP, FILTER TANK AND INTERCONNECTING FILTRATION VALVES, PIPING AND FITTINGS ARE NOT INCLUDED IN THE BASIC WATER TREATMENT KIT. CONTACT FACTORY FOR THESE ITEMS.

NOTE: THE ABOVE SHOWN EQUIPMENT SCHEMATIC IS TYPICAL FOR A LIQUID EROSION SYSTEM.

NOTE: ALL PIPING SHOWN IS DIAGRAMMATIC IN NATURE AND IS NOT INTENDED TO REPRESENT THE ACTUAL PIPE ROUTING FOR THIS SYSTEM.

pH/ORP WATER TREATMENT SYSTEM SCHEMATIC

SCALE: NONE



RDJG-SERIES TYPICAL INSTALLATION DETAIL

SCALE: 3"=1'-0"

DRAWING SUBMITTAL
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SAMPLE DRAWING
Anywhere, USA
Splashpad

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Scale:	None
Drawn By:	W. Pierce
Checked By:	C. Bascas
Date:	02/23/2016

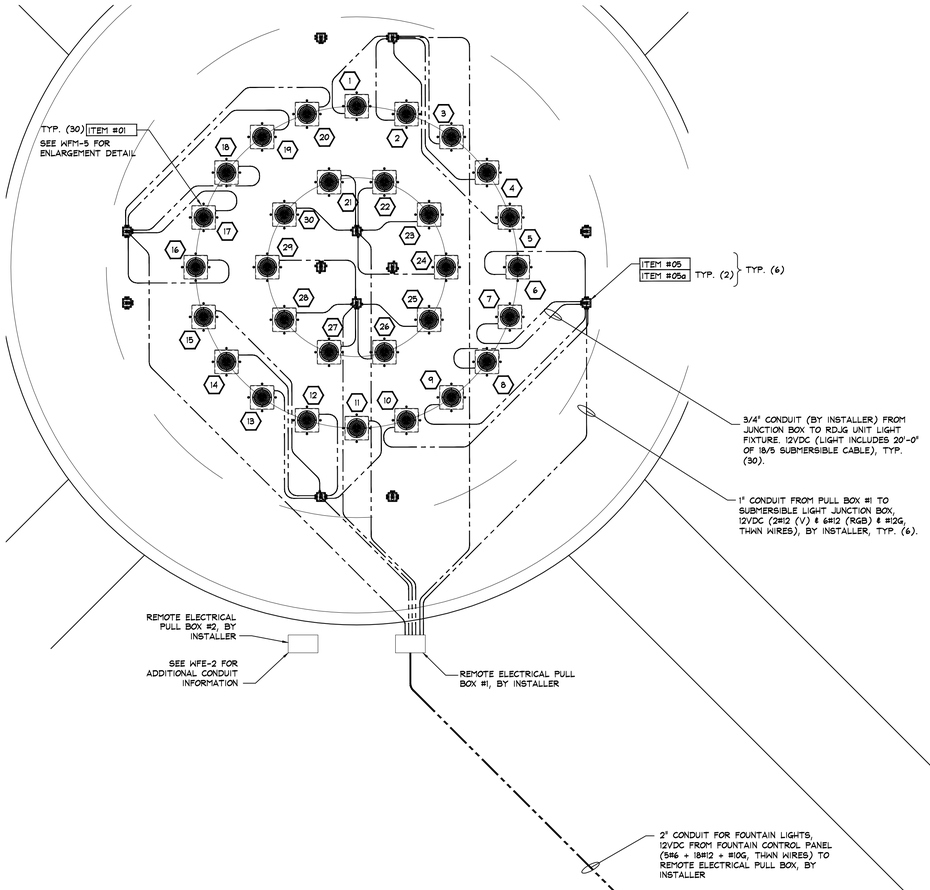
Revisions:

No.	Date	By	Comments

EQUIPMENT ROOM LAYOUT & RDJG INSTALLATION DETAILS

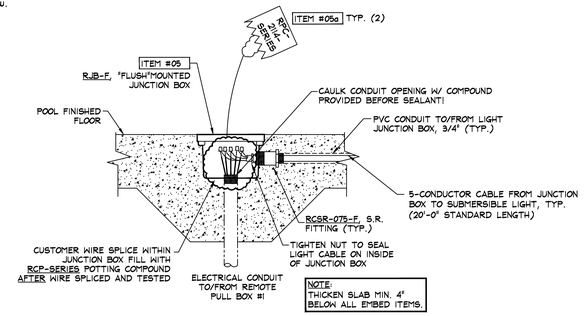
Drawing Number:

WFM-5



PIPING SCHEMATIC SYMBOL LEGEND

Symbol	Description
	A reducer fitting, by installer, is required at this location to change the pipe size.
	Piping turning downward in plan view via a 90 degree elbow. This allows another 90 degree elbow, located directly below the shown schematic elbow, to change the pipe direction to any angle.
	Piping turning downward in plan view or directly away from the viewer in section view via a 90 degree elbow.
	Piping turning upward in plan view or directly towards the viewer in section view via a 90 degree elbow.
	Direction of water flow.



DANGER

FATAL ELECTRICAL SHOCK CAN OCCUR IF FOUNTAIN ELECTRICAL EQUIPMENT IS NOT INSTALLED PROPERLY. THIS EQUIPMENT SHOULD ONLY BE INSTALLED BY QUALIFIED ELECTRICIANS WITH PROPER GROUNDING AND GROUND FAULT INTERRUPTION CIRCUIT BREAKERS IN ACCORDANCE WITH NATIONAL ELECTRICAL CODE, SECTION 680, AND ALL OTHER APPLICABLE SECTIONS OF THE CODE.

NOTE: INSTALLATION MUST BE PERFORMED BY A LICENSED ELECTRICIAN EXPERIENCED IN POOL WIRING, AND IN STRICT CONFORMANCE WITH NEC SECTION 680, AND ALL LOCAL CODE REQUIREMENTS.

* METALLIC CONDUIT MUST BE BONDED TO FOUNTAIN POOL STRUCTURE, PER THE NATIONAL ELECTRICAL CODE, AS REQUIRED.

