

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

- * 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 saves energy, reduces CO2 emissions and takes less energy to produce than many competing products. PVC 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.



AIA
Allied Member



roman fountains®

America's Fountain Company!SM

"Handcrafted In America . . . By American Craftsmen." SM

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/manufacture communication pertaining to scope of work & responsibility. Thank You.

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

RECEIVED
DEPARTMENT OF ENVIRONMENTAL QUALITY
AUG 21 2012
REGISTRATION MANAGEMENT DIVISION

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.

PREPARED FOR: Community Foundation for Muskegon County / Muskegon, MI

PROJECT NAME: ALCOA CELEBRATION SQUARE / Muskegon, MI

DATE: April 8, 2011 **REVISION 1:** April 25, 2011

PROJECT LEAD: Bryan Had - Atlanta Office

DESCRIPTION

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NOTICE: Any alterations to this design document in whole or in part made without the express written consent and permission of Roman Fountains Corporation shall be at sole risk of the individual or company making such unauthorized alterations, and Roman Fountains Corporation shall not have or accept any liability or legal exposure arising from said alterations.

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.

NOTICE: This design document and items incorporated herein as an instrument of professional services is the proprietary property of Roman Fountains Corporation and is not to be used or reproduced, in whole or in part, for any extension to this project or for any other project without the express written consent of an officer of Roman Fountains Corporation, Albuquerque, New Mexico. Copyright © 2011.

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
3070-K Business Park Drive
Norcross, GA 30071

WESTERN DESIGN & SALES OFFICE

Phone #: (888) 803-1803 Fax #: (951) 600-8322
24680 Corte Delgado, Murrieta, CA 92562

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.

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AUTHENTICATED COPY
IN ACCORDANCE WITH THE CONTRACT DOCUMENTS

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 for 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.

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

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 PANEL TO ALLOW DRAINAGE OF WATER FROM ENCLOSURE IN THE EVENT OF WATER INGRESS.

NOTICE TO CLIENT: ROMAN FOUNTAINS SHALL NOT BE RESPONSIBLE FOR WATER QUALITY AND WATER CHEMISTRY ISSUES WHICH MAY RESULT IN HARDWARE 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.

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 (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, DETRIORATION 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 waterproof 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.

NOTE: 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 CAN BE CREATED.

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".

ROMAN FOUNTAINS CORPORATION SHALL BY DEFINITION "FURNISH" EQUIPMENT, COMPONENTS, MATERIALS AND DOCUMENTS TO THE JOB SITE.

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.

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

- 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

- 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-2484 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.

- 1. Use only clear, free-flowing, non-expansive backfill material (naturally rounded 1/4" pea gravel or sand) and backfill in 8"-12" lifts with adequate complete compaction between lifts to 90% of maximum density per ASTM 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).

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 pour methods, concrete reinforcements such as rebar type, size and locations, or concrete structural waterproofing specifications, materials and methods, etc.

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 AND/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 BEST INSTALLATION IMAGES, INSTALLATION SEQUENCE IMAGES, START-UP AND COMMISSIONING IMAGES AND POST-INSTALLATION IMAGES.

WATERPROOFING NOTICE OF RESPONSIBILITY
ROMAN FOUNTAINS RECOMMENDS ALL FOUNTAINS BE PROPERLY WATERPROOFED AND ALL FOUNTAIN COMPONENTS BE PROPERLY SEALED WITH A SUITABLE WATERPROOF GULKING COMPOUND TO INSURE A WATERTIGHT FOUNTAIN INSTALLATION.

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

INTELLECTUAL PROPERTY AND COPYRIGHT NOTICE

All Rights Reserved
THIS IS AN ORIGINAL DESIGN CREATED BY ROMAN FOUNTAIN CORPORATION. THE CONCEPTS, IDEAS, PLANS, NOTES AND DETAILS ARE THE INTELLECTUAL PROPERTY OF ROMAN FOUNTAINS CORPORATION.

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.

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.

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.S. LISTED WHENEVER SUCH LABELING IS AVAILABLE FROM THE SOURCE EQUIPMENT OR MATERIAL.

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.

OWNERS MAINTENANCE RESPONSIBILITY
For purposes of issuing this proposal and/or drawing package, Roman Fountains Corporation assumes client will commit the necessary manpower, equipment and financial resources necessary to properly, adequately & routinely maintain the fountain system in accordance with the Operation & Maintenance Manuals furnished by equipment supplier/manufacturer.

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.

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.

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 quality 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/membrane installation or adaptation is the responsibility of the specifier, purchaser and installer, including but not limited to, fittings, 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 by any other permission or consent, to be limited to fitness, 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, for the use in musical systems as may be required by BMI, ASCAP, SESAC, by the artist or composer directly or by any other permission or consent, to be limited to fitness, qualifications and determinations as to suitability of bidders to perform the required work.

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 equipment 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.

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.

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 THESE WARRANTIES WHICH EXTEND BEYOND THE FACE OF THIS DOCUMENT, INCLUDING ROMAN FOUNTAINS IS AUTHORIZED TO EXTEND, EXPAND, OR AMEND THIS WARRANTY IN ANY MANNER WHATSOEVER.

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 SHALL NOT BE RESPONSIBLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES, DETRIORATION 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.

GENERAL INSTALLATION NOTES
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.

9471 MAR 25 13
Drawing Number: WFN-1



ALCOA CELEBRATION SQUARE
Muskegon, MI
For Community Foundation for Muskegon County
Muskegon, MI

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Table with columns: No., Date, By, Comments. Row 1: 1, 4-25-11, CMB, CHANGED POWER, 1-PH TO 3-PH.

GENERAL INSTALLATION NOTES
Drawing Number: WFN-1

FOUNTAIN PERFORMANCE CRITERIA

The fountain for Alcoa Celebration Square consists of an outdoor splashpad play area water feature that contains no visible standing body of water. The fountain includes a centrally located flush-mount Spritzer nozzle that creates a column of water with a maximum spray height of ten feet. Located around the center nozzle, on a 17'-6" diameter circle, are four flush-mount Jet Cluster nozzles that create columns of water with a maximum spray height of seven feet. Located at the perimeter of the splashpad, on a 17'-6" diameter circle, are eight evenly spaced flush-mount Precision Jet nozzles that create 3/8" diameter arcs of water towards the center of the fountain, with a maximum apex and throw of six feet.

Located inside each of the thirteen flush mount nozzle housing is an LED donut light that provides night time illumination. The LED donut light contains RGB LED diodes which can be operated through a pre-programmed color changing driver that is located in the pump vault.

The fountain pump vault contains a PLC, three solenoid valves, and a VFD that allows each group of nozzles to turn on/off and allows for the water display to vary in spray height. The PLC allows for the display to be programmed to operate at a reduced spray height mode during midday hours, when it is most likely that young children will be playing at the fountain. During the remaining hours of operation, the fountain will operate at the full spray heights listed above. There is a switch at the pump vault that overrides the midday lower spray heights and allows higher fountain display sprays.

Water from the display nozzles drain back to a remote storage tank/reservoir located in a landscape area near the fountain. The main pump vault, also located in the landscape area, takes water from the reservoir tank for filtration and re-circulation. Since the fountain is intended for interaction with visitors, a water treatment vault containing a PH/ORP system is also located in the landscape area to continually monitor and maintain the water quality.

Fountain Information

Area of Reservoir Tank:	19.63 Square Feet
Depth of Fountain Pool:	2'-6" (2.5 feet)
Volume of Fountain Pool:	49.1 Cubic Feet (367 Gallons)
Display Requirement:	20 GPM at 15 Feet of Head (center Spritzer) 61 GPM at 12 Feet of Head (middle Jet Cluster) 56 GPM at 10 Feet of Head (perimeter Precision Jet)
Total Display Requirement:	137 GPM at 45 Feet of Head
Filtration Requirement:	12.3 GPM at 50 Feet of Head (30 minute turnover)
Filtration Type:	75 Sq. Ft. Cartridge Filter
Actual Filtration Rate:	15 GPM at 50 Feet of Head (25 minute turnover)
Display/Filtration Pump Delivers:	152 GPM at 53 Feet of Head

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.

ALCOA CELEBRATION SQUARE					
120/240V 1-PHASE SERVICE LOAD SCHEDULE					
Description:	VA	Duty Factor		Load	
Control Circuit:	96 VA	x 1.25	=	120 VA	
PLC & Display Valves:	192 VA	x 1.25	=	240 VA	
3 HP (208V/60/3) Display Pump:	3,800 VA	x 1.25	=	4,750 VA	
(13) 18.5W 12VDC Display LED RGB Lights:	241 VA	x 1.25	=	301 VA	
Vault 1/3 HP Sump Pump (120V/60/1):	1,200 VA	x 1.00	=	1,200 VA	
Vault Receptacle & Fan:	768 VA	x 1.25	=	960 VA	
Water Treatment Vault (120V/60/1):	768 VA	x 1.25	=	960 VA	
Load (Continuous Duty)	0 VA	x 1.25	=	0 VA	
Load (Non-Continuous Duty)	0 VA	x 1.00	=	0 VA	
				8,531 VA	
TOTAL LOAD:	8,531 VA	/	240 V	/	1.00 = 35.5 AMPS
REQ'D. FEED:					40 AMPS
FEEDER CONDUIT:					1.00 inch

ALCOA CELEBRATION SQUARE (4/21/11)

Equipment List - By Roman Fountains

Item No.	Qty.	Component Number	Description
01	1	RDJ-SJ-DH-LED (RGB)	Flush-Mount "Deck" Jet with LED Donut Light. Includes stainless steel RDH-SJ Spritzer jet, sch. 80 PVC Niche housing w/integral waterstop flange and clear lean cover, and stainless steel high output RGB LED donut light fixture with 20 ft. cable. The niche housing is furnished with a 1" drain, a 1" water supply, and a 1/2" light conduit connection.
02	4	RDJ-JC-DH-LED (RGB)	Flush-Mount "Deck" Jet with LED Donut Light. Includes stainless steel RDH-JC Jet Cluster nozzle, sch. 80 PVC Niche housing w/integral waterstop flange and clear lean cover, and stainless steel high output RGB LED donut light fixture with 20 ft. cable. The niche housing is furnished with a 1" drain, a 1" water supply, and a 1/2" light conduit connection.
03	8	RDJ-APJ-DH-LED (RGB)	Flush-Mount "Deck" Jet with LED Donut Light. Includes stainless steel RDH-APJ adjustable 3/8" orifice precision jet, sch. 80 PVC Niche housing w/integral waterstop flange and clear lean cover, and stainless steel high output RGB LED donut light fixture with 20 ft. cable. The niche housing is furnished with a 1" drain, a 1" water supply, and a 1/2" light conduit connection.
04	1	RWST-500	Water Storage/Storage Tank. 500 gallon, approximately 5'-0" diameter x 5'-0" deep, brown gel-coat exterior, 36" square landscape access hatch opening of reinforced fiberglass with stainless steel piano hinge attachment, and lock hardware (LOCK BY INSTALLER). Fiberglass construction, with ladder, all required fittings, penetrations, and ROOM-RNF water level sensor installed.
05	1	RJB-6-100-FR	Flush Mounted Submersible Junction Box, cast bronze construction, with neoprene gasket, stainless steel fasteners, one 1" (F) N.P.T. bottom power connection, and six 3/4" N.P.T. side connections with brass cord seal fitting (shipped loose and installed in field). Junction box shall have a minimum volume of 65.0 cubic inches and shall include an internal grounding lug.
06	1	RJB-7-100-FR	Flush Mounted Submersible Junction Box, cast bronze construction, with neoprene gasket, stainless steel fasteners, one 1" (F) N.P.T. bottom power connection, and seven 3/4" N.P.T. side connections with brass cord seal fitting (shipped loose and installed in field). Junction box shall have a minimum volume of 65.0 cubic inches and shall include an internal grounding lug.
07	4	RPC-2114-D	Potting Compound, re-enterrable electrical insulating and potting compound, designed for use in RJB-Series junction boxes (required by NEC 680), 21.2 oz. size.
08	1	RDP-1-WTS	Series 1 Direct Burial Vault, consisting of a 3'-5" Sq. x 2'-8" deep heavy duty FRP vault with white gel-coat interior and brown gel-coat exterior, furnished with fiberglass reinforced plastic lid with stainless steel piano hinge attachment. Vault contains a dual-point water treatment controller and acrylic flow cell with pH and ORP electrodes, erosion type bromine feeder and bromine solenoid valve, single head adjustable rate chemical metering pump and 5 gallon chemical solution storage tank (for pH solution); 3" vent connections with 115 CPM vent fan. Unit is pre-wired, pre-plumbed (Schedule 80 PVC) and factory tested prior to shipment. Power requirement: 120 volt, single phase + GND.
09	3	RPVC-300	3" PVC Vent Cap, Schedule 40 PVC construction and 1/4" stainless steel fasteners. Low profile corrosion resistant design. Brown color.
10	1	RDP-250-300 (Special)	Series 250 Direct Burial Pump Vault, consisting of a 4'-0" x 4'-6" x 4'-2" deep heavy duty FRP vault with white gel-coat interior and brown gel-coat exterior, furnished with fiberglass reinforced plastic lid with stainless steel piano hinge attachment, lock hardware (LOCK BY INSTALLER), containing a RWSP-300 3 HP wall-piping display pump with integral suction strainer; three RSV-series electrically actuated valves (one 1" and two 1-1/2"); three RVS-series bronze valve strainers (two 2" and one 2-1/2"); RCF-075 75 sq. ft. cartridge filter unit; 4" vent connections with 250 CPM at 0.2" S.P. vent fan; 1/3 HP sump pump; three power supplies and drivers for color-changing light show controls; RVD-1000 variable frequency drive; RCP-RLCP UL 508 listed control panel in a NEMA 4 enclosure containing main disconnect switch, pump circuit breaker, PLC (programmable logic controller), two-channel programmable timer for pump and lights, H.O.A. switches, lighting contactor, G.F.C.I. breakers, and water level/low level cutoff control circuitry. Pump vault is pre-wired, pre-plumbed (Schedule 80 PVC) and factory tested prior to shipment. Power requirement: 120/240 V., single-phase, 40 amp, 3-wire feed + GND.
11	2	RPVC-400	4" PVC Vent Cap, Schedule 40 PVC construction and 1/4" stainless steel fasteners. Low profile corrosion resistant design. Brown color.

*NOTE: CONCRETE EMBED ITEM, REQUIRED FOR POUR.

SYSTEM POWER REQUIREMENT:

120/240V., SINGLE PHASE, 3-WIRE FEEDER + GND. @ 40 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.



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ALCOA CELEBRATION SQUARE

Muskegon, MI

For Community Foundation for Muskegon County
Muskegon, MI

Muskegon, MI

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Phone #: (888) 803-1803
Fax #: (951) 600-8322

Scale: None
Drawn By: C. Bascas
Checked By: J. Mitovich
Date: 4-8-11

Revisions:			
No.	Date	By	Comments
1	4-25-11	CMB	CHANGED POWER, 1-PH TO 3-PH

FOUNTAIN EQUIPMENT LIST & PERFORMANCE CRITERIA

Drawing Number:

WFN-2

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MUSKEGON COUNTY
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Scale: None
Drawn By: C. Bascas
Checked By: J. Mitovich
Date: 4-8-11

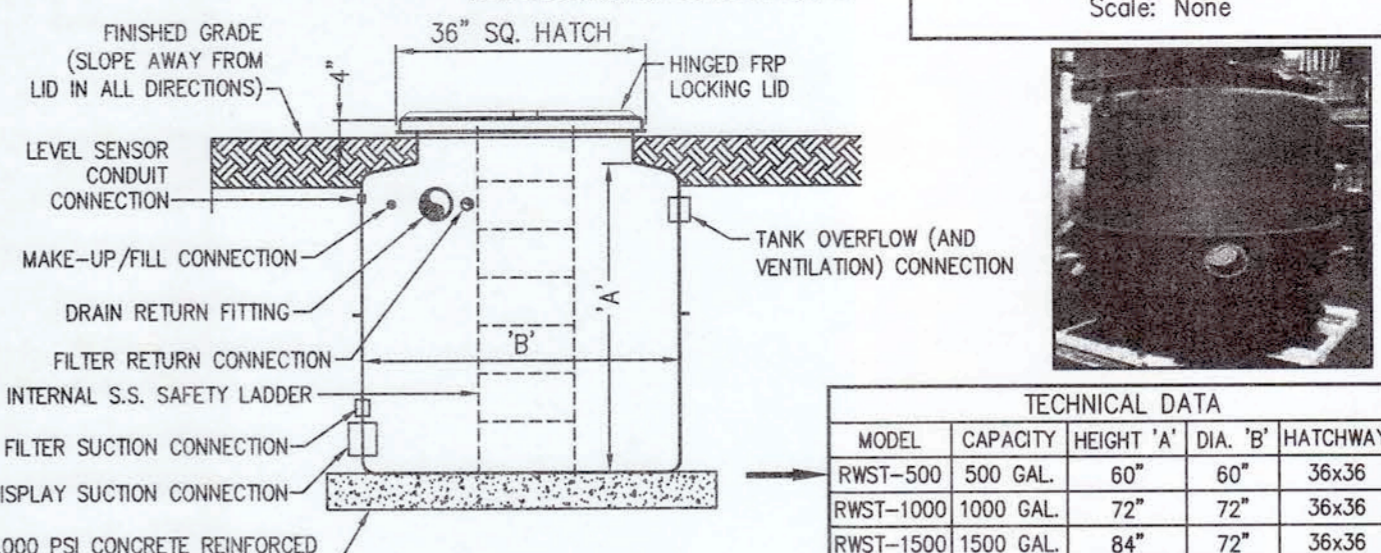
Revisions:

No.	Date	By	Comments
1	4-25-11	OMB	CHANGED POWER, 1-PH TO 3-PH

**FOUNTAIN EQUIPMENT
DETAIL SHEET**

Drawing Number:
WFD-1

RWST Series
Water Storage/Storage Tank
Scale: None



NOTE: SEE DWG. WFM-7 FOR SPECIFIC TANK DETAILS.

MODEL	CAPACITY	HEIGHT	A	B	HATCHWAY
RWST-500	500 GAL	60"	60"	36x36	
RWST-1000	1000 GAL	72"	72"	36x36	
RWST-1500	1500 GAL	84"	72"	36x36	
RWST-2000	2000 GAL	72"	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.

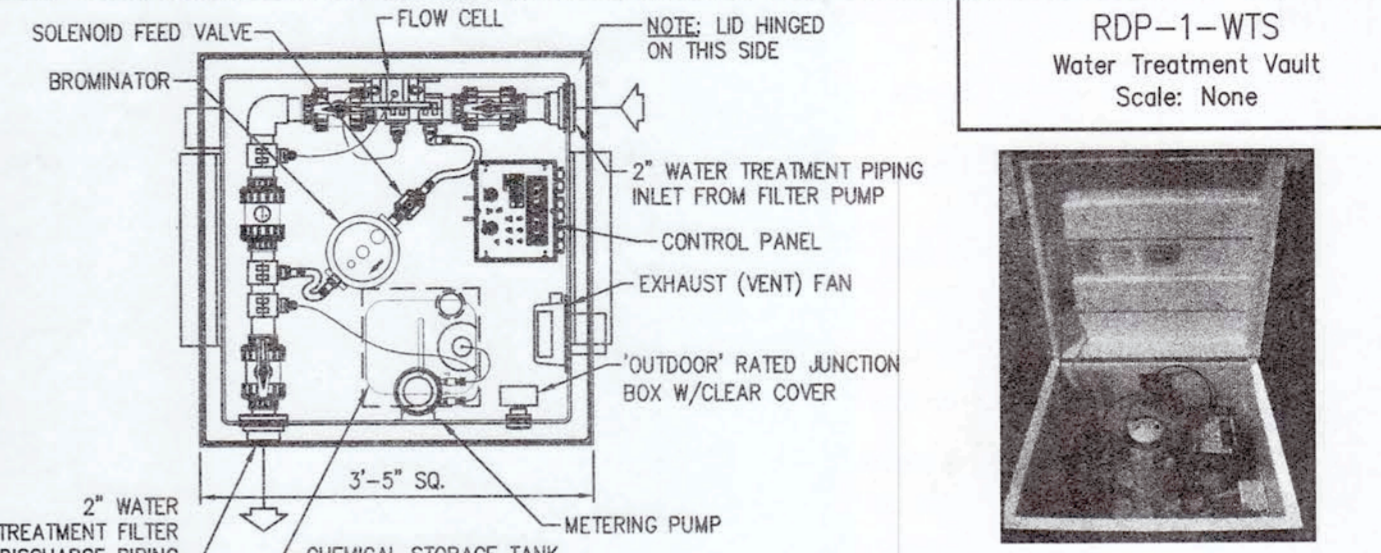
WARNING: FOR "DRY HOLE" INSTALLATION ONLY.

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

NOTE: ELECTRONIC LEVEL SENSOR CONTROL AVAILABLE AS A SEPARATE ITEM. (USE ROOM-RN SERIES). CONTACT FACTORY FOR ASSISTANCE & SPECIFICATIONS.

ITEM #01
ITEM #02
ITEM #03
ITEM #04

RDP-1-WTS
Water Treatment Vault
Scale: None



NOTE: LID HINGED ON THIS SIDE.