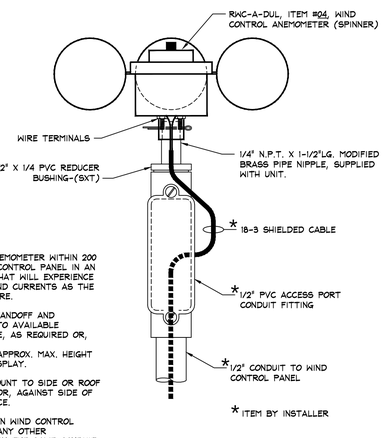
TYPICAL RJB-F DETAIL (12VDC)

SCALE: NONE (REF. ITEM'S #05 & 05a)

Sample Splashpad (2/23/16)
Equipment List – By Roman Fountains

Item No.	Qty.	Component Number	Description
01	30	RDJG-JC-DH-LED-RGB	Flush Mounted Nozzle/LED Assembly
02	1	RWST- 2500 (Special)	2500 Gallon Water Storage
03	1	RMS-075-NS	3/4" Fill Manifold System
04	1	RWC-A-DUL	Wind Anemometer.
04a	1	RWC-SM-DUL	Wind Control Panel.
*05	12	RJB-5-100-F	Flush Mount Submersible Junction Box. 5-hub
05a	24	RPC-2114-D	Potting Compound, 21.2 oz. size.
06	1	RSM-1-100 (Special)	1HP Skid-Mounted Pump.
07	1	RSM-S-500 (Special)	5HP Skid-Mounted Pump.
07a	1	RVFD-4-750	7.5HP VFD (rated 5HP Heavy Duty).
08	1	RSM-S-750 (Special)	7.5HP Skid-Mounted Pump.
08a	1	RVFD-4-1000	10HP VFD (rated 7.5HP Heavy Duty).
09	2	RBS-PVC-400 (Special)	4" PVC Inline Strainer.
10	7	RUV-T2-12	Ultraviolet Sterilizer.
11	1	RSFP-TR-100	30-1/2" Dia. High Rate Sand Filter
12	1	RWTS-BECS-3	Water Chemistry Controller
12a	2	RCMP-AD10	Chemical Metering Pump.
12b	2	RST-7910-30	30 Gallon Chemical Storage Tank
13	1	RPCP/RLCP- (Special)	UL508 Listed Custom Control Panel.

*NOTE: CONCRETE EMBED ITEM, REQUIRED FOR POUR.
NOTE: FOR COMPLETE ITEM SPECIFICATIONS, SEE SHEET WFN-2.



NOTES:

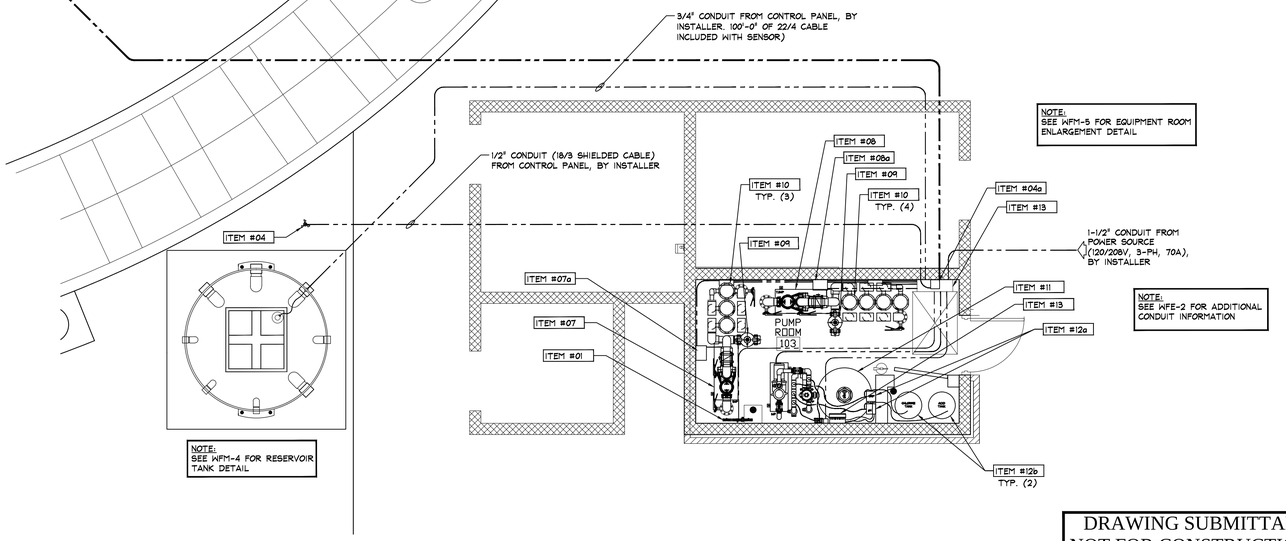
1. INSTALL ANEMOMETER WITHIN 200 FT. OF WIND CONTROL PANEL IN AN OPEN AREA THAT WILL EXPERIENCE THE SAME WIND CURRENTS AS THE WATER FEATURE.
2. CREATE STANDOFF AND SIDE-MOUNT TO AVAILABLE LIGHTING POLE, AS REQUIRED OR, TOP-MOUNT TO POLE AT APPROX. MAX. HEIGHT OF WATER DISPLAY.
3. DO NOT MOUNT TO SIDE OR ROOF OF BUILDING OR, AGAINST SIDE OF WALL OR FENCE.
4. DO NOT RUN WIND CONTROL WIRING WITH ANY OTHER CONDUCTORS IN THE SAME CONDUIT.

RWC-A-DUL, ITEM #04, WIND CONTROL ANEMOMETER (SPINNER) MOUNTING DETAIL

SCALE: None

ANEMOMETER INSTALLATION NOTES:

1. COORDINATE LOCATION OF ANEMOMETER WITH LANDSCAPE ARCHITECT.
2. INSTALL ANEMOMETER WITHIN 200 FT. OF WIND CONTROL PANEL IN AN OPEN AREA THAT WILL EXPERIENCE THE SAME WIND SPEEDS AS THE WATER FEATURE.
3. CREATE STANDOFF AND SIDE-MOUNT TO AVAILABLE LIGHTING POLE, AS REQUIRED OR, TOP-MOUNT TO POLE AT APPROX. MAX. HEIGHT OF WATER DISPLAY.
4. DO NOT MOUNT TO SIDE OR ROOF OF BUILDING OR, AGAINST SIDE OF WALL OR FENCE.
5. DO NOT RUN WIND CONTROL WIRING WITH ANY OTHER CONDUCTORS IN THE SAME CONDUIT.



FOUNTAIN ELECTRICAL/12VDC CONDUIT PLAN

SCALE: 1/4"=1'-0"

DRAWING SUBMITTAL
NOT FOR CONSTRUCTION
FOR CLIENT REVIEW.