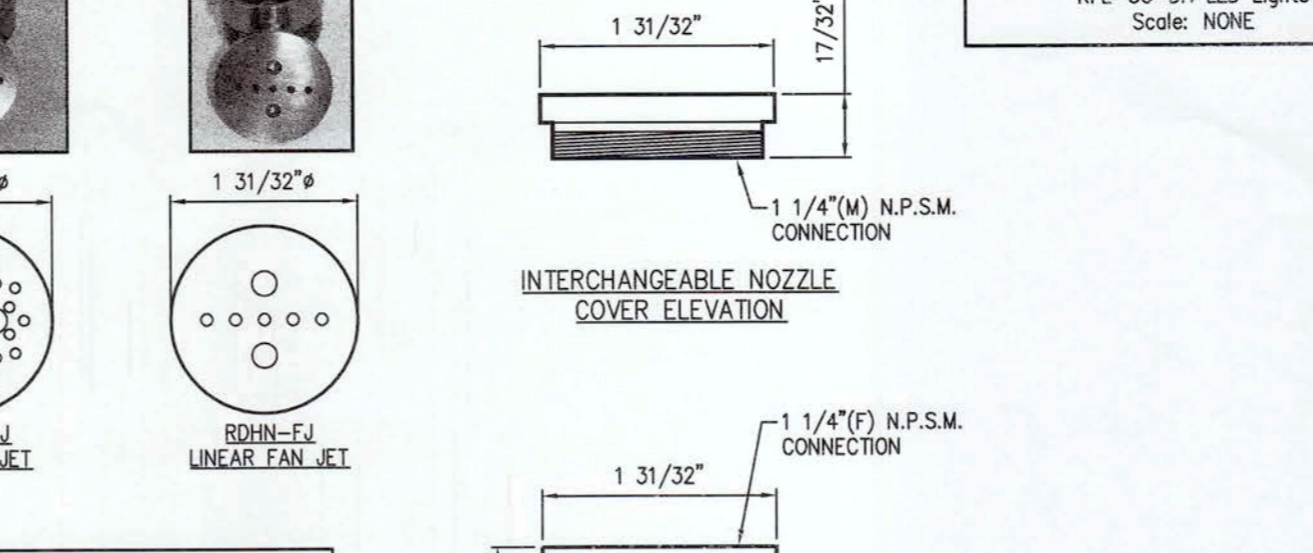
NOTE: DO NOT STORE CHEMICALS IN VAULT OR SERIOUS INJURY AND EQUIPMENT DAMAGE MAY RESULT.

NOTE: 1. Hatch opening must be located in flood-safe area. 2. Slope finished grade away from pump module. 3. Protect pump module gravity drain from back flow and gas, as required. 4. Top of pump module must be at, or below lowest pool water level.

NOTE: SEE DWG. WFM-5 FOR SPECIFIC VAULT DETAILS.

ITEM #08

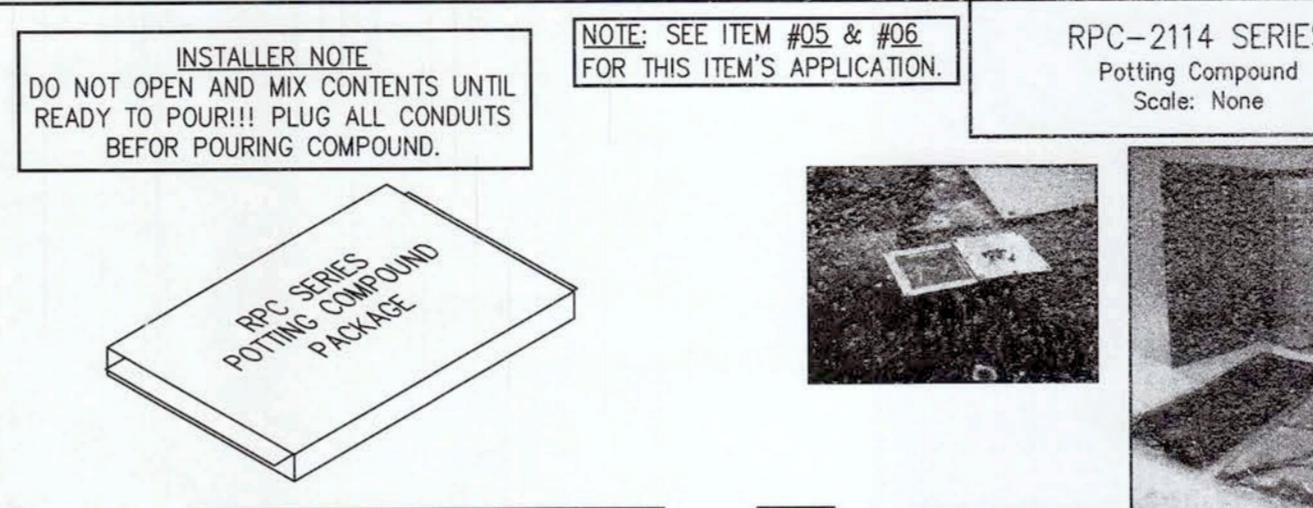
RHNS Series
Stainless Steel Nozzle Assembly for RFL-CG-OH LED Lights
Scale: NONE



INTERCHANGEABLE NOZZLE COVER ELEVATION

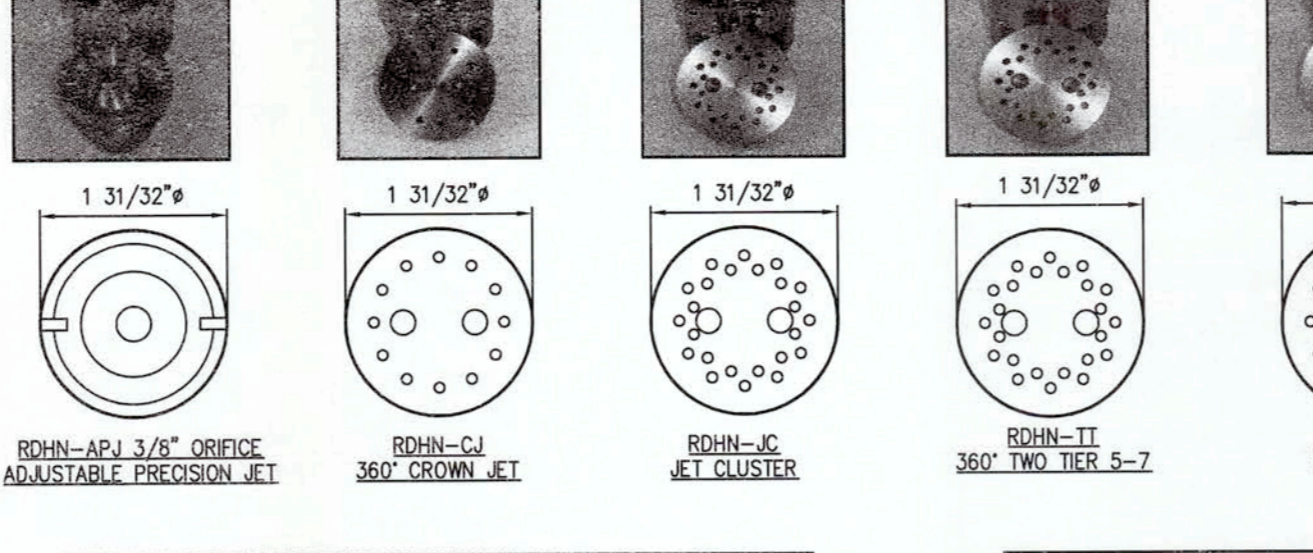
ITEM #01
ITEM #02
ITEM #03

RPC-2114 SERIES
Potting Compound
Scale: None



ITEM #05
ITEM #06
ITEM #07

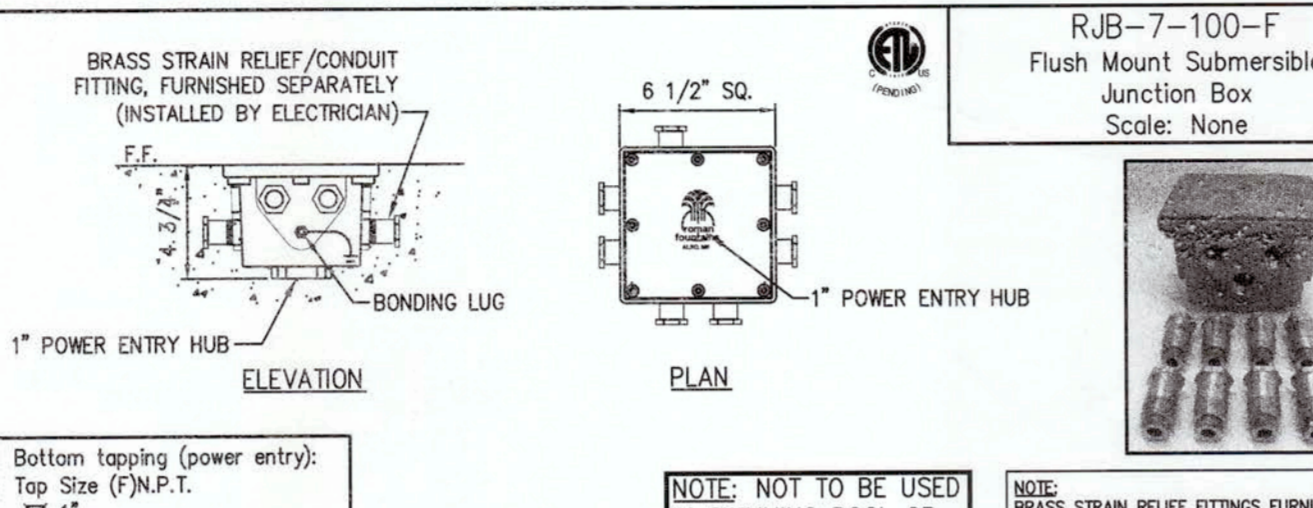
RDHN Series
Stainless Steel Nozzle Assembly with interchangeable cover. Manufactured from Type 303 Stainless Steel w/1" (F) N.P.S.M. bottom connection.



Model No.	2'-0"	3'-0"	4'-0"	5'-0"	6'-0"	7'-0"	8'-0"
RDHN-APJ	GPM 4.08	4.93	5.71	6.49	7.02	7.58	8.15
RDHN-TT	HEAD 3.46	4.62	6.93	8.08	9.24	10.39	11.55
RDHN-CJ	GPM 1.04	4.93	5.71	6.49	7.09	7.69	8.35
RDHN-SJ	HEAD 3.46	5.19	6.93	8.08	9.24	10.39	11.55
RDHN-FJ	GPM 8.15	9.57	11.13	12.83	14.07	15.17	16.09
RDHN-JC	HEAD 4.62	5.77	7.5	9.24	10.39	11.55	12.7

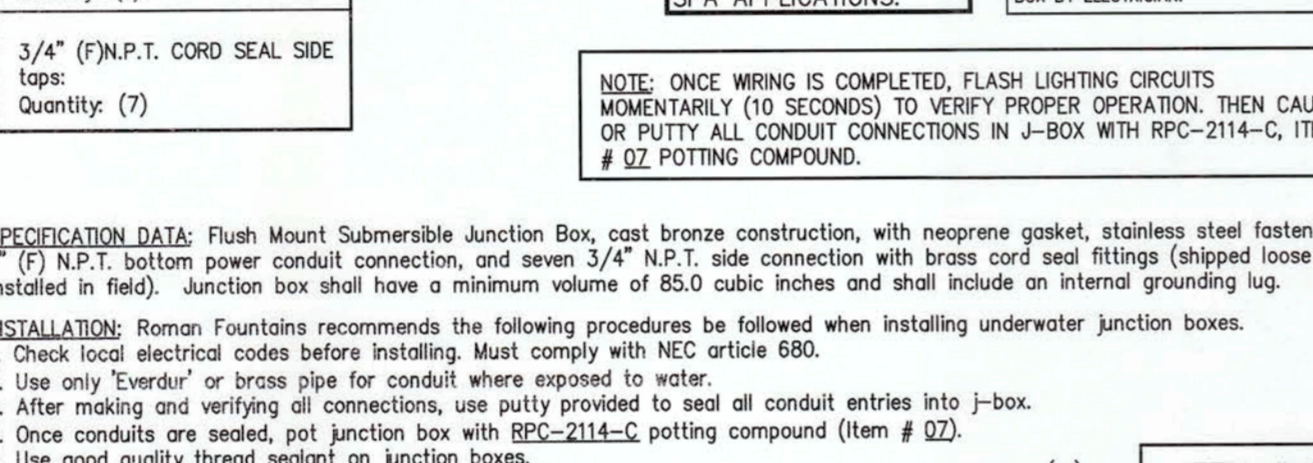
ITEM #01
ITEM #02
ITEM #03

RJB-6-100-F
Flush Mount Submersible Junction Box
Scale: None



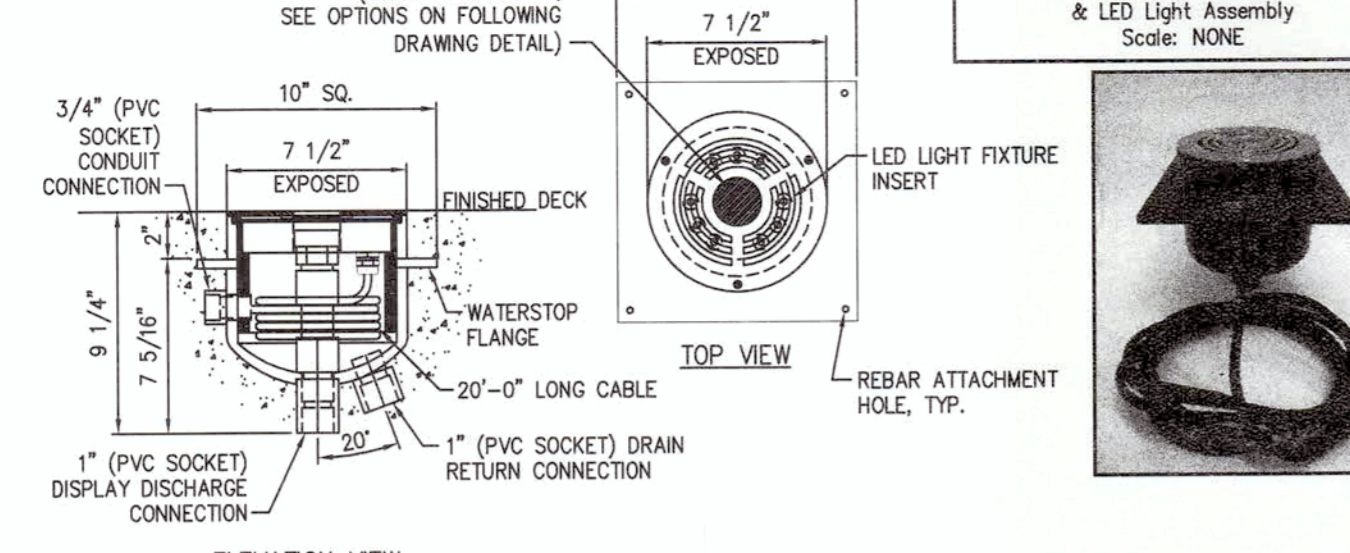
ITEM #05

RJB-7-100-F
Flush Mount Submersible Junction Box
Scale: None



ITEM #06

RDJ-DH-LED Series
Flush-Mount Nozzle & LED Light Assembly
Scale: NONE

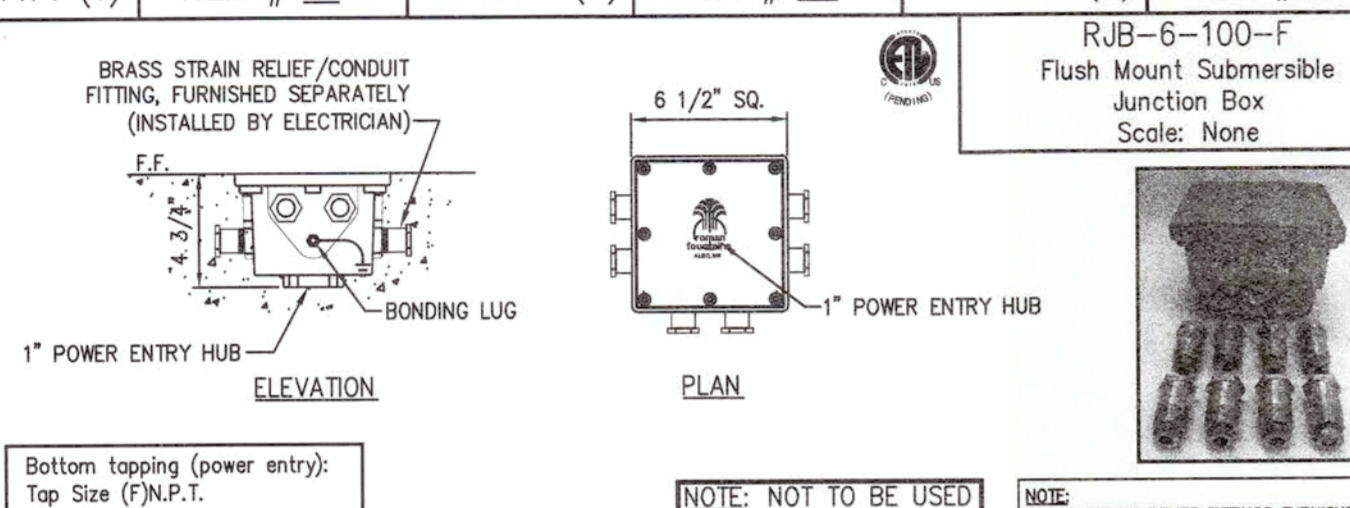


12VDC LED

NOTE: THE LIGHT FIXTURE HAS BEEN CERTIFIED BY ETL TO MEET THE U.L. 676 STANDARD FOR UNDERWATER LIGHTING FIXTURES.

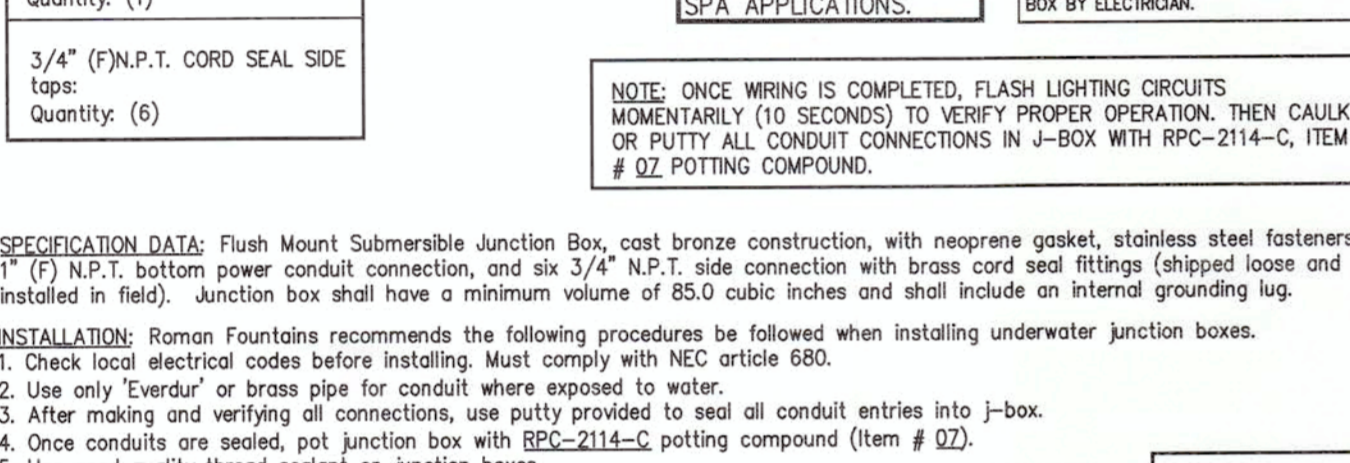
ITEM #01
ITEM #02
ITEM #03

RPVC Series
PVC Vent Cap
Scale: NONE



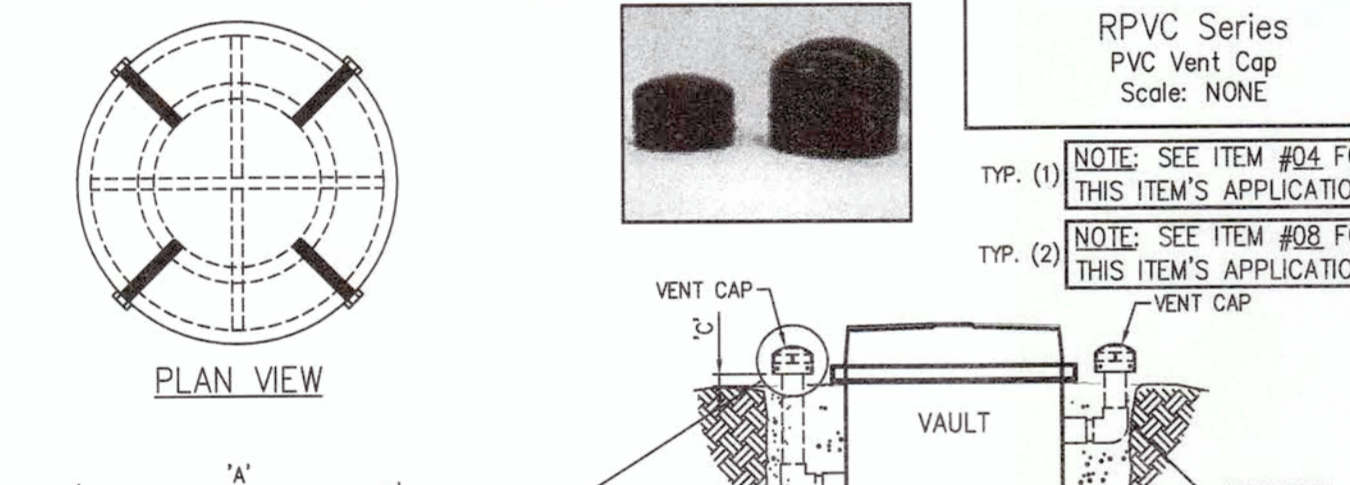
ITEM #09

RDP-250 Series
Pre-Fabricated Direct Burial Pump Vault w/Fiberglass Landscape Lid
Scale: None



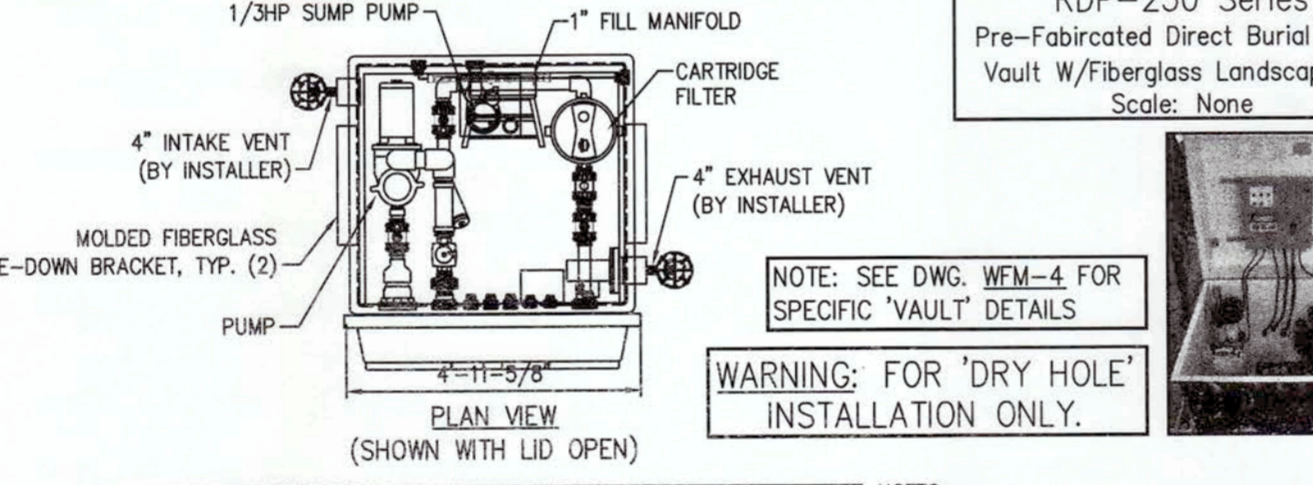
ITEM #10

RPVC Series
PVC Vent Cap
Scale: NONE



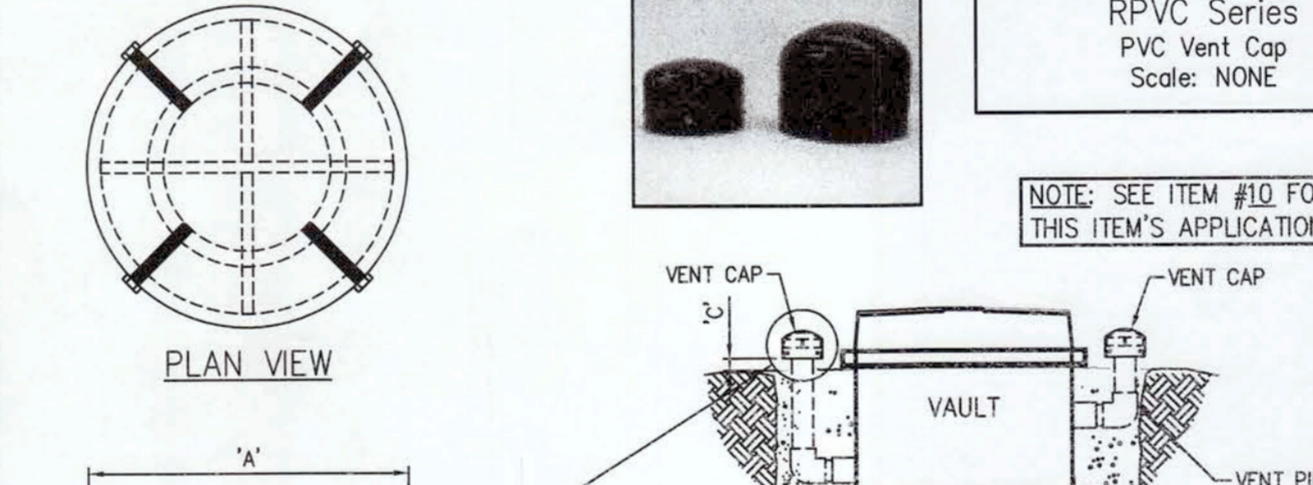
ITEM #11

RDP-250 Series
Pre-Fabricated Direct Burial Pump Vault w/Fiberglass Landscape Lid
Scale: None




ITEM #10

RPVC Series
PVC Vent Cap
Scale: NONE




ITEM #11

RPVC Series
PVC Vent Cap
Scale: NONE



ITEM #09

RDP-250 Series
Pre-Fabricated Direct Burial Pump Vault w/Fiberglass Landscape Lid
Scale: None



ITEM #10

RPVC Series
PVC Vent Cap
Scale: NONE



ITEM #11

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ALCOA CELEBRATION SQUARE
Muskegon, MI

Muskegon, MI

For Community Foundation for Muskegon County
Muskegon, MI

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Scale:	As Shown		
Drawn By:	C. Bascas		
Checked By:	J. Mitovich		
Date:	4-8-11		
Revisions:			
No.	Date	By	Comments
1	4-25-11	QMB	CHANGED POWER, 1-PH TO 3-PH

FOUNTAIN EMBED & EQUIPMENT LAYOUT PLAN

Drawing Number:

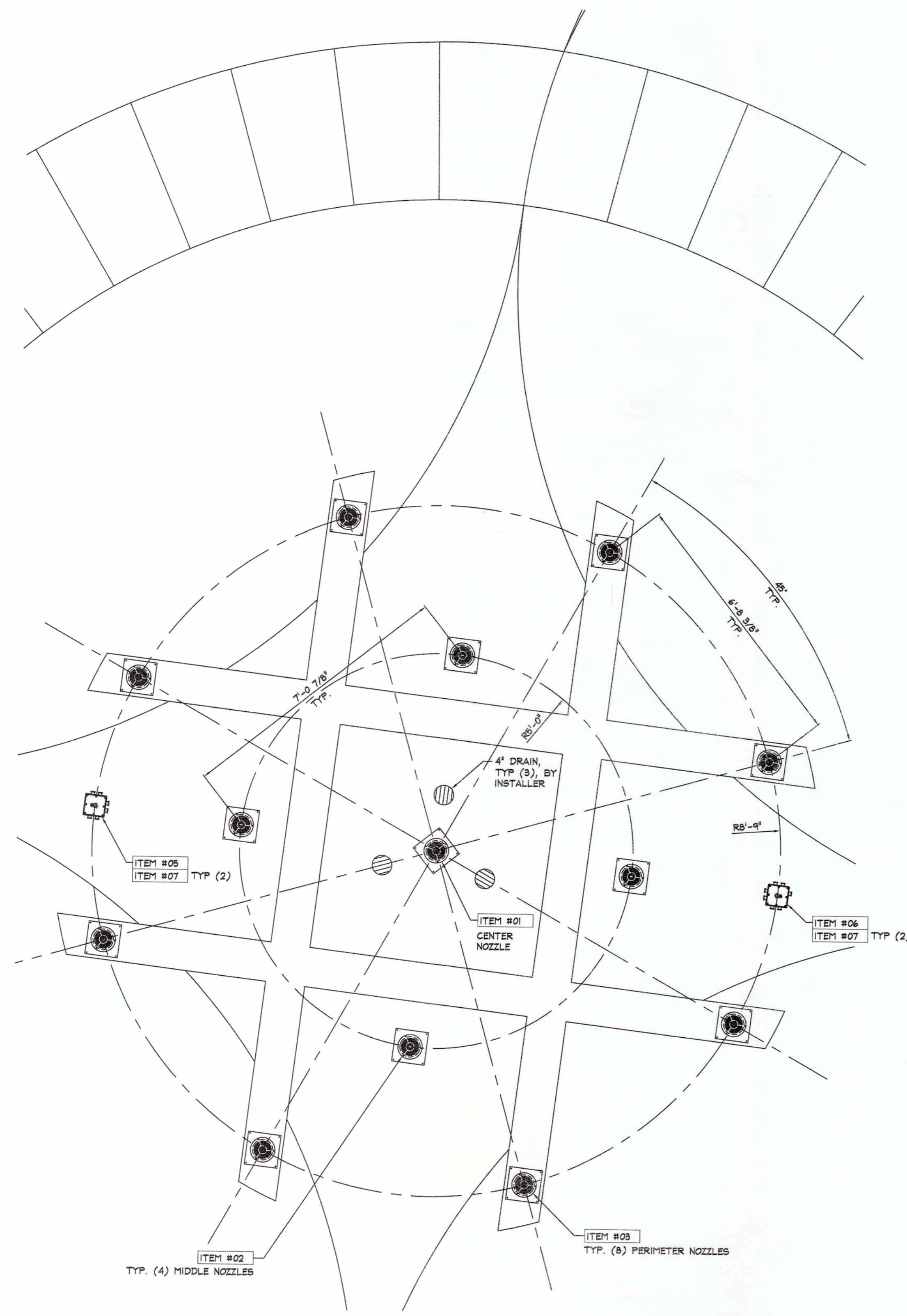
WFM-1

ALCOA CELEBRATION SQUARE
(4/21/11)

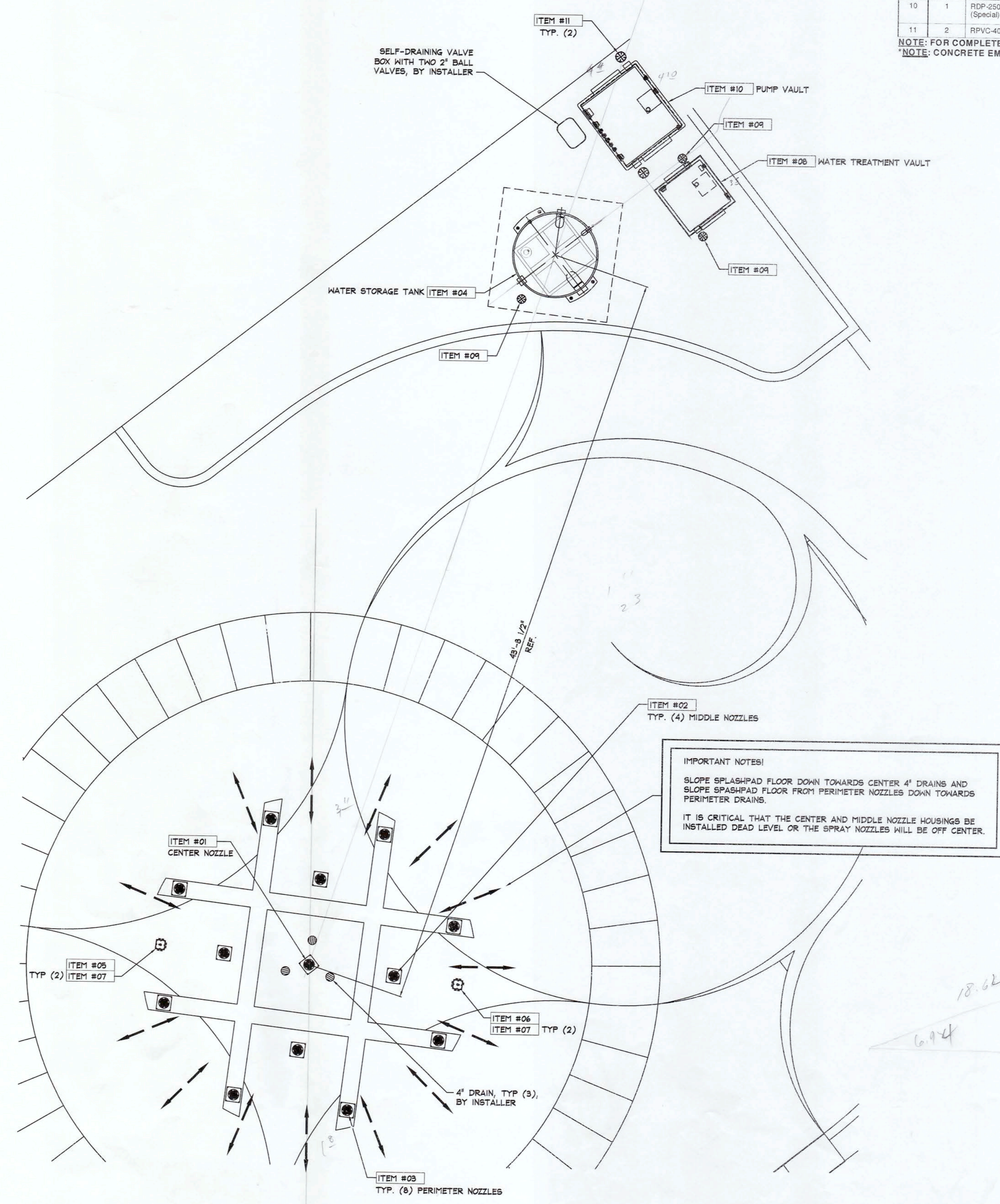
Equipment List - By Roman Fountains

Item No.	Qty.	Component Number	Description
*01	1	RDJ-SJ-DH-LED (RGB)	Flush-Mount 'Deck' Spritzer Jet with LED Donut Light.
*02	4	RDJ-JC-DH-LED (RGB)	Flush-Mount 'Deck' Jet Cluster with LED Donut Light.
*03	8	RDJ-AJ-DH-LED (RGB)	Flush-Mount 'Deck' Precision Jet with LED Donut Light.
04	1	RWST-500	Water Storage/Storage Tank, 500 gallon.
*05	1	RJB-6-100-FR	Flush Mounted Submersible Junction Box
*06	2	RJB-7-100-FR	Flush Mounted Submersible Junction Box
07	4	RPC-2114-D	Putting Compound, 21.2 oz. size.
08	1	RDP-1-WTS	Series I Direct Burial Water Treatment Vault. Power requirement: 120 volt, single phase + GND.
09	3	RPVC-300	3" PVC Vent Cap.
10	1	RDP-250-300 (Special)	Series 250 Direct Burial Pump Vault. Power requirement: 120/240 V., 1-phase.
11	2	RPVC-400	4" PVC Vent Cap.

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



FOUNTAIN ENLARGED DIMENSION PLAN
SCALE: 1/2"=1'-0"



FOUNTAIN EMBED & EQUIPMENT LAYOUT PLAN
SCALE: 1/4"=1'-0"



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For Community Foundation for Muskegon County

Muskegon, MI

Muskegon, MI

ALCOA CELEBRATION SQUARE

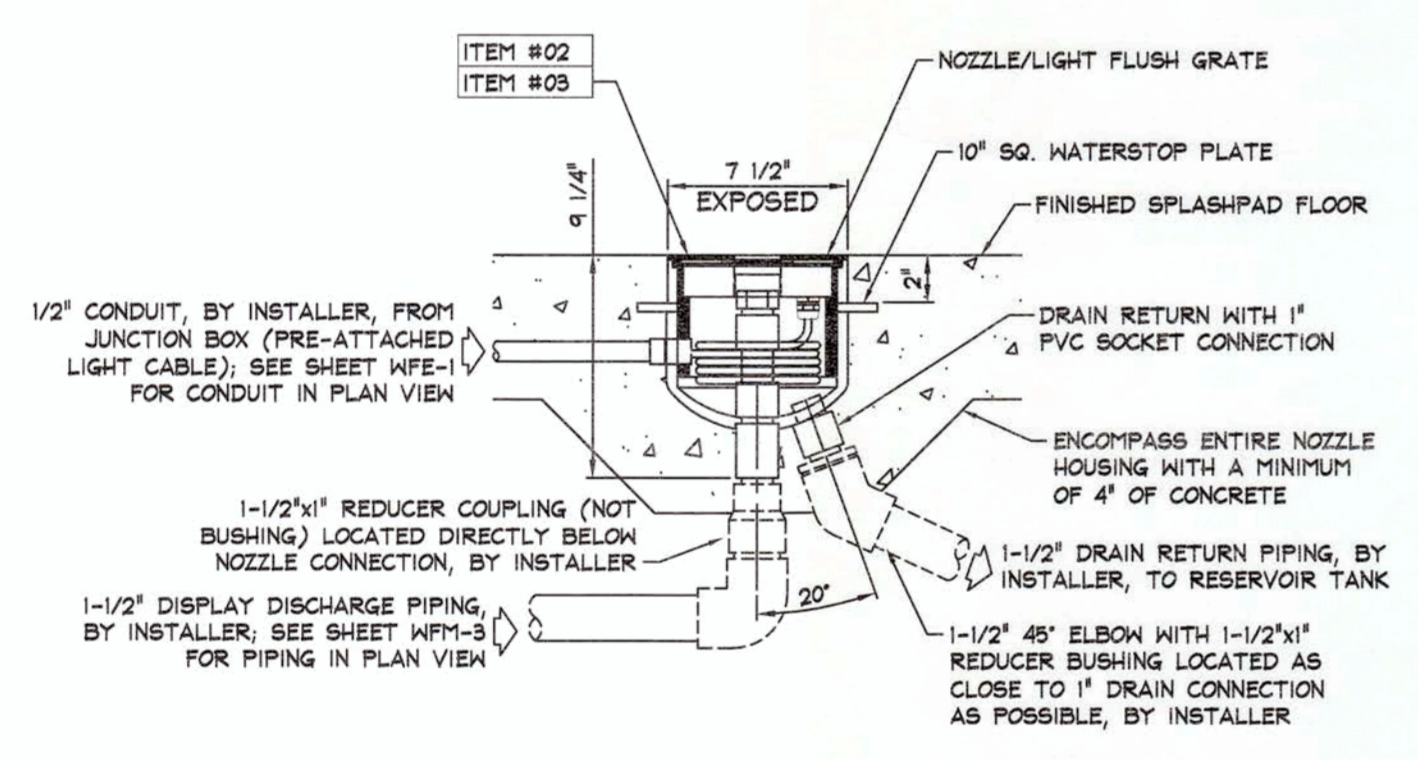
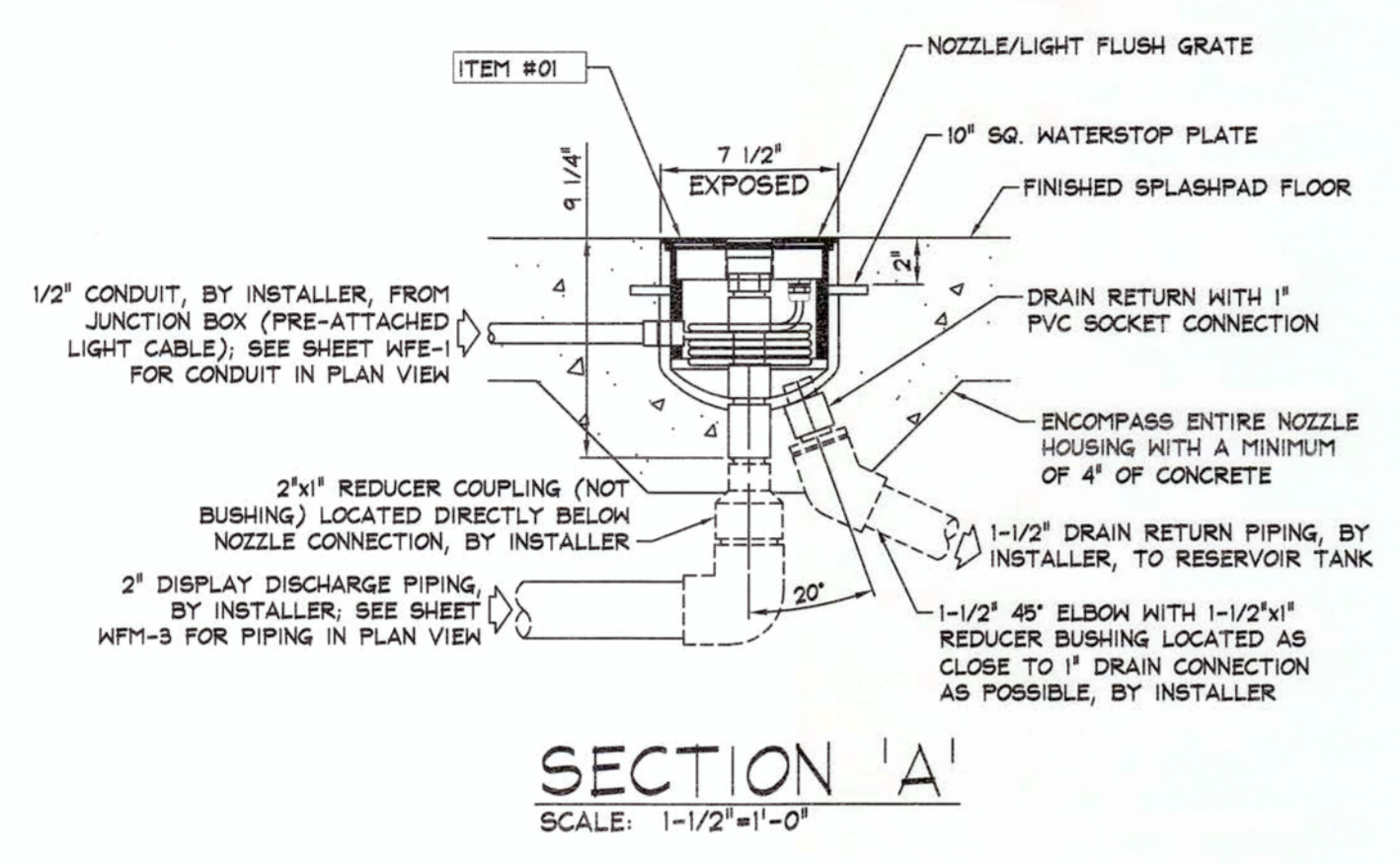
ALCOA CELEBRATION SQUARE (4/21/11)
Equipment List - By Roman Fountains

Item No.	Qty.	Component Number	Description
'01	1	RDU-SJ-DH-LED (RGB)	Flush-Mount 'Deck' Spritzer Jet with LED Donut Light.
'02	4	RDU-JC-DH-LED (RGB)	Flush-Mount 'Deck' Jet Cluster with LED Donut Light.
'03	8	RDU-APJ-DH-LED (RGB)	Flush-Mount 'Deck' Precision Jet with LED Donut Light.
04	1	RWST-500	Water Storage/Storage Tank, 500 gallon.
'05	1	RJB-6-100-FR	Flush Mounted Submersible Junction Box
'06	2	RJB-7-100-FR	Flush Mounted Submersible Junction Box
'07	4	RPC-2114-D	Potting Compound, 21.2 oz. size.
08	1	RDP-1-WTS	Series I Direct Burial Water Treatment Vault. Power requirement: 120 volt, single phase + GND.
09	3	RPVC-300	3" PVC Vent Cap.
10	1	RDP-250-300 (Special)	Series 250 Direct Burial Pump Vault. Power requirement: 120/240 V, 1-phase.
11	2	RPVC-400	4" PVC Vent Cap.