ROMAN FOUNTAINS

SAMPLE DRAWING
Anywhere, USA
Splashpad

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Fax #: (770) 300-0074

Scale:	None
Drawn By:	W. Pierce
Checked By:	C. Bascas
Date:	02/23/2016

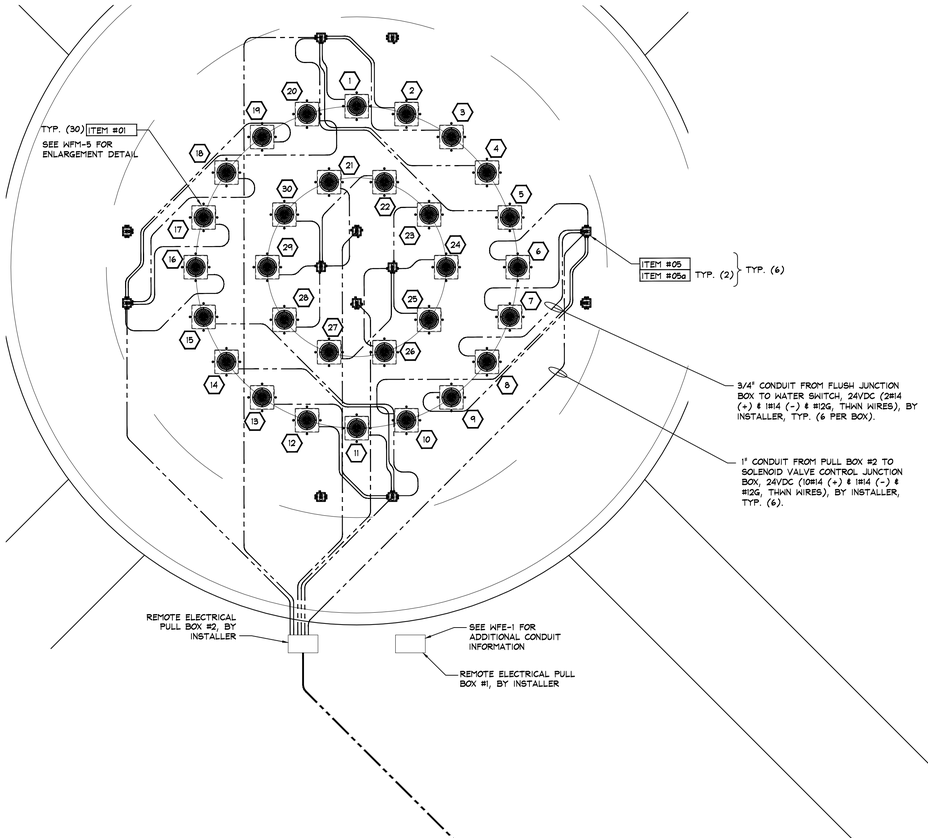
Revisions:

No.	Date	By	Comments

FOUNTAIN ELECTRICAL/12VDC CONDUIT PLAN

Drawing Number:

WFE-1



PIPING SCHEMATIC SYMBOL LEGEND

Symbol	Description
	A reducer fitting, by installer, is required at this location to change the pipe size.
	Piping turning downward in plan view via a 90 degree elbow. This allows another 90 degree elbow, located directly below the shown schematic elbow, to change the pipe direction to any angle.
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	Piping turning upward in plan view or directly towards the viewer in section view via a 90 degree elbow.
	Direction of water flow.

Sample Splashpad (2/23/16)
Equipment List – By Roman Fountains

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02	1	RWST- 2500 (Special)	2500 Gallon Water Storage
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04	1	RWC-A-DUL	Wind Anemometer.
04a	1	RWC-SM-DUL	Wind Control Panel.
*05	12	RJB-5-100-F	Flush Mount Submersible Junction Box. 5-hub
05a	24	RPC-2114-D	Potting Compound, 21.2 oz. size.
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08a	1	RVFD-4-1000	10HP VFD (rated 7.5HP Heavy Duty).
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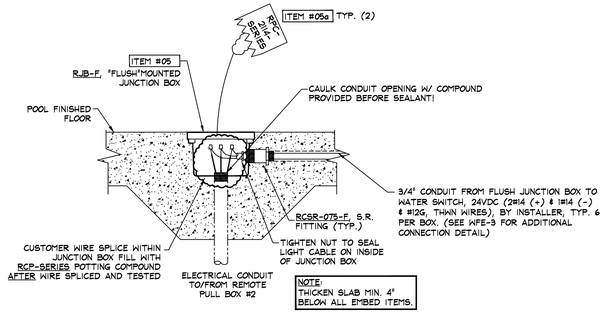
*NOTE: CONCRETE EMBED ITEM, REQUIRED FOR POUR.
NOTE: FOR COMPLETE ITEM SPECIFICATIONS, SEE SHEET WFN-2.



DANGER

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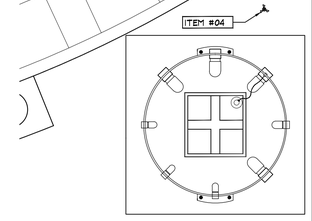
NOTE: INSTALLATION MUST BE PERFORMED BY A LICENSED ELECTRICIAN EXPERIENCED IN POOL WIRING, AND IN STRICT CONFORMANCE WITH NEC SECTION 680, AND ALL LOCAL CODE REQUIREMENTS.

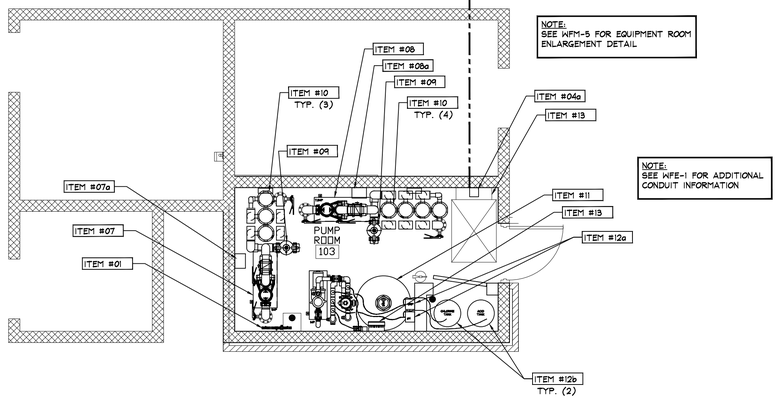
* METALLIC CONDUIT MUST BE BONDED TO FOUNTAIN POOL STRUCTURE, PER THE NATIONAL ELECTRICAL CODE, AS REQUIRED.

TYPICAL RJB-F DETAIL (24VDC)

SCALE: NONE (REF. ITEM'S #05 & 05a)



NOTE: SEE WFM-4 FOR RESERVOIR TANK DETAIL



FOUNTAIN 24VDC CONDUIT PLAN

SCALE: 1/4"=1'-0"

DRAWING SUBMITTAL
NOT FOR CONSTRUCTION
FOR CLIENT REVIEW.