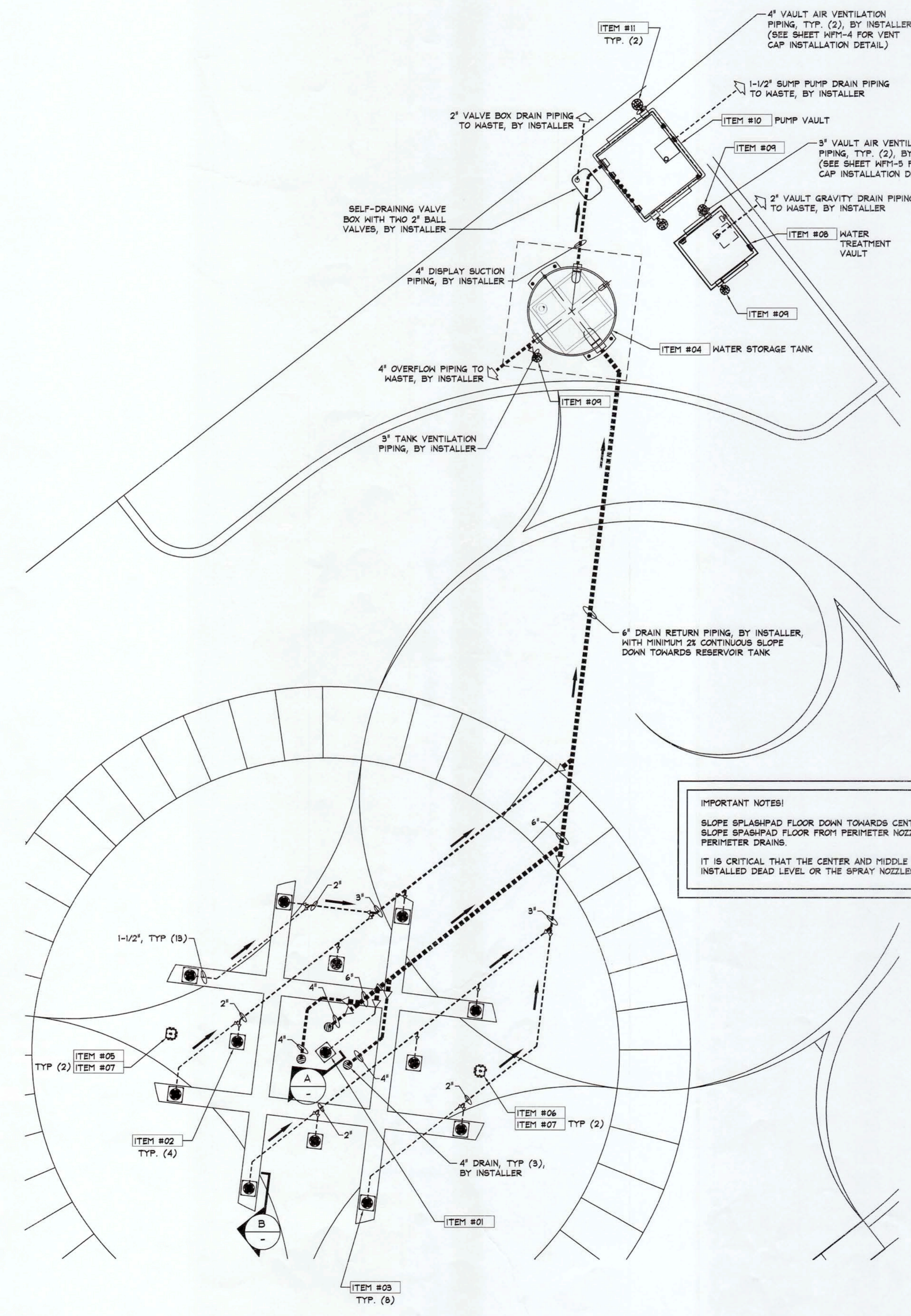
NOTE: FOR COMPLETE ITEM SPECIFICATIONS, SEE SHEET WFN-2.
NOTE: CONCRETE EMBED ITEM, REQUIRED FOR POUR.

PIPING SCHEMATIC SYMBOL LEGEND

Symbol	Description
--->	A reducer fitting, by installer, is required at this location to change the pipe size.
---> (90°)	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.
---> (90°)	Piping turning downward in plan view or directly away from the viewer in section view via a 90 degree elbow.
---> (90°)	Piping turning upward in plan view or directly towards the viewer in section view via a 90 degree elbow.
→	Direction of water flow.



NOTE: THIS DETAIL APPLIES FOR BOTH THE FOUR MIDDLE NOZZLES, ITEM #02, AND THE EIGHT PERIMETER NOZZLES, ITEM #03.



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

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AUTHENTICITY VERIFIED BY...
IN ACCORDANCE WITH...

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Scale: As Shown
Drawn By: C. Bascas
Checked By: J. Mitovich
Date: 4-8-11

Revisions:

No.	Date	By	Comments
1	4-25-11	CMB	CHANGED POWER, 1-PH TO 3-PH

FOUNTAIN SUCTION, DRAIN & VENT PIPING PLAN

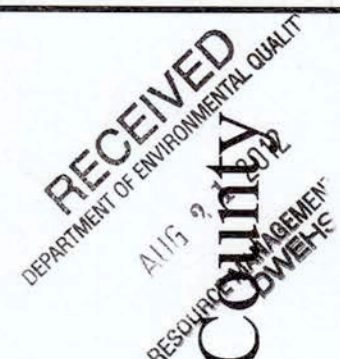
Drawing Number:

WFM-2



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Muskegon, MI

For Community Foundation for Muskegon County

Muskegon, MI

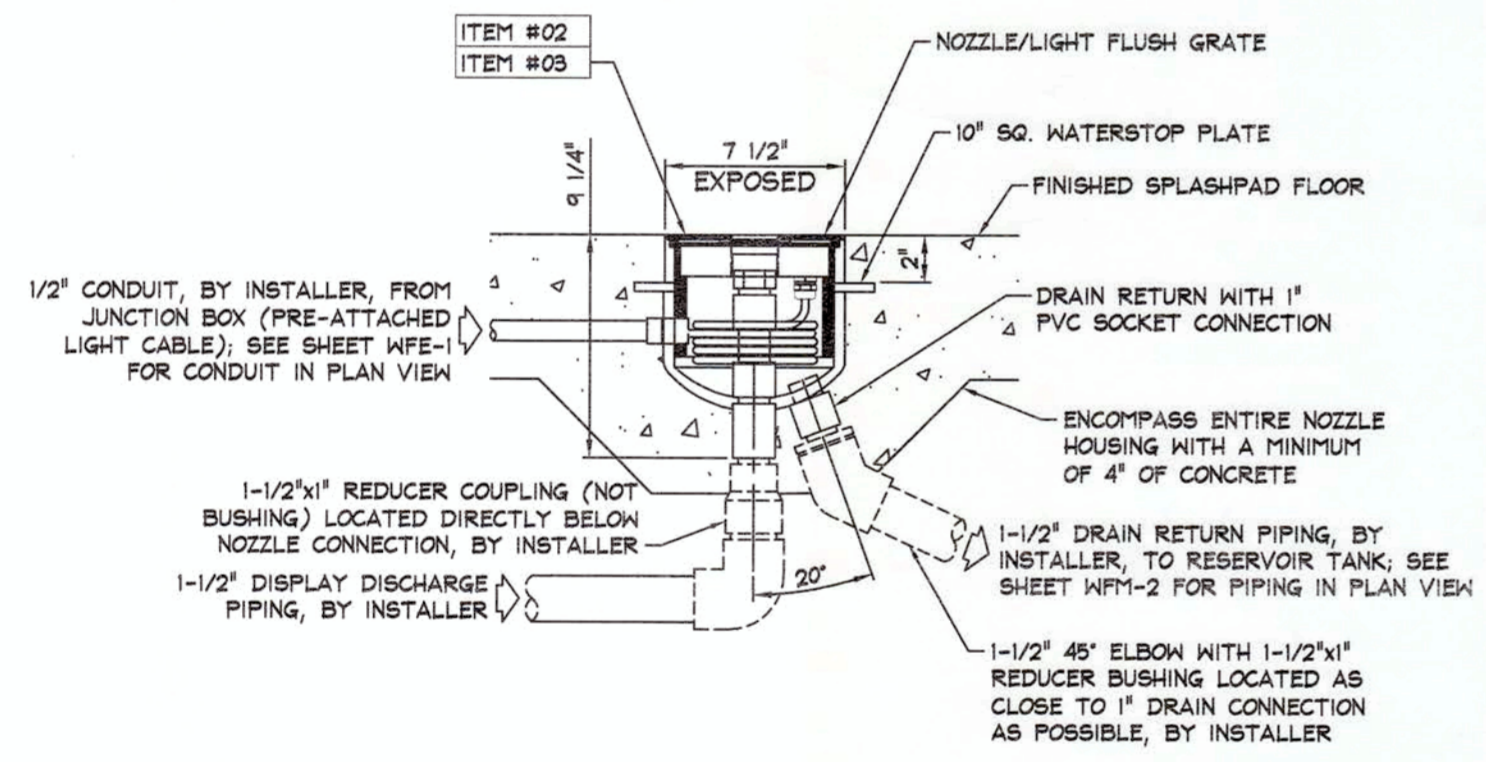
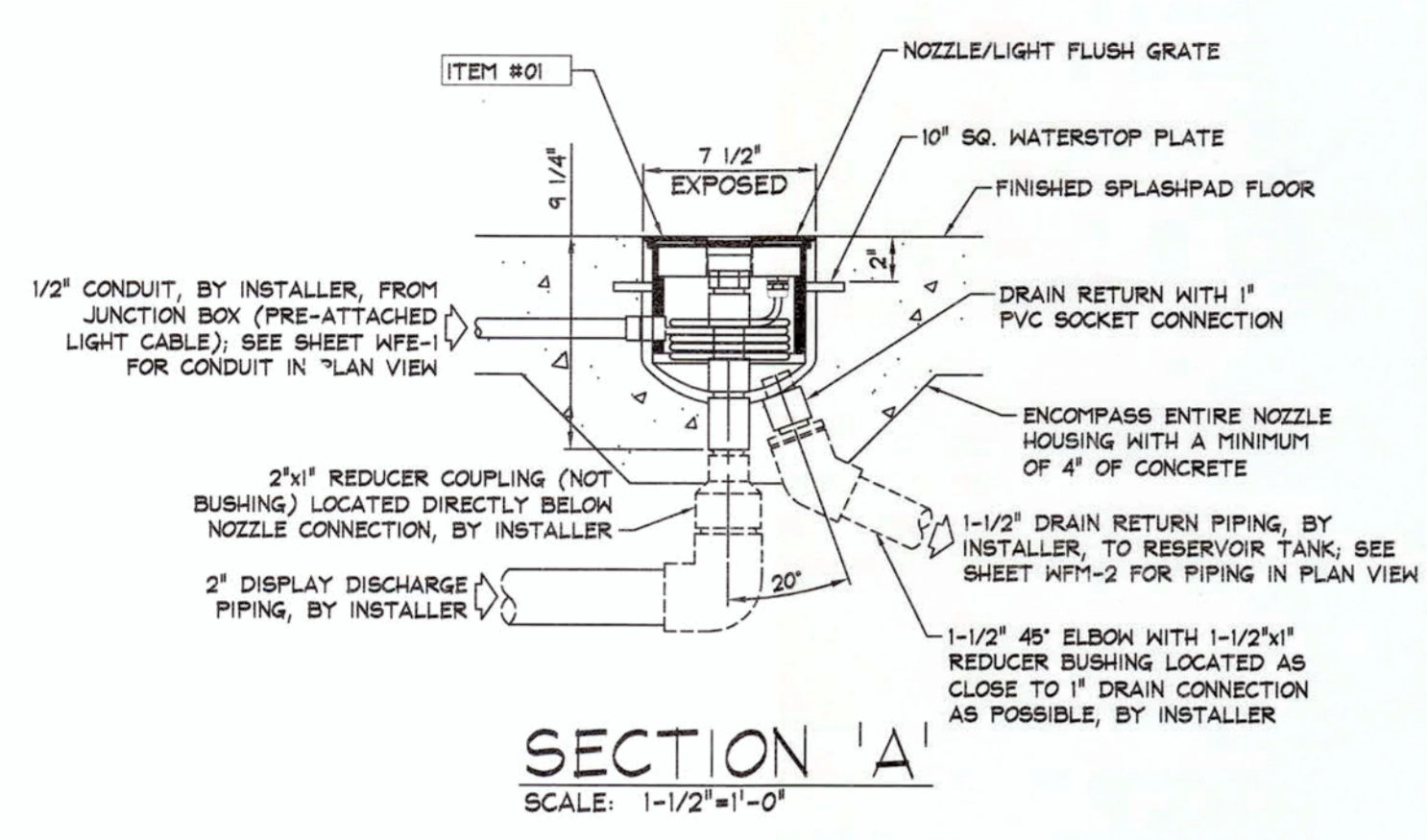
ALCOA CELEBRATION SQUARE (4/21/11)
Equipment List - By Roman Fountains

Item No.	Qty.	Component Number	Description
*01	1	RDU-SJ-DH-LED (RGB)	Flush-Mount 'Deck' Spritzer Jet with LED Donut Light.
*02	4	RDU-JC-DH-LED (RGB)	Flush-Mount 'Deck' Jet Cluster with LED Donut Light.
*03	8	RDU-APJ-DH-LED (RGB)	Flush-Mount 'Deck' Precision Jet with LED Donut Light.
04	1	RWST-500	Water Storage/Storage Tank, 500 gallon.
*05	1	PLJB-6-100-FR	Flush Mounted Submersible Junction Box
*06	2	PLJB-7-100-FR	Flush Mounted Submersible Junction Box
07	4	RPC-2114-D	Potting Compound, 21.2 oz. size.
08	1	RDP-1-WTS	Series 1 Direct Burial Water Treatment Vault.
09	3	RPVC-500	3" PVC Vent Cap.
10	1	RDP-250-300 (Spackle)	Series 250 Direct Burial Pump Vault.
11	2	RPVC-400	4" PVC Vent Cap.

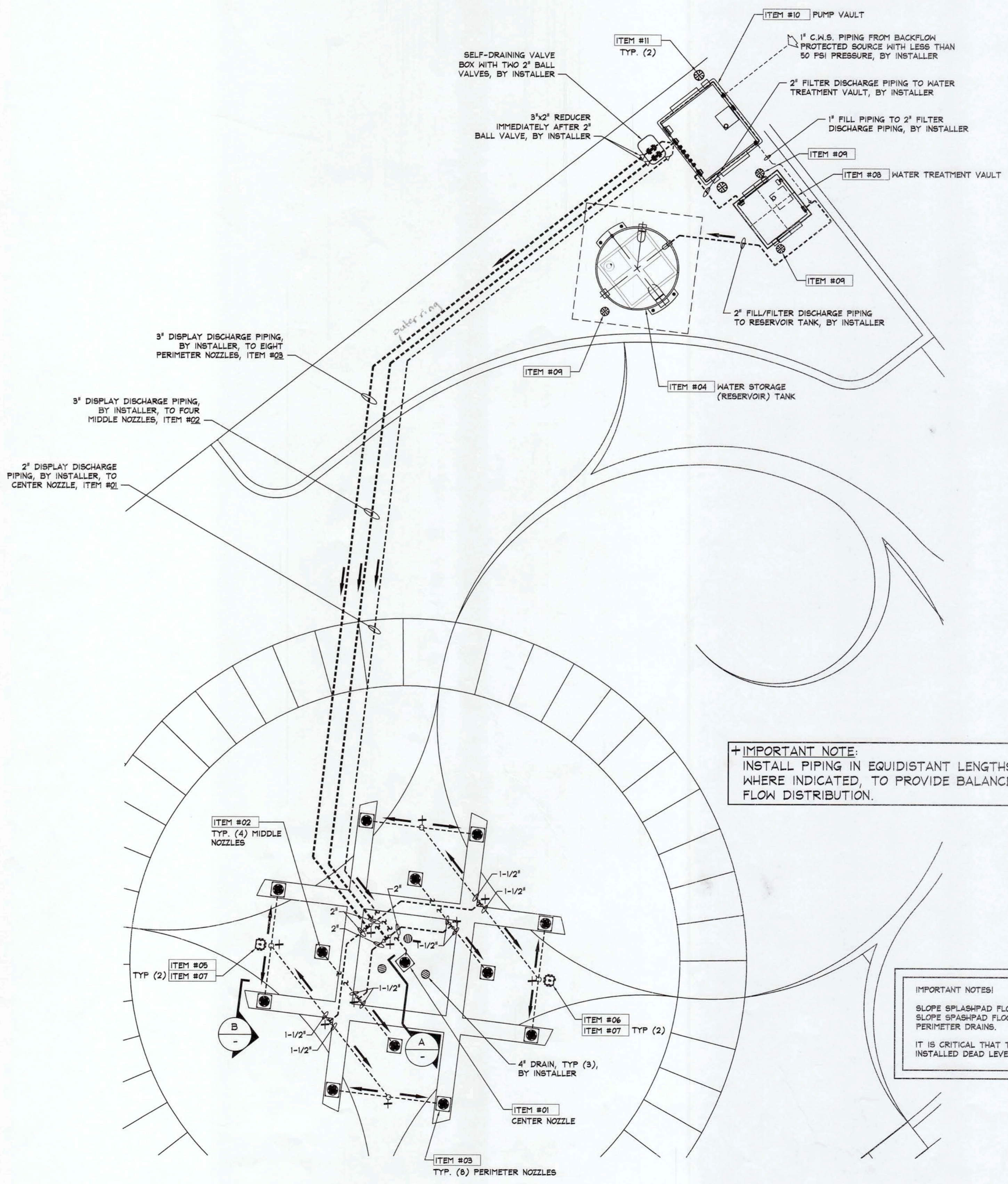
NOTE: FOR COMPLETE ITEM SPECIFICATIONS, SEE SHEET WFN-2.
NOTE: CONCRETE EMBED ITEM, REQUIRED FOR POUR.

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.



NOTE, THIS DETAIL APPLIES FOR BOTH THE FOUR MIDDLE NOZZLES, ITEM #02, AND THE EIGHT PERIMETER NOZZLES, ITEM #03.



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

IMPORTANT NOTES:

SLOPE SPLASHPAD FLOOR DOWN TOWARDS CENTER 4" DRAINS AND SLOPE SPLASHPAD FLOOR FROM PERIMETER NOZZLES DOWN TOWARDS PERIMETER DRAINS.

IT IS CRITICAL THAT THE CENTER AND MIDDLE NOZZLE HOUSINGS BE INSTALLED DEAD LEVEL OR THE SPRAY NOZZLES WILL BE OFF CENTER.

9471 MAR 25 '13

AUTHENTIC COPY OF ORIGINAL DRAWING

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

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Scale: As Shown

Drawn By: C. Bascas

Checked By: J. Mitovich

Date: 4-8-11

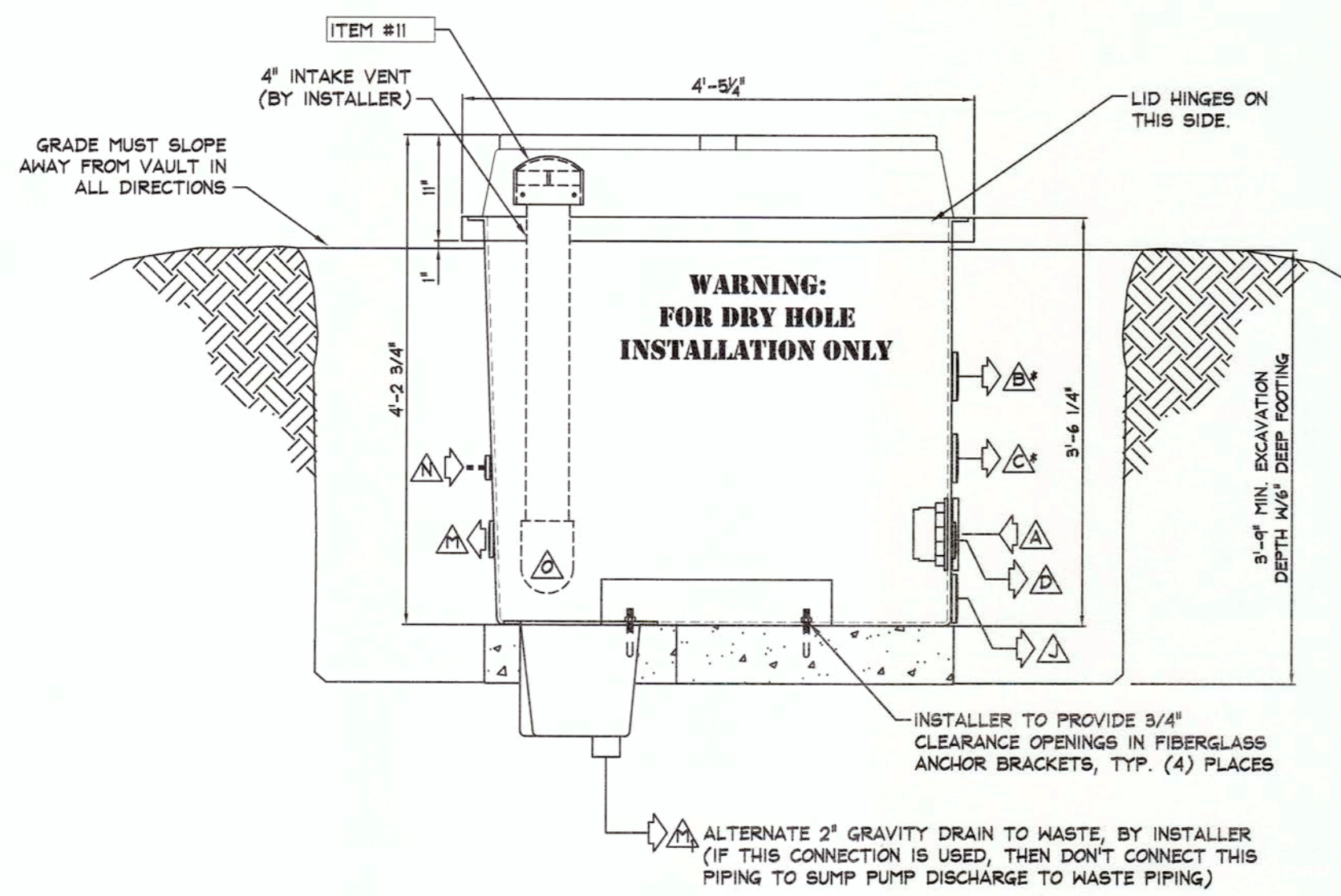
Revisions:

No.	Date	By	Comments
1	4-25-11	CMR	CHANGED POWER, 1-PH TO 3-PH

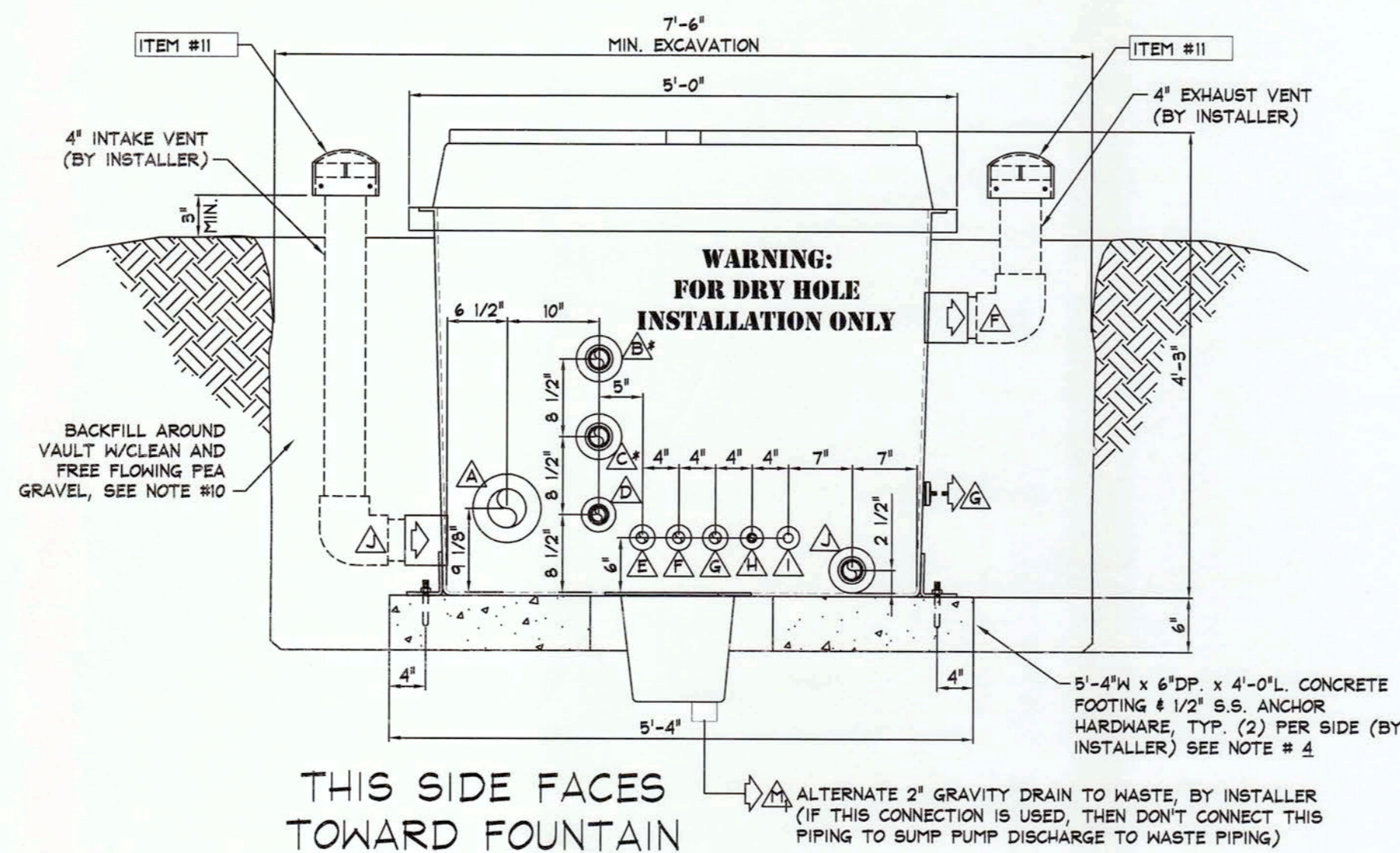
FOUNTAIN DISCHARGE & FILL PIPING PLAN

Drawing Number:

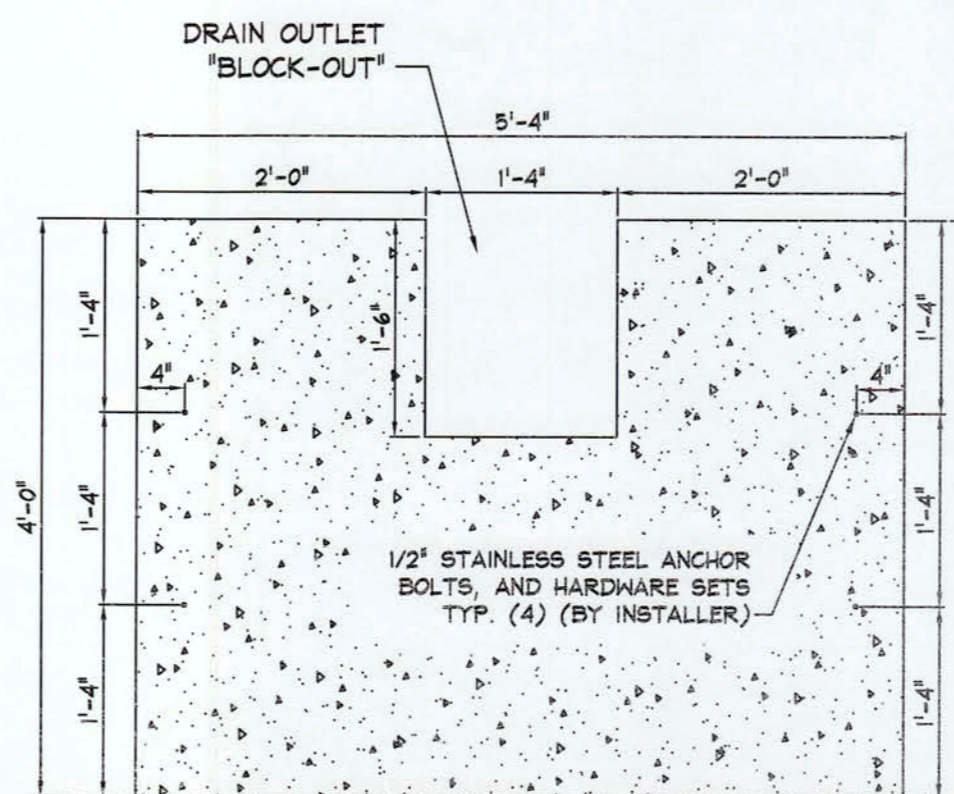
WFM-3



VAULT: SIDE DETAIL
SCALE: 3/4"=1'-0"



VAULT: FRONT DETAIL
SCALE: 3/4"=1'-0"



ANCHOR PAD: PLAN VIEW
SCALE: 3/4"=1'-0"

- RDP SERIES 250 PUMP VAULT INSTALLATION NOTES**
PLEASE READ CAREFULLY
- The gravity floor drain (located inside the Series 250 vault) must be immediately connected to storm drain, sanitary sewer, or day-lit. If drain is not able to be connected DO NOT install until it can be connected.
 - Do not install pump vault into any location below sea level, or where a high water table exists, or in any area subject to periodic or repeated flooding, or groundwater saturation, as the unit is not designed to be surrounded by ground water; damage and/or leakage may occur. If periodic ground water flooding is possible, an adequately sized drainage system (French drain or sump pump well type) must be designed (by project engineer) and provided (by installer) around the vault to move surrounding ground water away from the unit to a lower elevation.
 - In all cases finished grade around the pump vault must be sloped away from the access hatchway in all directions so no water flows into the pump vault (see installation details this sheet). Do not allow water to "pool" around vault under any circumstances.
 - Prior to pump vault installation, a level smooth, steel reinforced concrete pad, measuring 4'-0"x5'-4"x6" minimum thickness, must be poured, and must include the four (4) installer provided 1/2" stainless steel "J"-bolts/eye bolts (see installation drawing). Concrete shall have a minimum compression strength at 28 days of 3000 PSI and have a reinforcing steel conforming to ASTM A 615-40. Reinforced concrete pad, anchoring "J"-bolts or 'eye bolts' are provided and installed by the installing contractor.
 - The pump vault must be lifted using a properly weighted and balanced fork lift with extended forks or a boom crane and girde straps. The weight of the vault for transportation and lifting purposes is 2,500 pounds unless otherwise indicated on the installation drawings, submittal data, or freight bill of lading.
 - Lower the pump vault into the excavation using a two part lifting sling with padded straps to ensure a true vertical lift. DO NOT LIFT FROM TOP AND DO NOT USE CHAINS FOR LIFTING AS THEY MAY DAMAGE FIBERGLASS. All off-loading and lifting equipment and labor is the responsibility of the installing contractor.
 - Lower the vault into the excavation slowly and center it on the concrete pad. Insure the concrete pad is level and thoroughly cleaned of debris that could damage the vault floor prior to placing the unit on the pad.
 - Securely anchor the vault to the stainless steel anchor bolts previously installed into the concrete pad (cable, straps and bolts furnished by the installing contractor). Vault must be plumb and level prior to hook-up and backfill. 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 ON PVC PIPING.
 - After the vault is securely in position, outside piping and conduits must be aligned and connected to ensure a true fit without excessive lateral force applied to piping, conduits or fittings.
 - Backfill around the pump vault using an approved granular material free of trash, debris, roots, rocks, 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. ensure that backfill fills all voids, especially under vault piping and fittings.
 - Spread backfill material in 6" to 8" lifts, and compact to at least 95% of maximum density as determined by ASTM 1557-70.
 - Use manual compaction equipment being careful not to damage pump vault, piping or conduit due to excessive compaction. A single lift of backfill material around pump vault with a final compaction to excessive loads shall not be permitted.
 - A second pressure test of piping should be made after backfilling to ensure that piping has not been damaged during backfill operations.
 - It is the responsibility of the installing contractor to ensure the all electrical equipment is installed and wired by a QUALIFIED, LICENSED ELECTRICIAN, experienced in pool wiring. All electrical equipment must be installed in accordance with the NATIONAL ELECTRICAL CODE.
 - OSHA confined space requirements and safety procedures are the sole responsibility of the installer. (See below) This product is NOT U.L. listed as an assembly.

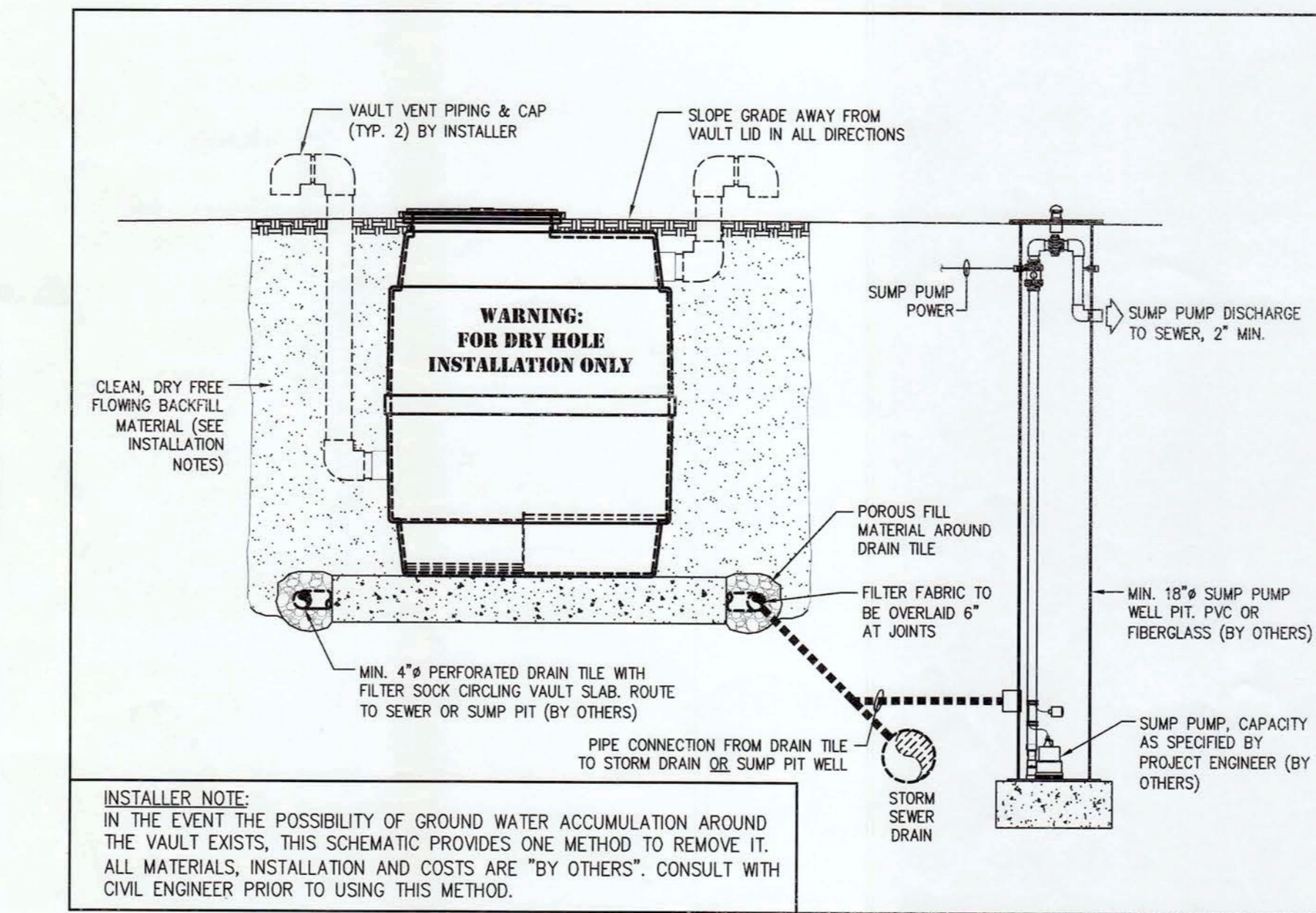
SYSTEM POWER REQUIREMENT:
120/240V, SINGLE PHASE, 3-WIRE FEEDER + GND. @ 40 AMPS.
CONTACT FACTORY IMMEDIATELY IF NOT AVAILABLE.
(NOTE: SEE SHEET WFI-1 FOR POWER DIAGRAM)

VAULT PIPING AND CONDUIT PENETRATION LEGEND

SYM.	SIZE	FUNCTION
△	4"	DISPLAY SUCTION PIPING FROM RESERVOIR TANK
△	2"	DISPLAY DISCHARGE PIPING TO EIGHT PERIMETER NOZZLES
△	2"	DISPLAY DISCHARGE PIPING TO FOUR MIDDLE NOZZLES
△	1-1/2"	DISPLAY DISCHARGE PIPING TO CENTER NOZZLE
△	1"	CONDUIT FROM POWER SOURCE, 120/240V, 1-PHASE, 3-WIRE FEEDER + GND. @ 40 AMPS
△	1"	CONDUIT TO JUNCTION BOX, FOR (6) 12VDC 18.5W LED LIGHTS (8 #12 + GND.)
△	1"	CONDUIT TO JUNCTION BOX, FOR (7) 12VDC 18.5W LED LIGHTS (8 #12 + GND.)
△	1/2"	CONDUIT FROM WATER LEVEL SENSOR (PROVIDED 22'4" CABLE) IN RESERVOIR TANK
△	3/4"	CONDUIT TO WATER TREATMENT VAULT
△	2"	FILTER DISCHARGE PIPING TO RESERVOIR TANK
△	6"	VAULT INLET VENTILATION PIPING FROM VENT CAP
△	1"	FILL PIPING TO 2" FILTER DISCHARGE PIPING
△	1-1/2"	SUMP PUMP DISCHARGE PIPING TO WASTE
△	2"	GRAVITY DRAIN PIPING TO WASTE (ALTERNATE DRAIN CONNECTION)
△	1"	C.M.S. IN FROM BACKFLOW PROTECTED SOURCE (BY INSTALLER), REGULATE PRESSURE TO 50 P.S.I. MAXIMUM
△	6"	VAULT EXHAUST VENTILATION PIPING TO VENT CAP

* ROUTE 2" PIPING DIRECTLY TO VALVE BOX, INSTALL A 2" BALL VALVE, INCREASE PIPE SIZE TO 3" IMMEDIATELY AFTER 2" BALL VALVE, AND THEN ROUTE PIPING AS SHOWN ON SHEET WFI-3.

SPECIFICATION DATA: Series 250 Direct Burial Pump Vault, consisting of a 4'-0" x 4'-6" x 4'-2" deep heavy duty FRP vault with white gel-coat interior and brown gel-coat exterior, furnished with fiberglass reinforced plastic lid with stainless steel piano hinge attachment, lock hardware (LOCK BY INSTALLER), containing a RWSP-300 3 HP self-priming display pump with integral suction strainer; three RVV-series electrically actuated valves (one 1" and two 1-1/2"); three RTS-series bronze wire strainers (two 3" and one 2"); RCF-075 75 sq. ft. cartridge filter unit; 4 vent connections with 250 CFM at 0.2" S.P. vent fan; 1/2 HP sump pump; 120v power supplies and drivers for color-changing light show controls; RVFD-1000 variable frequency drive; RPPC/RLCP U.L. 508 listed control panel in a NEMA 4 enclosure, containing main disconnect switch; pump circuit breaker; PLC (programmable logic controller); two-channel programmable timer for pump and lights; H.O.A. switches; lighting contactor; G.F.C.I. breakers; and water level/low level cutoff control circuitry. Pump vault is pre-wired, pre-plumbed (Schedule 80 PVC) and factory tested prior to shipment. Power requirement: 120/240 V, single-phase, 40 amp, 3-wire feed + GND.