ROMAN FOUNTAINS

SAMPLE DRAWING
Anywhere, USA
Splashpad

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Fax #: (770) 300-0074

Scale:	None
Drawn By:	W. Pierce
Checked By:	C. Bascas
Date:	02/23/2016

Revisions:

No.	Date	By	Comments

FOUNTAIN 24VDC CONDUIT PLAN

Drawing Number:

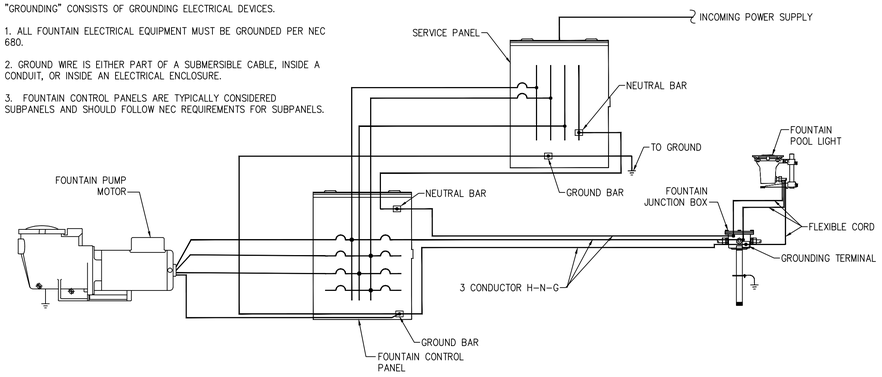
WFE-2

"GROUNDING" CONSISTS OF GROUNDING ELECTRICAL DEVICES.

1. ALL FOUNTAIN ELECTRICAL EQUIPMENT MUST BE GROUNDED PER NEC 680.

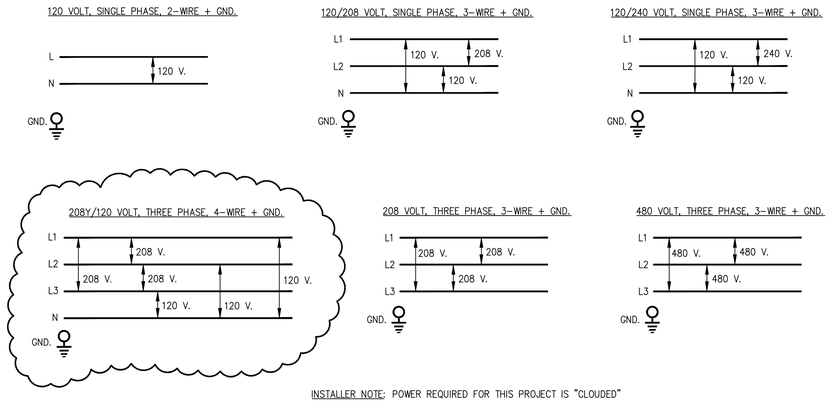
2. GROUND WIRE IS EITHER PART OF A SUBMERSIBLE CABLE, INSIDE A CONDUIT, OR INSIDE AN ELECTRICAL ENCLOSURE.

3. FOUNTAIN CONTROL PANELS ARE TYPICALLY CONSIDERED SUBPANELS AND SHOULD FOLLOW NEC REQUIREMENTS FOR SUBPANELS.



TYPICAL FOUNTAIN "GROUNDING" SCHEMATIC

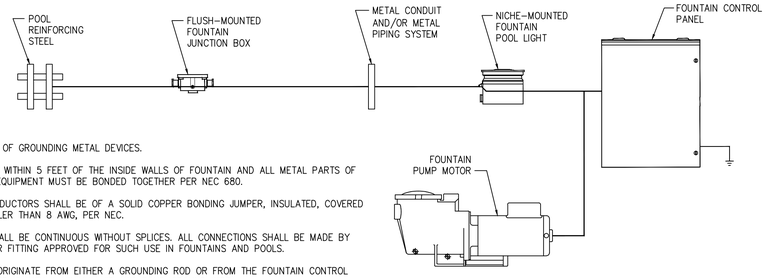
SCALE: NONE



INSTALLER NOTE: POWER REQUIRED FOR THIS PROJECT IS "CLOUDED"

ELECTRICAL POWER SUPPLY OPTIONS

SCALE: NONE



"BONDING" CONSISTS OF GROUNDING METAL DEVICES.

1. ALL METAL PARTS WITHIN 5 FEET OF THE INSIDE WALLS OF FOUNTAIN AND ALL METAL PARTS OF ASSOCIATED METAL EQUIPMENT MUST BE BONDED TOGETHER PER NEC 680.

2. ALL BONDING CONDUCTORS SHALL BE OF A SOLID COPPER BONDING JUMPER, INSULATED, COVERED OR BARE, NOT SMALLER THAN 8 AWG, PER NEC.

3. ALL BONDING SHALL BE CONTINUOUS WITHOUT SPLICES. ALL CONNECTIONS SHALL BE MADE BY EXOTHERMIC WELD OR FITTING APPROVED FOR SUCH USE IN FOUNTAINS AND POOLS.

4. BONDING WIRES ORIGINATE FROM EITHER A GROUNDING ROD OR FROM THE FOUNTAIN CONTROL PANEL (IF PANEL FEED IS WITH A MINIMUM #8 AWG BOND/GROUND WIRE).

5. BONDING WIRES ARE TYPICALLY EXTERNAL FROM CONDUITS BUT COULD ORIGINATE FROM THE FOUNTAIN CONTROL PANEL TO A SUBMERSIBLE JUNCTION BOX, THROUGH A CONDUIT, TO AN INTERNAL BONDING LUG. BUT THEN THE REST OF THE BONDING WIRES SHOULD RUN EXTERNAL BY USE OF JUNCTION BOX EXTERNAL BONDING LUG TO THE POOL REINFORCING STEEL (REBAR) AND TO OTHER POOL METAL DEVICES SUCH AS NICHE LIGHTS.

6. FOUNTAIN CONTROL PANELS ARE TYPICALLY CONSIDERED SUBPANELS AND SHOULD FOLLOW NEC REQUIREMENTS FOR SUBPANELS.

TYPICAL FOUNTAIN "BONDING" SCHEMATIC

SCALE: NONE

RECOMMENDED WIRE COLOR CODE

Color code for conductors for general wiring;
1. Color code conductors insulation as follows:

CONDUCTOR	208-240/120	440-480/277	12-24/AC-DC
Phase A	BLACK (BL)	BROWN (BR)	GRAY (GY), BROWN (BR)
Phase B	RED (RD)	ORANGE (OR)	
Phase C	BLUE (BU)	YELLOW (YL)	
NEUTRAL (COM)	WHITE (WH)		PURPLE (PU), BLUE (BU)
GROUND	GREEN (GRN)	GREEN (GRN)	GREEN (GRN)

2. For conductors #6 AWG or larger, permanent plastic - colored tape may be used to mark conductor insulation. Tape shall cover not less than 2 inches of conductor insulation within enclosure.