INSTALLER NOTE:
IN THE EVENT THE POSSIBILITY OF GROUND WATER ACCUMULATION AROUND THE VAULT EXISTS, THIS SCHEMATIC PROVIDES ONE METHOD TO REMOVE IT. ALL MATERIALS, INSTALLATION AND COSTS ARE "BY OTHERS". CONSULT WITH CIVIL ENGINEER PRIOR TO USING THIS METHOD.

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 an 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.

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.

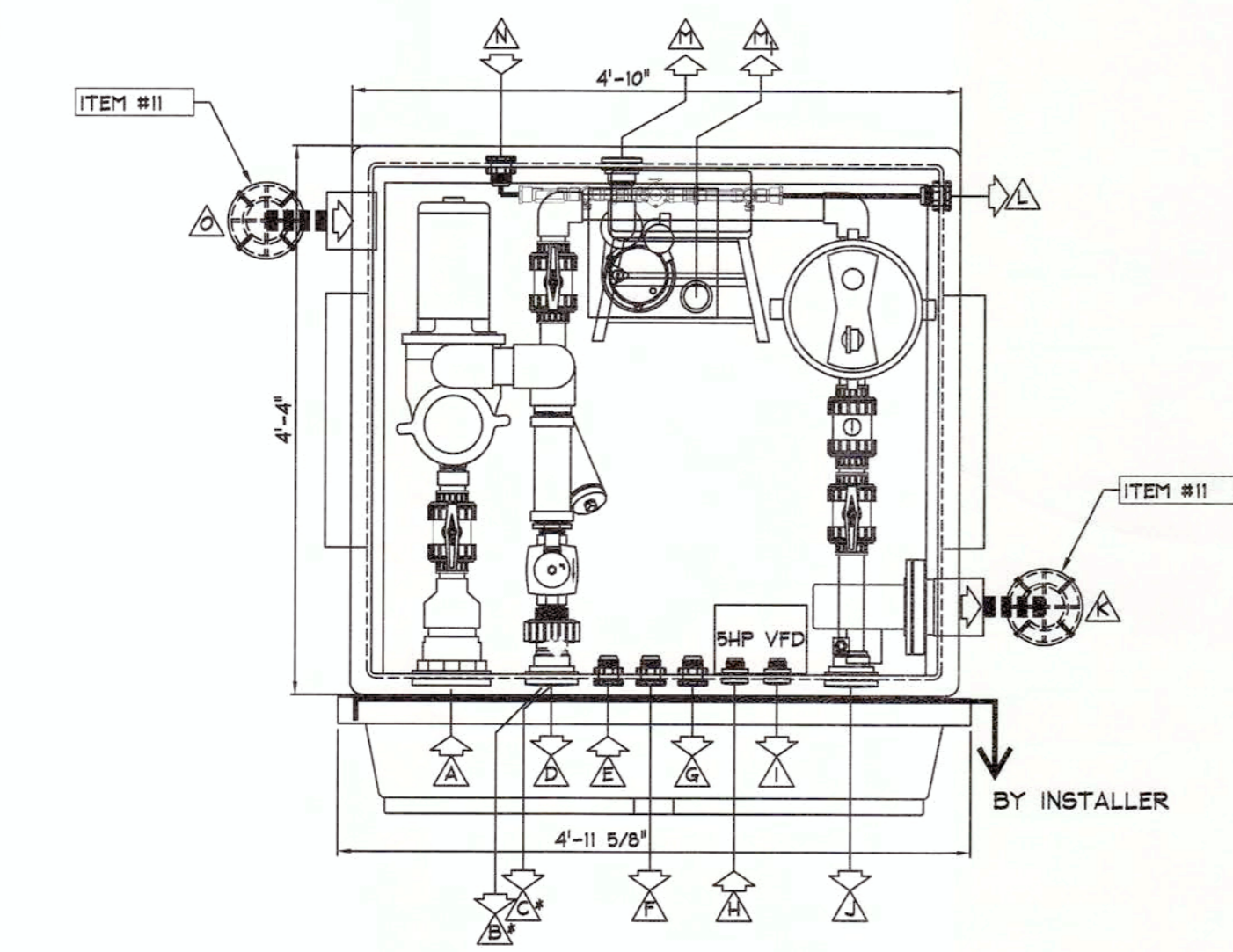
AS SUCH, ROMAN FOUNTAINS IS NOT RESPONSIBLE FOR ANY GROUNDWATER INTRUSION INTO ANY FIBERGLASS EQUIPMENT VAULT UNDER ANY CIRCUMSTANCES WHATSOEVER.

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.

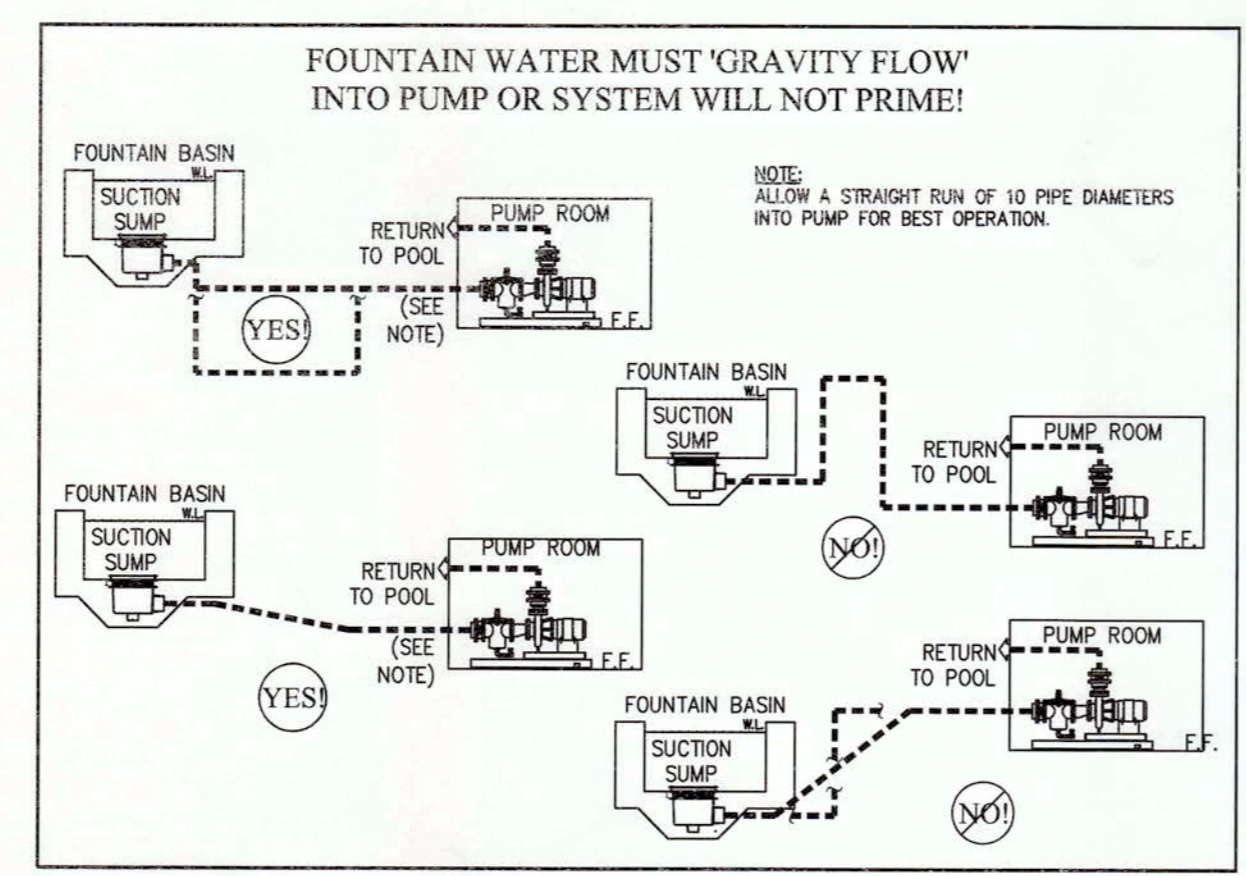
NOTE: ALL CONNECTION LOCATIONS ARE APPROXIMATE.

THIS PRODUCT IS NOT U.L. LISTED AS AN ASSEMBLY. ANY SUCH REQUIREMENTS SHALL BE PROVIDED BY OTHERS IF REQUIRED.

NOTE: TOP OF VAULT TO BE AT OR BELOW FOUNTAIN OPERATING WATER LEVEL FOR OPTIMUM OPERATION.



THIS SIDE FACES TOWARD FOUNTAIN
VAULT: PLAN VIEW
SCALE: 3/4"=1'-0"



ALCOA CELEBRATION SQUARE
Muskegon, MI
For Community Foundation for Muskegon County
Muskegon, MI

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Scale: As Shown
Drawn By: C. Bassas
Checked By: J. Mitovich
Date: 4-8-11

Revisions:

No.	Date	By	Comments
1	4-25-11	CM	CHANGED POWER, 1-PH TO 3-PH

RDP-250, DIRECT BURIAL PUMP VAULT INSTALLATION DETAILS

Drawing Number:
WFM-4

9471 MAR 25 13
AUTHENTIC IN ORIGINAL FORM ONLY



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BUREAU OF WATER QUALITY
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ALCOA CELEBRATION SQUARE

Muskegon, MI

For Community Foundation for Muskegon County

Muskegon, MI

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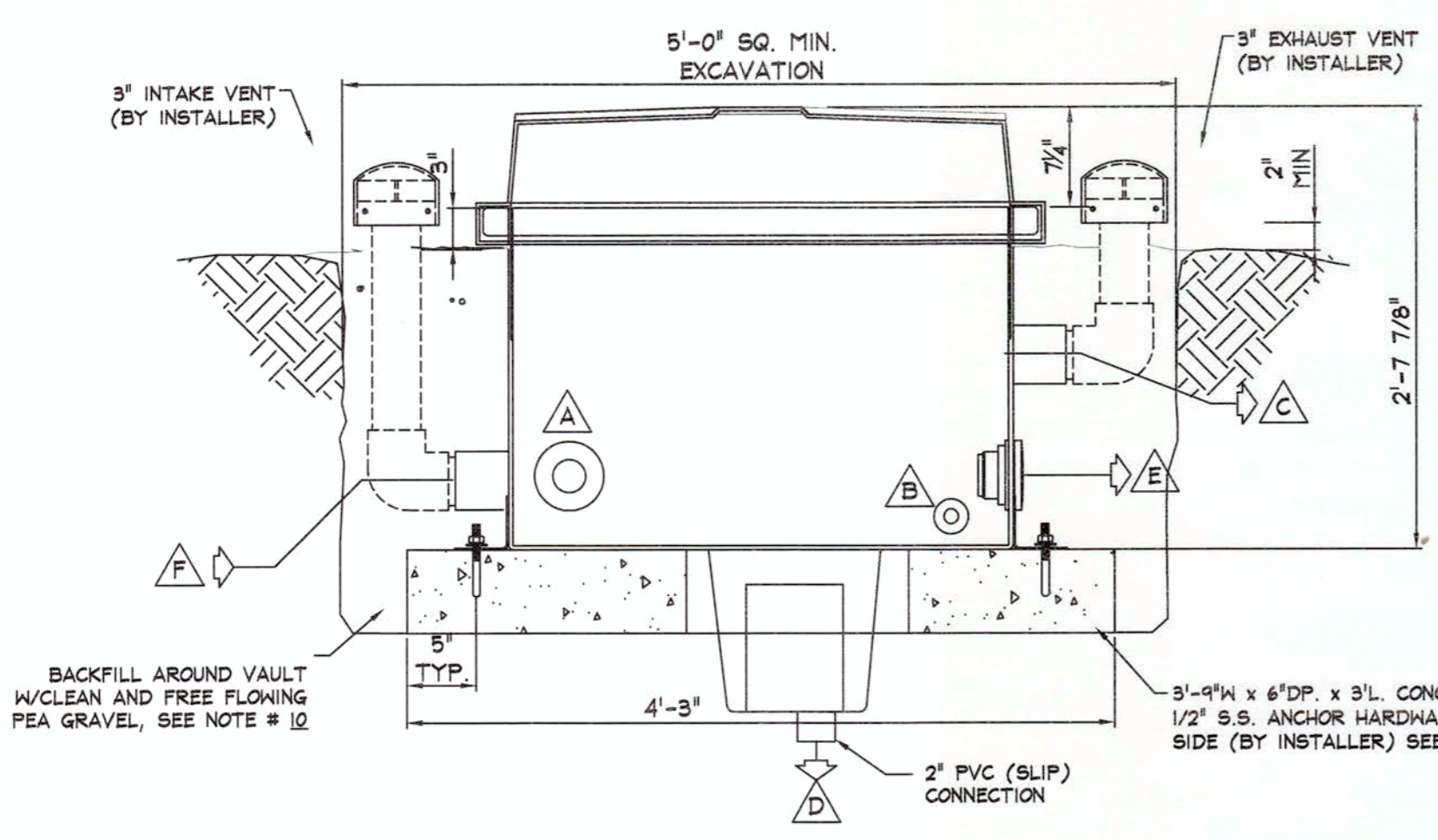
Revisions table with columns: No., Date, By, Comments

RDP-1-WTS, WATER TREATMENT DIRECT BURIAL VAULT INSTALLATION DETAILS

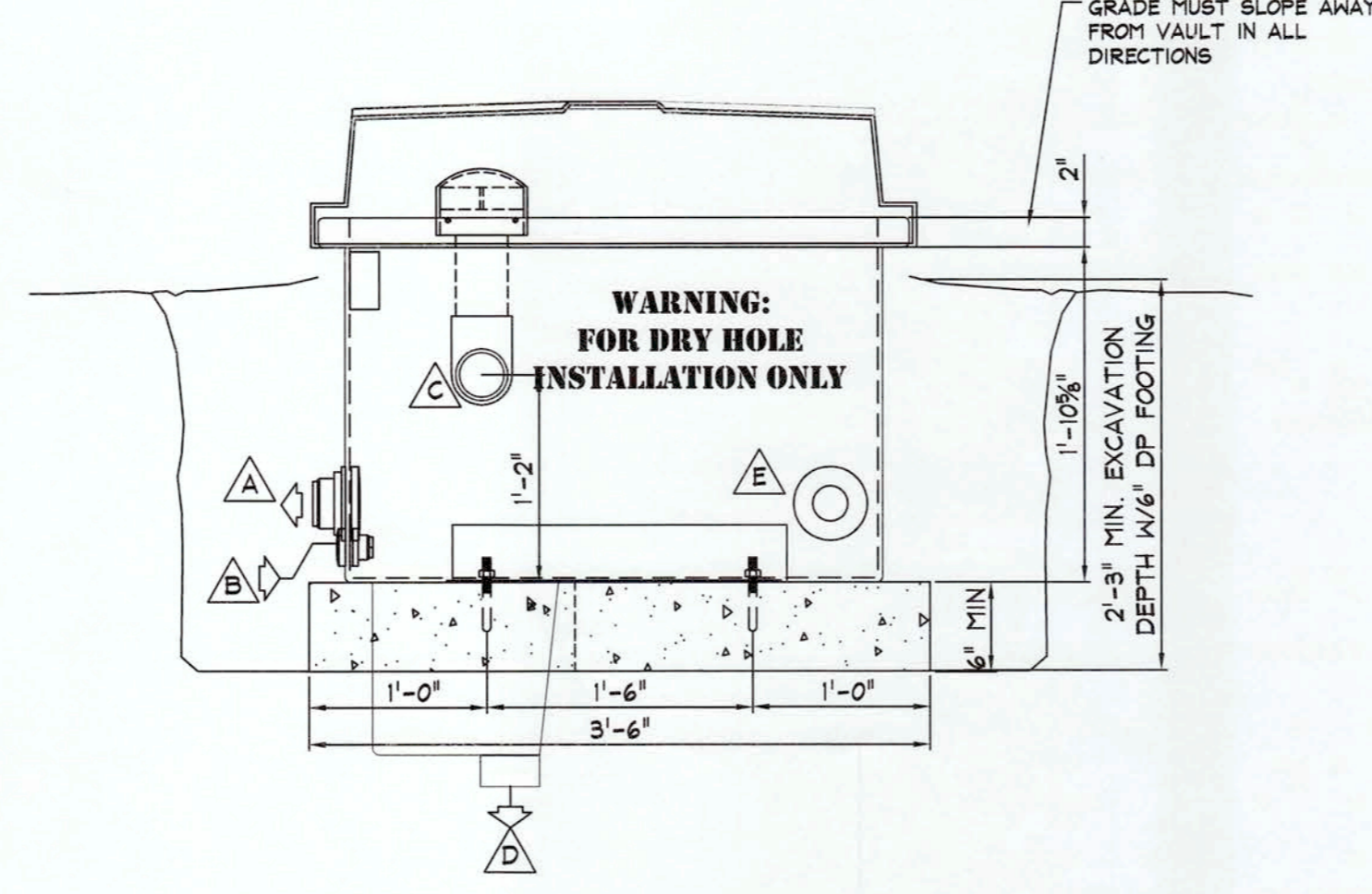
Drawing Number: WFM-5

RDP SERIES I PUMP VAULT INSTALLATION NOTES PLEASE READ CAREFULLY

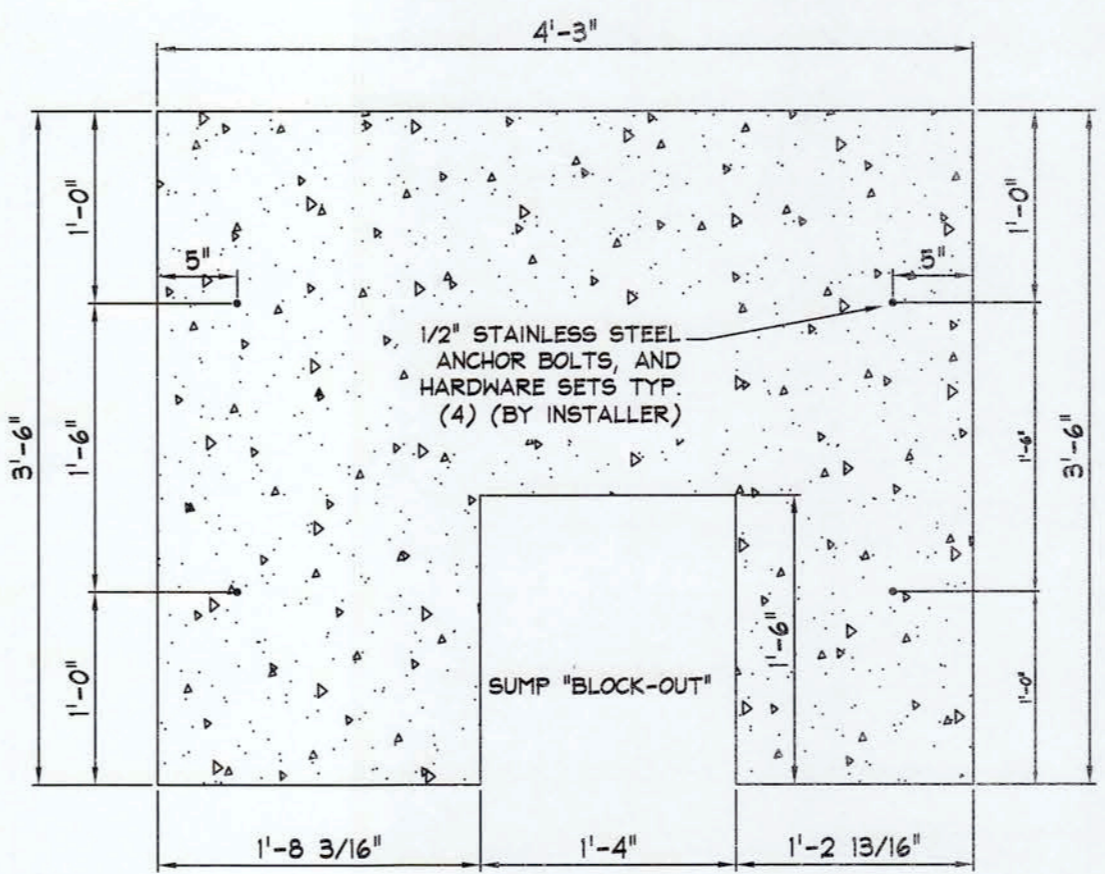
- 1. The gravity floor drain (located inside the Series I Vault) must be immediately connected to storm drain, sanitary sewer, or 'day-lighted, as required. If drain is not able to be connected DO NOT install vault until it can be connected.
- 2. Do not install pump vault into any location below sea level, or where a high water table exists, or in any area subject to periodic or repeated flooding, or groundwater saturation, as the unit is not designed to be surrounded by ground water, damage and/or leakage may occur.
- 3. In all cases finished grade around the pump vault must be sloped away from the access hatchway in all directions so no water flows into the pump vault (see installation details this sheet). Do not allow water to 'pool' around vault under any circumstances.
- 4. Prior to pump vault installation, a level smooth, steel reinforced concrete pad, measuring 3'-6" x 4'-3" x 6" minimum thickness, must be poured, and must include the four (4) installer provided 1/2" stainless steel "L"-bolts (see installation drawing). Concrete shall have a minimum compression strength at 28 days of 3000 PSI and have a reinforcing steel conforming to ASTM A 615-40. Reinforced concrete pad, anchoring "L"-bolts are provided and installed by the installing contractor.
- 5. The pump module must be lifted using a properly weighted and balanced fork lift with extended forks or a boom crane and girder straps. The weight of the vault for transportation and lifting purposes is 1,500 pounds unless otherwise indicated on the installation drawings, submittal data, or freight bill of lading.
- 6. Lower the pump vault into the excavation using a two part lifting sling with padded straps to ensure a true vertical lift. DO NOT LIFT FROM TOP AND DO NOT USE CHAINS FOR LIFTING AS THEY MAY DAMAGE FIBERGLASS. All off-loading and lifting equipment and labor is the responsibility of the installing contractor.
- 7. Lower the vault into the excavation slowly and center it on the concrete pad. Insure the concrete pad is level and thoroughly cleaned of debris that could damage the vault floor prior to placing the unit on the pad.
- 8. Securely anchor the vault to the stainless steel anchor bolts previously installed into the concrete pad (cable, straps and bolts furnished by the installing contractor). Vault must be plumbed and level prior to hook-up and backfill. 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 ON PVC PIPING.
- 9. After the vault 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.
- 10. Backfill around the pump vault using an approved granular material free of trash, debris, roots, rocks, 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 crushing, clean and free flowing, may be used. Insure that backfill fills all voids, especially under vault piping and fittings.
- 11. Spread backfill material in 6" to 8" lifts, and compact to at least 95% of maximum density as determined by ASTM 1557-70.
- 12. Use manual compaction equipment being careful not to damage pump vault, piping or conduit due to excessive compaction. A single lift of backfill material around pump vault with a final compaction to excessive loads shall not be permitted.
- 13. A second pressure test of piping should be made after backfilling to ensure that piping has not been damaged during backfill operations.
- 14. It is the responsibility of the installing contractor to ensure the all electrical equipment is installed and wired by a QUALIFIED, LICENSED ELECTRICIAN, experienced in pool wiring. All electrical equipment must be installed in accordance with the NATIONAL ELECTRICAL CODE.
- 15. OSHA confined space requirements and safety procedures are the sole responsibility of the installer. (See below) This product IS NOT U.L. listed as an assembly.