CONDUCTOR	DEVICES	LIGHT FIXTURES	SOLENOIDS	PLC-INPUTS	PLC-OUTPUTS
Phase	RED (RD)	BLACK (BL)	BLACK (BL)	YELLOW (YL)	ORANGE (OR), RED (RD)
NEUTRAL (COM)	WHITE (WH)	WHITE (WH)	WHITE (WH)	WHITE (WH)	WHITE (WH)
GROUND	GREEN (GRN)	GREEN (GRN)	GREEN (GRN)	GREEN (GRN)	GREEN (GRN)

EXCERPT FROM 2014 EDITION OF NEC ARTICLE 680 PERTAINING TO DECORATIVE FOUNTAINS

V. Fountains

680.50 General. The provisions of Part I and Part V of this article shall apply to all permanently installed fountains as defined in 680.2. Fountains that have water common to a pool shall additionally comply with the requirements in Part II of this article. Part V does not cover self-contained, portable fountains. Portable fountains shall comply with Parts II and III of Article 422.

680.51 Luminaires, Submersible Pumps, and Other Submersible Equipment.
(A) Ground-Fault Circuit Interrupter. Luminaires, submersible pumps, and other submersible equipment, unless listed for operation at low voltage contact limit or less and supplied by a transformer or power supply that complies with 680.23(A)(2), shall be protected by a ground-fault circuit interrupter.
(B) Operating Voltage. No luminaires shall be installed for operation on supply circuits over 150 volts between conductors. Submersible pumps and other submersible equipment shall operate at 300 volts or less between conductors.
(C) Luminaire Lenses. Luminaires shall be installed with the top of the luminaire lens below the normal water level of the fountain unless listed for above-water locations. A luminaire facing upward shall comply with either (1) or (2):
(1) Have the lens adequately guarded to prevent contact by any person
(2) Be listed for use without a guard
(D) Overheating Protection. Electrical equipment that depends on submersion for safe operation shall be protected against overheating by a low-water cutoff or other approved means when not submerged.
(E) Wiring. Equipment shall be equipped with provisions for threaded conduit entries or be provided with a suitable flexible cord. The maximum length of each exposed cord in the fountain shall be limited to 3.0 m (10 ft). Cords extending beyond the fountain perimeter shall be enclosed in approved wiring enclosures. Metal parts of equipment in contact with water shall be of brass or other approved corrosion-resistant metal.
(F) Servicing. All equipment shall be removable from the water for relamping or normal maintenance. Luminaires shall not be permanently embedded into the fountain structure such that the water level must be reduced or the fountain drained for relamping, maintenance, or inspection.
(G) Stability. Equipment shall be inherently stable or be securely fastened in place.

680.52 Junction Boxes and Other Enclosures.
(A) General. Junction boxes and other enclosures used for other than underwater installation shall comply with 680.24.
(B) Underwater Junction Boxes and Other Underwater Enclosures. Junction boxes and other underwater enclosures shal meet the requirements of 680.52(B)(1) and (B)(2).
(1) Construction.
(a) Underwater enclosures shall be equipped with provisions for threaded conduit entries or compression glands or seals for cord entry.
(b) Underwater enclosures shall be submersible and made of copper, brass, or other approved corrosion-resistant material.
(2) Installation. Underwater enclosure installations shall comply with (a) and (b).
(a) Underwater enclosures shall be filled with an approved potting compound to prevent the entry of moisture.
(b) Underwater enclosures shall be firmly attached to the supports or directly to the fountain surface and bonded as required. Where the junction box is supported only by conduits in accordance with 314.23(E) and (F), the conduits shall be of copper, brass, stainless steel, or other approved corrosion-resistant metal. Where the box is fed by nonmetallic conduit, it shall have additional supports and fasteners of copper, brass, or other approved corrosion-resistant material.

V. Fountains (Cont.)

680.53 Bonding.
All metal piping systems associated with the fountain shall be bonded to the equipment grounding conductor of the branch circuit supplying the fountain.
Informational Note: See 250.122 for sizing of these conductors.

680.54 Grounding.
The following equipment shall be grounded:
(1) Other than listed low-voltage luminaires not requiring grounding, all electrical equipment located within the fountain or within 1.5 m (5 ft) of the inside wall of the fountain
(2) All electrical equipment associated with the recirculating system of the fountain
(3) Panelboards that are not part of the service equipment and that supply any electrical equipment associated with the fountain

680.55 Methods of Grounding.
(A) Applied Provisions. The provisions of 680.21(A), 680.23(B)(3), 680.23(F)(1) and (F)(2), 680.24(F), and 680.25 shall apply.
(B) Supplied by a Flexible Cord. Electrical equipment that is supplied by a flexible cord shall have all exposed non-current-carrying metal parts grounded by an insulated copper equipment grounding conductor that is an integral part of this cord. The equipment grounding conductor shall be connected to an equipment grounding terminal in the supply junction box, transformer enclosure, power supply enclosure, or other enclosure.

680.56 Cord-and-Plug-Connected Equipment.
(A) Ground-Fault Circuit Interrupter. All electrical equipment, including power-supply cords, shall be protected by ground-fault circuit interrupters.
(B) Cord Type. Flexible cord immersed in or exposed to water shall be of a type for extra-hard usage, as designated in Table 400.4, and shall be a listed type with a "W" suffix.
(C) Sealing. The end of the flexible cord jacket and the flexible cord conductor termination within equipment shall be covered with, or encapsulated in, a suitable potting compound to prevent the entry of water into the equipment through the cord or its conductors. In addition, the ground connection within equipment shall be similarly treated to protect such connections from the deteriorating effect of water that may enter into the equipment.
(D) Terminations. Connections with flexible cord shall be permanent, except that grounding-type attachment plugs and receptacles shall be permitted to facilitate removal or disconnection for maintenance, repair, or storage of fixed or stationary equipment not located in any water-containing part of a fountain.

NOTE: For a complete copy of 2011 edition of NEC Article 680 (680.1 through 680.74) please contact:
NFPA
1 Batterymarch Park
Quincy, MA 02169-7471

READ THIS FIRST

"GOOD FAITH INFORMATION" DISCLAIMER NOTICE

ALL DETAILS DEPICTED ON THIS SHEET ARE FURNISHED AS A GENERAL REFERENCE GUIDE ONLY, AS A COURTESY AND IN GOOD FAITH, TO ASSIST THE INSTALLER WITH TYPICAL INSTALLATION METHODS FOR A FOUNTAIN SYSTEM.

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INSTALLER IS RESPONSIBLE FOR ANY AND ALL 'CODE AND STANDARD' REQUIREMENTS PERTAINING TO THE INSTALLATION OF ANY AND ALL EQUIPMENT REQUIRED FOR A COMPLETE AND ACCEPTABLE INSTALLATION, WHETHER INDICATED IN THESE GENERAL GUIDELINES OR NOT.

ROMAN FOUNTAINS

SAMPLE DRAWING
Anywhere, USA
Splashpad

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ROMAN FOUNTAINS CORP.
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Scale:	None
Drawn By:	W. Pierce
Checked By:	C. Bascas
Date:	02/23/2016

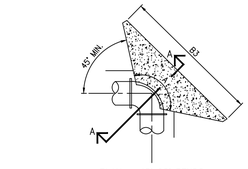
Revisions:

No.	Date	By	Comments

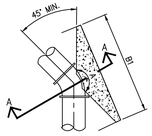
TYPICAL ELECTRICAL DETAILS & ARTICLE 680 NEC REQUIREMENTS

Drawing Number:

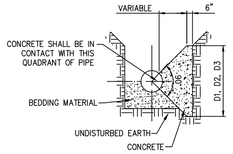
WFI-1



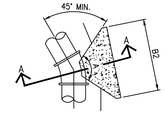
PLAN – 45° 90° BENDS



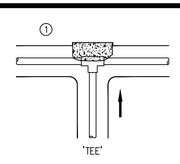
PLAN – 22 1/2°-45°BENDS



SECTION A–A



PLAN – 0°-22 1/2° BENDS



NOTE:
1. SHAPE OF BACK OF BUTTRESS MAY VARY AS LONG AS POUR IS AGAINST FIRM UNDISTURBED EARTH.
2. DIMENSION 'A' SHOULD BE AS LARGE AS POSSIBLE.
3. PLAN FOR 45°–90° BENDS & SECTION A–A SHALL APPLY TO TEES.

BUTTRESS DIMENSIONS

PIPE SIZE	22 1/2° BEND		45° BEND		90° BEND	
	B1	D1	B2	D2	B3	D3
4"	1'–5"	1'–5"	1'–5"	1'–5"	2'–1"	1'–6"
6"	1'–5"	1'–5"	1'–5"	1'–5"	2'–1"	1'–6"
8"	1'–5"	1'–5"	2'–1"	1'–6"	2'–8"	2'–0"
10"	1'–8"	1'–8"	2'–11"	1'–10"	4'–0"	2'–4"
12"	1'–10"	1'–10"	3'–4"	2'–0"	4'–9"	2'–6"
16"	3'–0"	2'–0"	3'–10"	3'–0"	6'–2"	3'–6"
18"	3'–3"	2'–4"	4'–6"	3'–4"	7'–0"	4'–0"
20"	3'–6"	2'–8"	5'–6"	3'–4"	8'–4"	4'–0"
24"	4'–4"	3'–0"	6'–10"	3'–10"	9'–8"	5'–0"

PROVIDE AT BURIED WATER SERVICE PIPING BENDS

WATER HAMMER:
FOUNTAIN PIPING SYSTEMS SHOULD BE DESIGNED AND CONSTRUCTED TO AVOID EXCESSIVE WATER HAMMER. WATER HAMMER CAN CAUSE DAMAGE AND FAILURE TO PIPES, VALVES AND FITTINGS WITHIN THE PIPING SYSTEM.

THIS IS A GENERAL GUIDELINE ONLY. CONTACT PROJECT ENGINEER FOR ACTUAL THRUST BLOCKING SPECIFICATIONS AND INSTRUCTIONS FOR THIS PROJECT.

1. THRU LINE CONNECTION, TEE
2. DIRECTION CHANGE, 90° ELBOW
3. CROSS AND REDUCER
4. DIRECTION CHANGE–OFFSET
5. DIRECTION CHANGE–45° ELBOW

INDICATES FLOW DIRECTION

THRUST BLOCKING:
WATER UNDER PRESSURE EXERTS THRUST FORCES IN PIPING SYSTEMS. THRUST BLOCKING SHOULD BE PROVIDED, AS NECESSARY AND REQUIRED BY PROJECT ENGINEER, TO PREVENT MOVEMENT OF PIPE OR APPURTENANCES IN RESPONSE TO THRUST. THRUST BLOCKING IS RECOMMENDED WHEREVER THE PIPELINE:

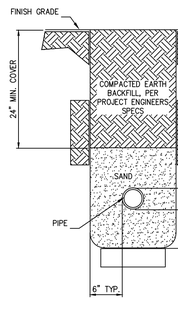
* CHANGES DIRECTION (E.G., TEES, BENDS, ELBOWS, AND CROSSES)
* CHANGES SIZE AT REDUCERS/INCREASERS/BUSHINGS
* STOPS AS IT DEAD ENDS

SIZE AND TYPE OF THRUST BLOCKING DEPENDS ON:

* MAXIMUM SYSTEM PRESSURE
* PIPE SIZE & PIPE MATERIAL (PVC, COPPER, STEEL, ETC.)
* APPURTENANCE SIZE
* TYPE OF FITTINGS OR METHODS USED TO CONNECT/JOIN PIPING
* LINE PROFILE (HORIZONTAL OR VERTICAL BENDS)
* SOIL TYPE