VAULT: FRONT DETAIL SCALE: 1"=1'-0"



VAULT: SIDE DETAIL SCALE: 1"=1'-0"



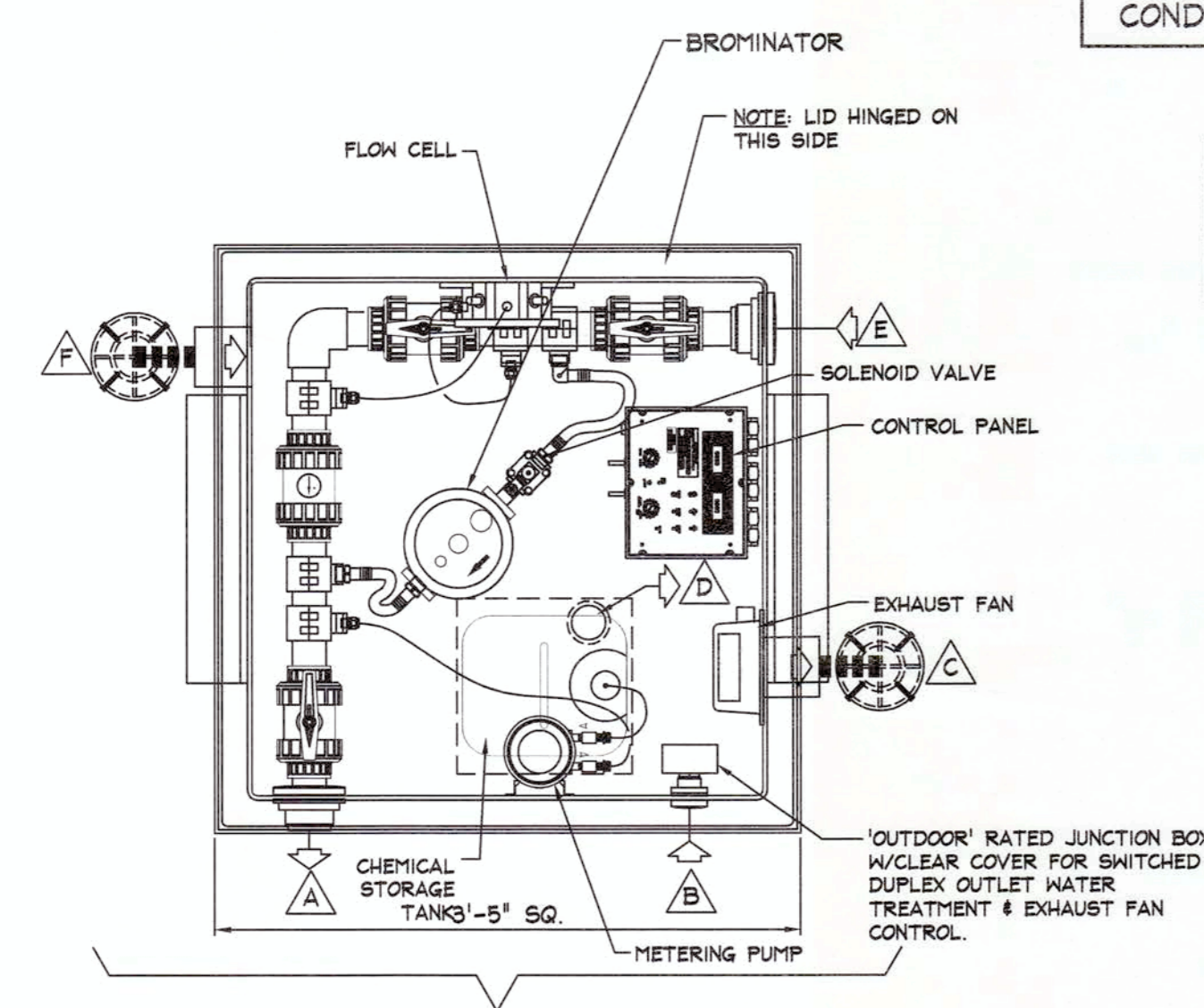
ANCHOR PAD: PLAN VIEW SCALE: 1"=1'-0"

NOTE: TOP OF VAULT TO BE AT OR BELOW FOUNTAIN OPERATING WATER LEVEL FOR OPTIMUM OPERATION.

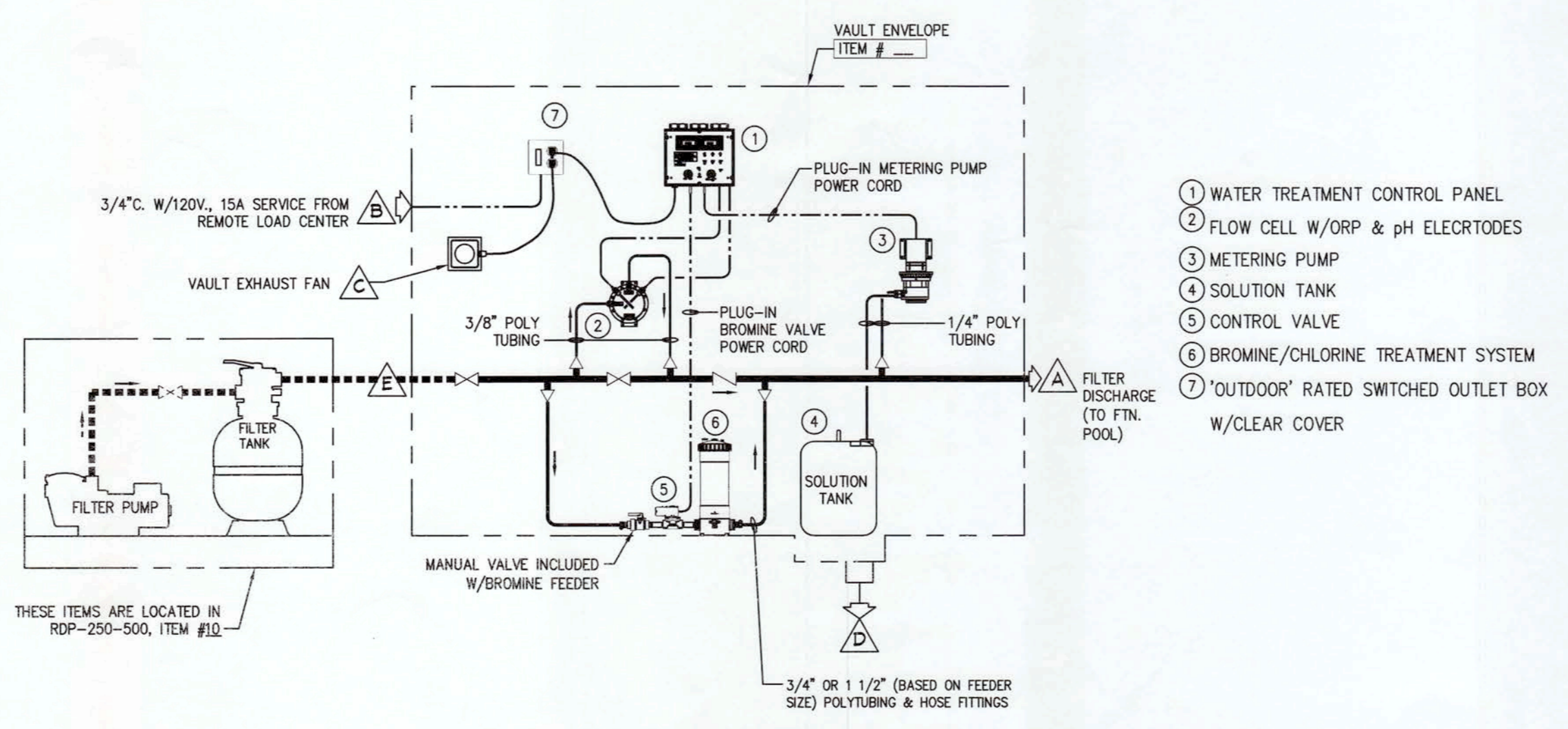
NOTE: ALL CONNECTION LOCATIONS ARE APPROXIMATE.

*ALL INTERCONNECTING PIPE, FITTINGS, CONDUIT, ETC. ARE BY INSTALLER

SYSTEM POWER REQUIREMENT: 120V, SINGLE PHASE, 2-WIRE FEEDER + GND. W/15A SERVICE CONTACT FACTORY IMMEDIATELY IF NOT AVAILABLE. (NOTE: SEE SHEET WFI-1 FOR POWER DIAGRAM)



VAULT: PLAN VIEW SCALE: 1"=1'-0"



WATER TREATMENT SYSTEM SCHEMATIC DIAGRAM

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, equipment, and hazardous atmospheric conditions. Confined 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.

CAUTION: INSTALLER TO VERIFY THAT ELEVATIONS AND OTHER DIMENSIONAL INFORMATION PROVIDED HEREIN, AGREE WITH ACTUAL SITE CONDITIONS. PLEASE REPORT ANY DEVIATIONS, OR POTENTIAL INSTALLATION CHANGES IMMEDIATELY TO ROMAN FOUNTAINS. PHONE: (505) 343-8082.

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, U.S.A.; PHONE: (505) 343-8082. SUBSTITUTION OF EQUIPMENT OTHER THAN THAT SELECTED AND FURNISHED, voids the SYSTEM WARRANTY AND PERFORMANCE GUARANTEE, AND INSTALLER ASSUMES FULL RESPONSIBILITY FOR ITS OPERATION AND PERFORMANCE.



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.

- 1. HATCHWAY OPENING MUST BE LOCATED IN A AREA SAFE FROM FLOODING; SLOPE GRADE AWAY FROM VAULT.
- 2. PROTECT THE FURNISHED DRAIN LINE FROM POSSIBLE BACKFLOW AND SEWER GAS, AS REQUIRED.
- 3. TOP OF VAULT MUST BE AT, OR BELOW THE LOWEST POOL LEVEL.
- 4. ALL VAULT AND PENETRATIONS ARE APPROXIMATE.

THIS PRODUCT IS NOT U.L. LISTED AS AN ASSEMBLY. ANY SUCH REQUIREMENTS SHALL BE PROVIDED BY OTHERS IF REQUIRED.

NOTE: DO NOT STORE CHEMICALS IN VAULT OR SERIOUS INJURY AND EQUIPMENT DAMAGE MAY RESULT.

SPECIFICATION DATA: Direct Burial Pump Vault, consisting of a 3'-5" Sq. x 2'-8" deep heavy duty FRP vault with white gel-coat interior and brown gel-coat exterior; furnished with fiberglass reinforced plastic lid with stainless steel piano hinge attachment, and locking device. Vault contains a dual-point water treatment controller and acrylic flow cell with pH and ORP electrodes; erosion type bromine feeder and bromine solenoid valve; single head adjustable rate chemical metering pump and 5 gallon chemical solution storage tank (for pH solution); 3" vent connections with 115 CFM vent fan. Unit is pre-wired, pre-plumbed (Schedule 80 PVC) and factory tested, prior to shipment. Power requirement: 120 volt, single phase + GND.

VAULT PIPING & CONDUIT PENETRATION LEGEND table with columns: SYM., SIZE, DESCRIPTION

WARNING:

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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.

9471 MAR 25 '13

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RDP SERIES 250 PUMP VAULT INSTALLATION NOTES
PLEASE READ CAREFULLY

- The gravity floor drain (located inside the Series 250 vault) must be immediately connected to storm drain, sanitary sewer, or "day-lighted. If drain is not able to be connected **DO NOT** install vault until it can be connected.
- Do not install pump vault into any location below sea level, or where a high water table exists, or in any area subject to periodic or repeated flooding, or groundwater saturation, as the unit is not designed to be surrounded by ground water; damage and/or leakage may occur. If periodic ground water flooding is possible, an adequately sized drainage system (French drain or sump pump well type) must be designed (by project engineer) and provided (by installer) around the vault to move surrounding ground water away from the unit to a lower elevation.
- In all cases finished grade around the pump vault must be sloped away from the access hatchway in all directions so no water flows into the pump vault (see installation details this sheet). Do not allow water to "pool" around vault under any circumstances.
- Prior to pump vault installation, a level smooth, steel reinforced concrete pad, measuring 4'-0"x5'-4"x6" minimum thickness, must be poured, and must include the four (4) installer provided 1/2" stainless steel "J-bolts/eyebolts" (see installation drawing). Concrete shall have a minimum compression strength at 28 days of 3000 PSI and have a reinforcing steel conforming to ASTM A 615-40. Reinforced concrete pad, anchoring "J-bolts" or "eyebolts" are provided and installed by the installing contractor.
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- Lower the pump vault into the excavation using a two part lifting sling with padded straps to ensure a true vertical lift. **DO NOT LIFT FROM TOP AND DO NOT USE CHAINS FOR LIFTING AS THEY MAY DAMAGE FIBERGLASS.** All off-loading and lifting equipment and labor is the responsibility of the installing contractor.
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- Securely anchor the vault to the stainless steel anchor bolts previously installed into the concrete pad (cable, straps and bolts furnished by the installing contractor). Vault must be plumb and level prior to hook-up and backfill. 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 ON PVC PIPING.
- After the vault is securely in position, outside piping and conduits must be aligned and connected to ensure a true fit without excessive lateral force applied to piping, conduits or fittings.
- Backfill around the pump vault using an approved granular material free of trash, debris, roots, rocks, 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. ensure that backfill fills all voids, especially under vault piping and fittings.
- Spread backfill material in 6" to 8" lifts, and compact to at least 95% of maximum density as determined by ASTM 1557-70.
- Use manual compaction equipment being careful not to damage pump vault, piping or conduit due to excessive compaction. A single lift of backfill material around pump vault with a final compaction to excessive loads shall not be permitted.
- A second pressure test of piping should be made after backfilling to ensure that piping has not been damaged during backfill operations.
- It is the responsibility of the installing contractor to ensure the all electrical equipment is installed and wired by a QUALIFIED, LICENSED ELECTRICIAN, experienced in pool wiring. All electrical equipment must be installed in accordance with the NATIONAL ELECTRICAL CODE.
- OSHA confined space requirements and safety procedures are the sole responsibility of the installer. (See below) This product IS NOT U.L. listed as an assembly.

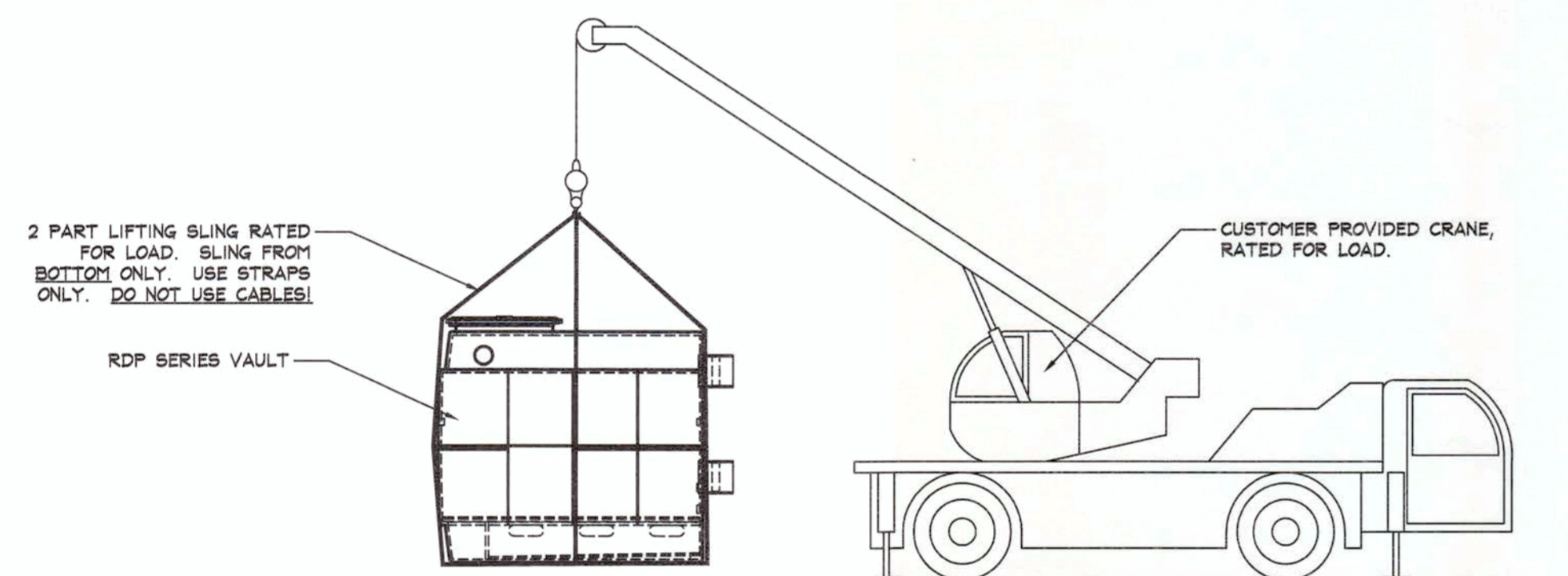


ALCOA CELEBRATION SQUARE

Muskegon, MI

For Community Foundation for Muskegon County

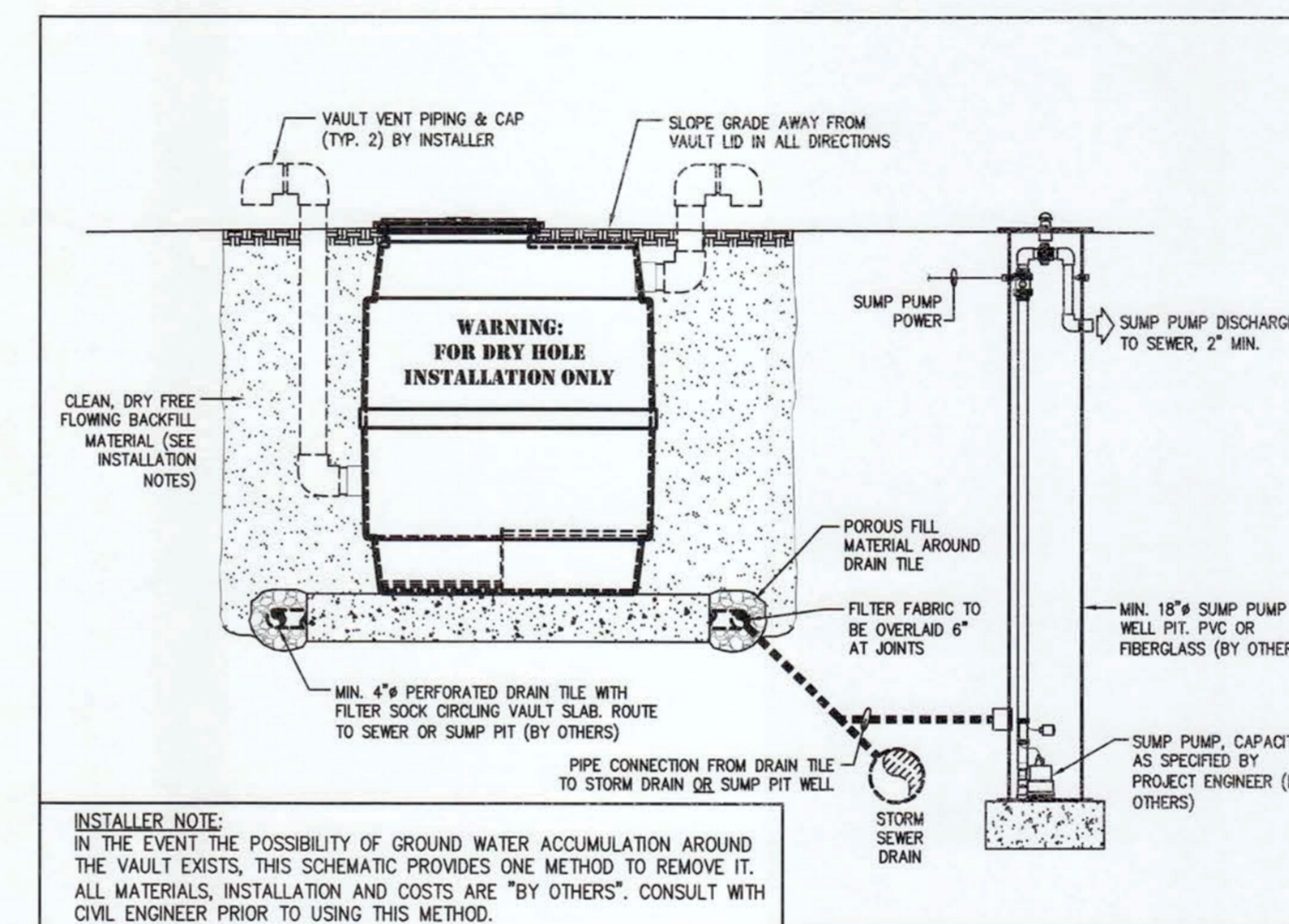
Muskegon, MI



WARNING
VAULT IS WARRANTED FOR DRY HOLE INSTALLATION AND OPERATION ONLY. DO NOT ATTEMPT TO INSTALL IN STANDING WATER!