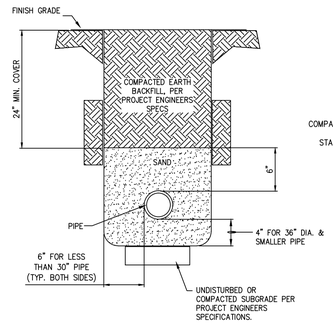
TYPICAL "THRUST BLOCKING" FOR FOUNTAIN SYSTEM PIPING

SCALE: NONE



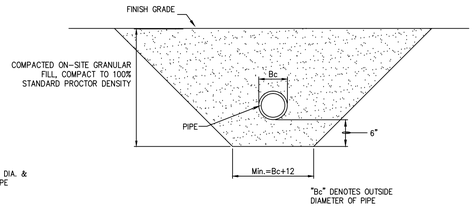
3" & SMALLER PIPE-TRENCH DETAIL

SCALE: NONE



4" & LARGER PIPE-TRENCH DETAIL

SCALE: NONE



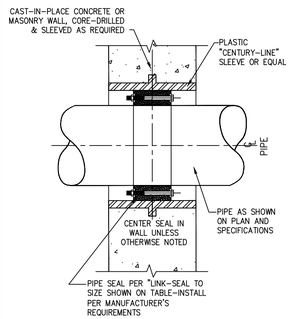
ALTERNATE PIPETRENCH DETAIL

SCALE: NONE

PIPING INSTALLATION NOTE:
ALL PIPING RELATED TO THE INSTALLATION OF THE FOUNTAIN SYSTEM(S) SHALL BE INSTALLED IN PARALLEL RUNS WITH ADEQUATE SPACE AND PROPER SUPPORT AND BACKFILL OVER, UNDER AND BETWEEN PIPE RUNS. PIPING SHALL NOT CRISS-CROSS AND SHALL NOT BE BUNDLED OR STACKED TOGETHER, OR MAKE CONTACT WITH ADJACENT PIPING. ELECTRICAL CONDUITS SHALL NOT BE RUN IN SAME TRENCH AS FOUNTAIN PIPING. PROJECT CIVIL ENGINEER IS RESPONSIBLE FOR, AND SHALL HAVE FINAL AUTHORITY OVER ALL PIPE INSTALLATION MEANS METHODS AND PRACTICES, INCLUDING PROPER BURIAL DEPTHS FOR THE PROJECT LOCATION.

TYPICAL "TRENCH & BACKFILL" DETAILS FOR FOUNTAIN SYSTEM PIPING

SCALE: NONE

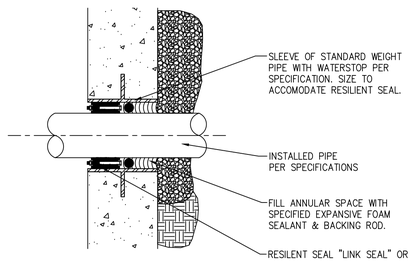


PIPE SIZE (NOMINAL)	OUTSIDE DIAMETER (PIPE O.D.)	CAST OR DRILLED CONCRETE HOLE INSIDE DIA. (I.D.) IN.	LINK SEAL SIZE NO.	NO. OF LINKS PER SEAL
1/2"	0.840	2.0	LS–200	4
3/4"	1.050	3.0	LS–315	4
1"	1.315	3.0	LS–300	4
1 1/4"	1.660	3.0	LS–275	8
1 1/2"	1.900	4.0	LS–315	6
2"	2.375	4.0	LS–300	6
2 1/2"	2.875	4.0	LS–200	9
3"	3.506	5.0	LS–300	8
3 1/2"	4.00	6.0	LS–315	10
4"	4.50	6.0	LS–300	10
5"	5.563	8.0	LS–340	13
6"	6.625	10.0	LS–475	10
8"	8.625	12.0	LS–475	12
10"	10.75	14.0	LS–475	14
12"	12.75	16.0	LS–475	17

"LINK–SEAL" AND "CENTURY–LINE" IS A PRODUCT OF THUNDERLINE CORPORATION, HOUSTON, TX.

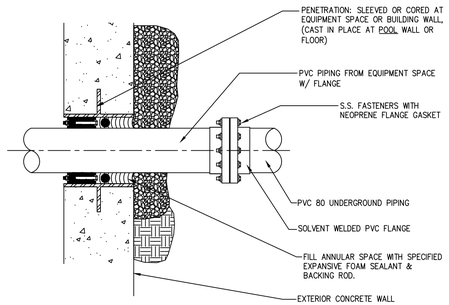
PIPE SEAL/SLEEVE SIZE TABLE

SCALE: NONE INSTALLATON DETAIL (TYP.)



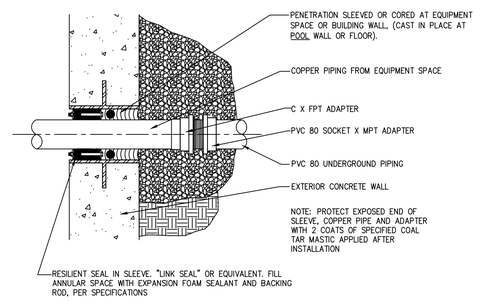
PENETRATION, SLEEVED (EXTERIOR WALL)

SCALE: NONE INSTALLATON DETAIL (TYP.)



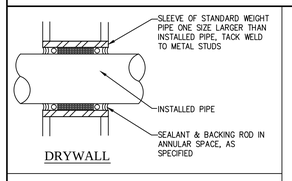
UNDERGROUND PVC PIPING TRANSITION

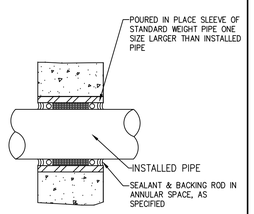
SCALE: NONE INSTALLATON DETAIL (TYP.) (EXTERIOR WALL)



UNDERGROUND PIPING TRANSITION

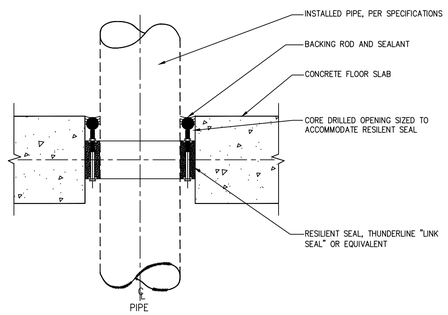
SCALE: NONE INSTALLATON DETAIL (TYP.) (THREADED)





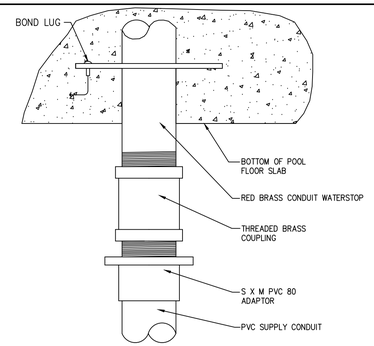
PENETRATION, SLEEVED (INTERIOR WALL OR FLOOR)

SCALE: NONE INSTALLATON DETAIL (TYP.)



PENETRATION, CORE DRILLED

SCALE: NONE INSTALLATON DETAIL (TYP.)



CONDUIT WATER STOP TRANSITION

SCALE: NONE INSTALLATON DETAIL (TYP.)

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ROMAN FOUNTAINS

SAMPLE DRAWING
Anywhere, USA
Splashpad

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Scale:	None
Drawn By:	W. Pierce
Checked By:	C. Bascas
Date:	02/23/2016

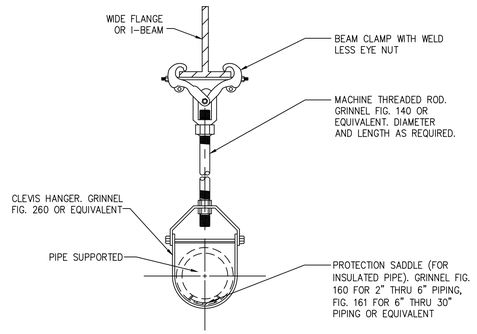
Revisions:

No.	Date	By	Comments

TYPICAL PIPING AND PENETRATION DETAILS

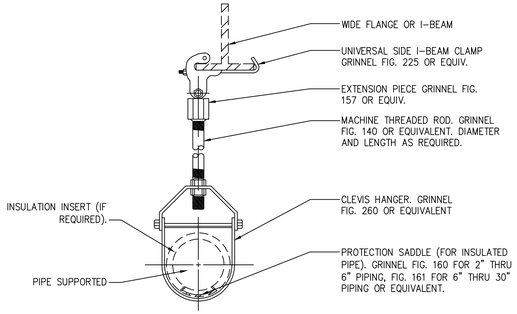
Drawing Number:

WFI-2



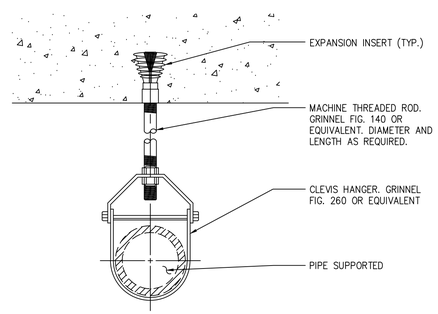
PIPE HANGER, CLEVIS TYPE

SCALE: NONE



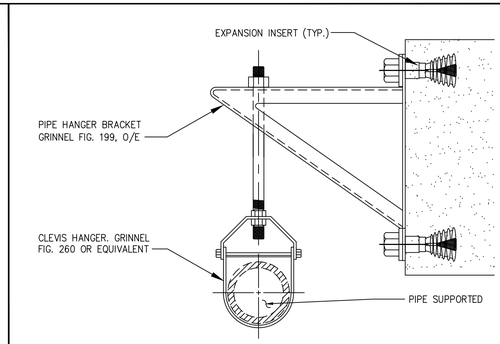
PIPE HANGER, CLEVIS TYPE W/ SIDE I BEAM CLAMP

SCALE: NONE



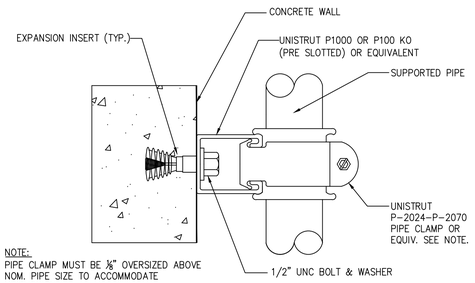
PIPE HANGER, CLEVIS TYPE W/ CONCRETE FASTENER

SCALE: NONE



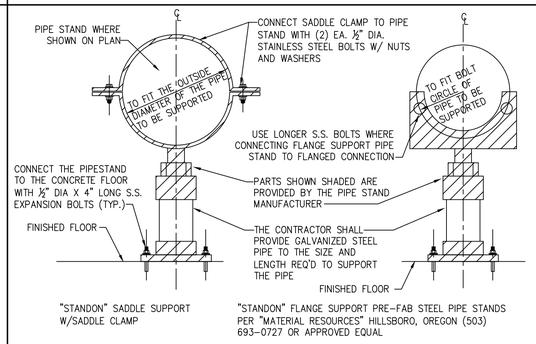
PIPE HANGER, CLEVIS TYPE W/ BRACKET

SCALE: NONE



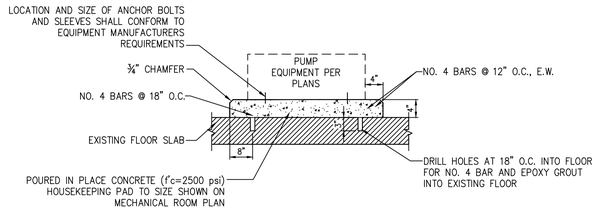
WALL MOUNTED PIPE CLAMP ASSEMBLY

SCALE: NONE



PIPE STAND SUPPORTS

SCALE: NONE



TYPICAL EQUIPMENT "HOUSEKEEPING PAD" DETAIL

SCALE: NONE (IF REQUIRED PER PROJECT ENGINEERS DETAILS)

PIPE HANGER REQUIREMENTS

(A) INSTALLING CONTRACTOR SHALL PROVIDE ALL REQUIRED FASTENERS, INSERTS, RODS, HANGERS, SUPPORTS, ANCHOR BOLTS, NUTS, WASHERS AND STEEL PLATES AND BRACKETS.

(B) INSTALLING CONTRACTOR SHALL PROVIDE ADDITIONAL HANGERS OR SUPPORTS AT ALL VALVES, STRAINERS AND ELSEWHERE AS REQUIRED TO PROPERLY SUPPORT ANY (C) ADDITIONAL PIPE LOADING.

(D) INSTALLING CONTRACTOR SHALL PROVIDE TRAPEZE TYPE HANGERS WHERE SEVERAL PIPES ARE AT THE SAME ELEVATION AND COPPER PLATED HANGERS FOR COPPER PIPING.

(E) INSTALLING CONTRACTOR SHALL PROVIDE HANGERS IMMEDIATELY ADJACENT TO ANY CHANGE IN PIPE DIRECTION.

HANGER SPACING IS AS FOLLOWS:

PIPE SIZE	SPACING
UP TO 1.25"	7 FT.
UP TO 1.50"	9 FT.
UP TO 2.00"	10 FT.
UP TO 4.00"	12 FT.
UP TO 8.00"	14 FT.
UP TO 12.00"	16 FT.
UP TO 16.00"	18 FT.
UP TO 30.00"	20 FT.

(F) EQUIPMENT MAY NOT SUPPORT ANY PIPE LOAD.

READ THIS FIRST

"GOOD FAITH INFORMATION" DISCLAIMER NOTICE

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INSTALLER IS RESPONSIBLE FOR ANY AND ALL 'CODE AND STANDARD' REQUIREMENTS PERTAINING TO THE INSTALLATION OF ANY AND ALL EQUIPMENT REQUIRED FOR A COMPLETE AND ACCEPTABLE INSTALLATION, WHETHER INDICATED IN THESE GENERAL GUIDELINES OR NOT.

DRAWING SUBMITTAL
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FOR CLIENT REVIEW.

ROMAN FOUNTAINS

SAMPLE DRAWING
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Splashpad

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Revisions:

No.	Date	By	Comments

TYPICAL PIPE HANGER, PUMP PAD AND SUPPORT DETAILS

Drawing Number:

WFI-3