VAULT HOUSE KEEPING PAD PER PRODUCT REQUIREMENT.
STABILIZED EXCAVATION PER PROJECT REQUIREMENTS.

GROSS WEIGHT OF VAULT	
<input checked="" type="checkbox"/> RDP-SERIES I	500 LBS
<input type="checkbox"/> RDP-SERIES II	1,000 LBS
<input checked="" type="checkbox"/> RDP-SERIES II.5	2,000 LBS
<input type="checkbox"/> RDP-SERIES III	3,000 LBS
<input type="checkbox"/> RDP-SERIES IV	5,000 LBS
<input type="checkbox"/> RDP-SERIES V	10,000 LBS



INSTALLER NOTE:
IN THE POSSIBILITY OF GROUND WATER ACCUMULATION AROUND THE VAULT EXISTS, THIS SCHEMATIC PROVIDES ONE METHOD TO REMOVE IT. ALL MATERIALS, INSTALLATION AND COSTS ARE "BY OTHERS". CONSULT WITH CIVIL ENGINEER PRIOR TO USING THIS METHOD.

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 an 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.

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.

- NOTES:**
- HATCHWAY OPENING MUST BE LOCATED IN A AREA SAFE FROM FLOODING; SLOPE GRADE AWAY FROM VAULT.
 - PROTECT THE FURNISHED DRAIN LINE FROM POSSIBLE BACKFLOW AND SEWER GAS, AS REQUIRED
 - VAULT SUCTION INTAKE MUST BE MIN. 1'-0" BELOW THE LOWEST POOL OPERATING WATER LEVEL.
 - ALL VAULT AND PENETRATIONS ARE APPROXIMATE.

***ALL INTERCONNECTING PIPE, FITTINGS, CONDUIT, ETC. ARE BY INSTALLER**

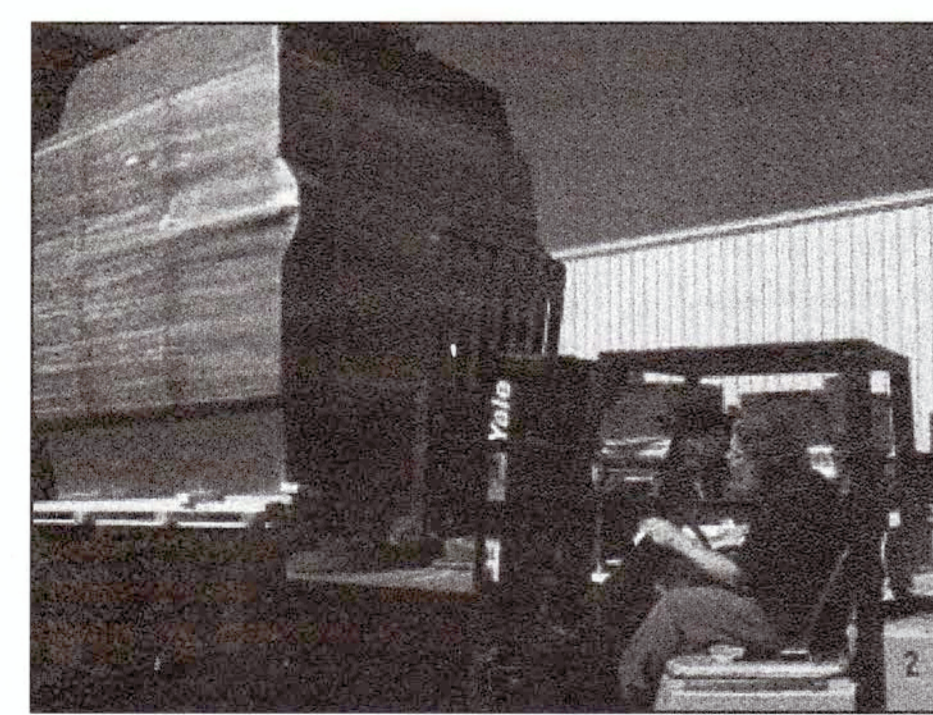
NOTE: INSURE FILL MATERIAL FILLS ALL VOIDS BENEATH VAULT. HAND FEED FILL MATERIAL AS NECESSARY TO FILL ALL POTENTIAL VOIDS. DO NOT USE SHARP ROCKS AS FILL BENEATH VAULT.

CAUTION: INSTALLER TO VERIFY THAT ELEVATIONS AND OTHER DIMENSIONAL INFORMATION PROVIDED HEREIN, AGREE WITH ACTUAL SITE CONDITIONS. PLEASE REPORT ANY DEVIATIONS, OR POTENTIAL INSTALLATION CHANGES IMMEDIATELY TO ROMAN FOUNTAINS. PHONE: (505) 343-8082.

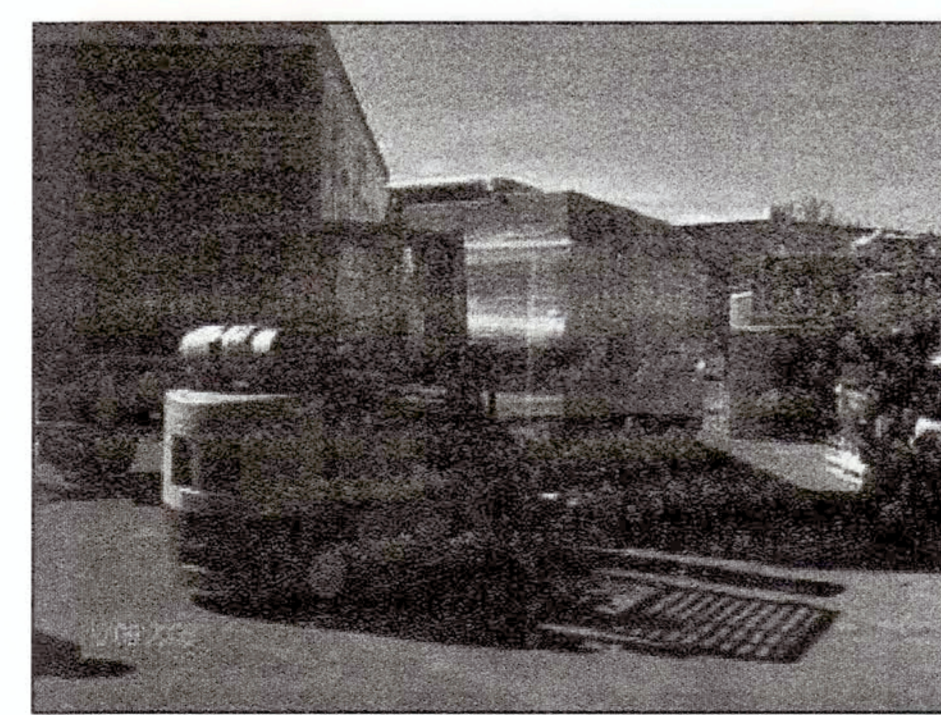
NOTE: THE PROPER DESIGN, OPERATION AND PERFORMANCE OF THIS SYSTEM IS BASED ON THE SELECTION AND USE OF EQUIPMENT MANUFACTURED AND/OR SELECTED BY ROMAN FOUNTAINS CORPORATION, ALBUQUERQUE, NEW MEXICO, U.S.A.; PHONE: (505) 343-8082. SUBSTITUTION OF EQUIPMENT OTHER THAN THAT SELECTED AND FURNISHED, VOIDS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

⚡ 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.



VAULT BEING REMOVED FROM TRUCK



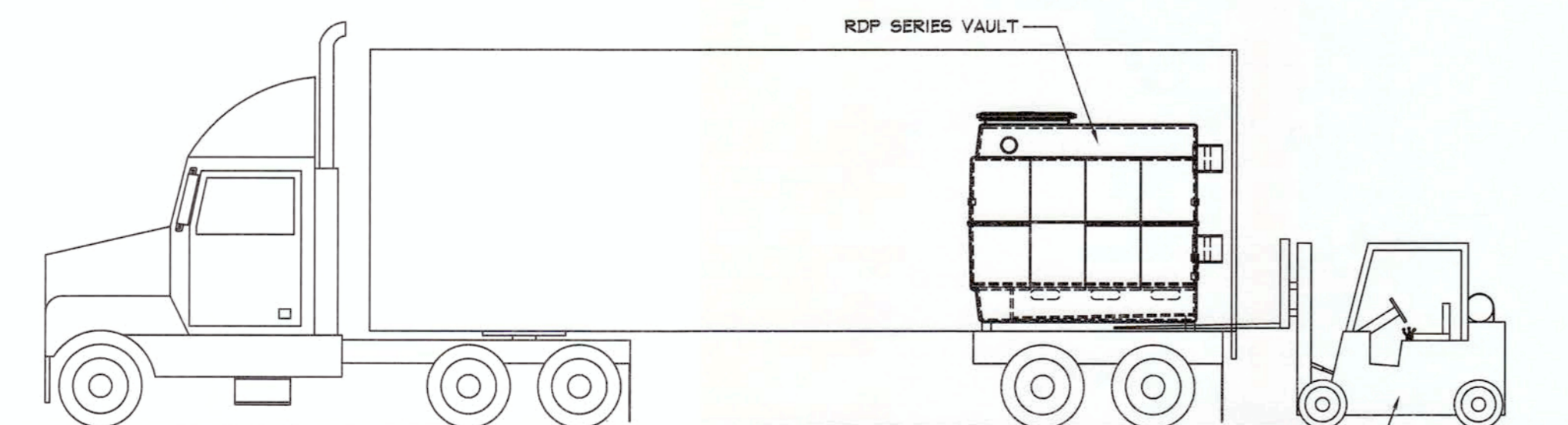
VAULT OFF-LOADED FROM TRUCK



VAULT IN POSITION PROTECTED BY 'CAVE-IN' BARRIER



LIFTING FORK CRANE WITH DOUBLE STRAP SLING



CUSTOMER PROVIDED FORK LIFT. USE FORK LIFT WITH 6' MIN. EXTENDED FORKS ONLY; RATED FOR HEIGHT OF VAULT.

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Scale: As Shown
Drawn By: C. Bascas
Checked By: J. Mitovich
Date: 4-8-11

Revisions:			
No.	Date	By	Comments
1	4-25-11	OMB	CHANGED POWER, 1-PH TO 3-PH

RDP-1 & RDP-250, DIRECT BURIAL VAULT INSTALLATION DETAILS

Drawing Number:

WFM-6

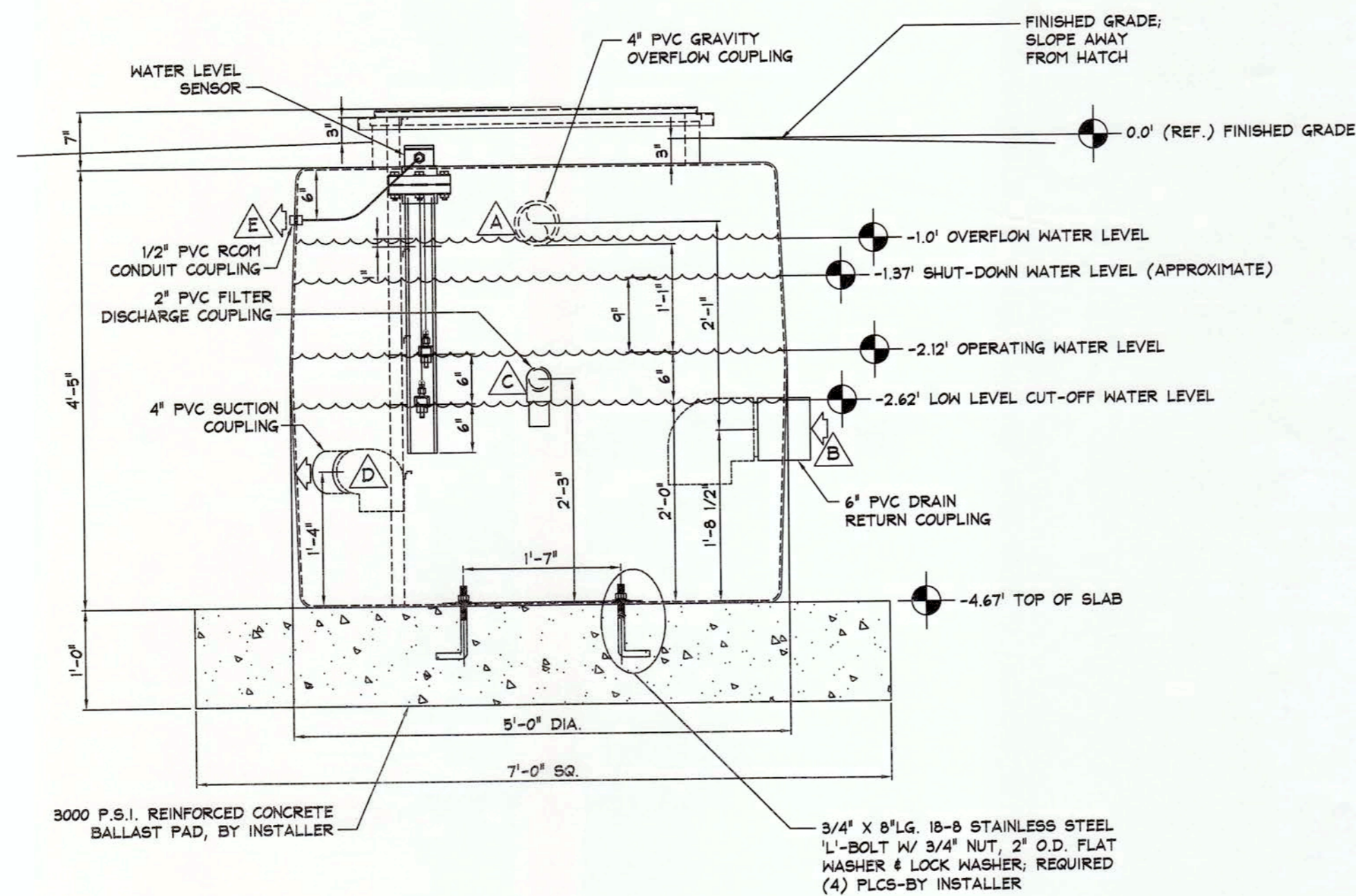
9471 MAR 25 11
AUTOMATICALLY GENERATED BY THE SYSTEM
IN ACCORDANCE WITH THE COMPANY'S POLICY



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, (800) 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.



RWST-500 RESERVOIR TANK SIDE VIEW
SCALE: 3/4"=1'-0"

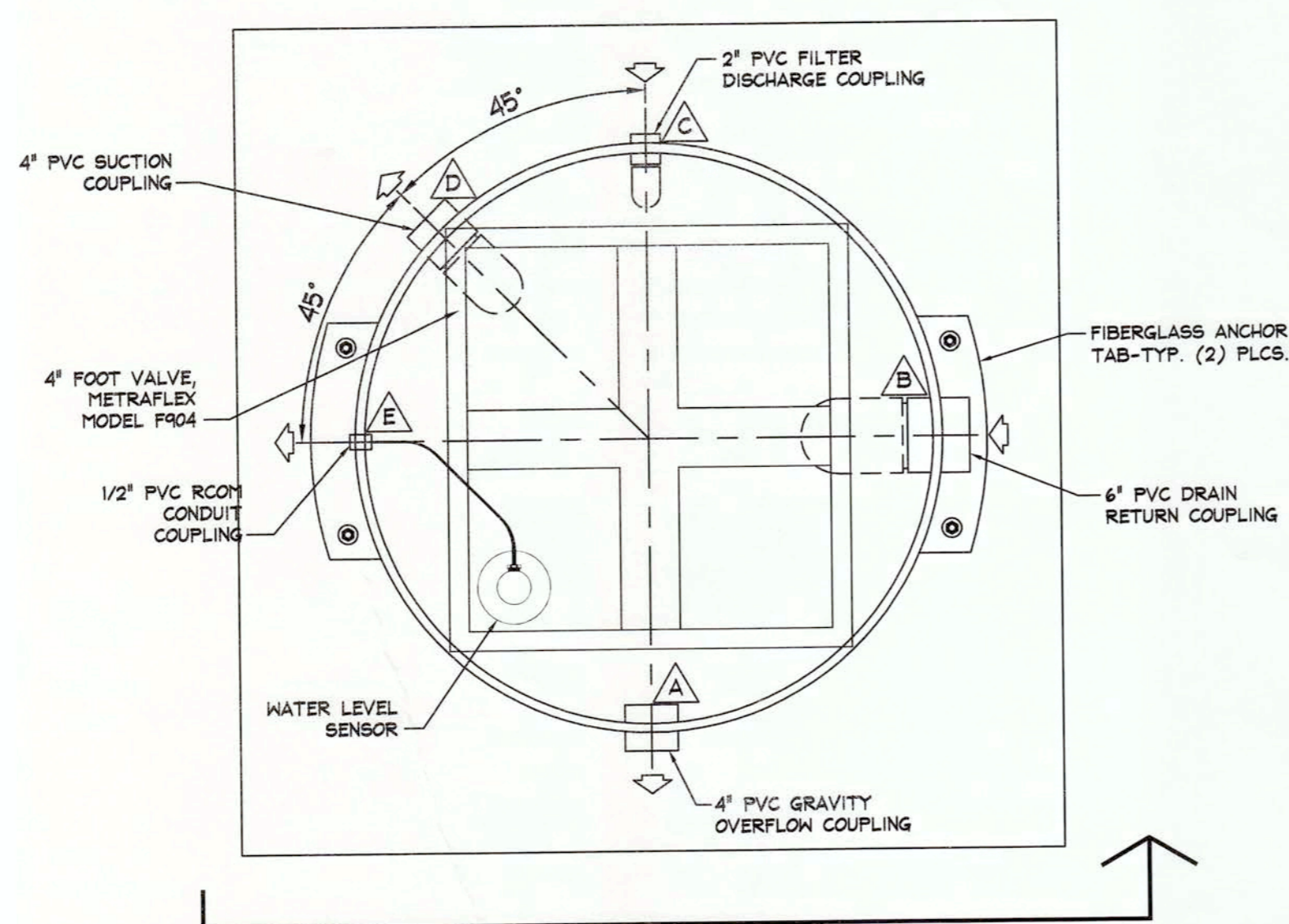
VAULT PIPING & CONDUIT PENETRATION LEGEND		
SYM.	SIZE	DESCRIPTION
A	4"	GRAVITY OVERFLOW PIPING TO WASTE AND TANK VENTILATION
B	6"	DRAIN RETURN (GRAVITY WATER TRANSFER FROM SPLASHPAD DRAINS) PIPING
C	2"	FILL/FILTER DISCHARGE PIPING
D	4"	DISPLAY SUCTION PIPING
E	1/2"C	CONDUIT (PRE-ATTACHED 4-CONDUCTOR CABLE) FROM WATER LEVEL SENSOR

SPECIFICATION DATA: Water Storage/Storage Tank, 500 gallon, approximately 5'-0" diameter x 5'-0" deep, brown gel-coat exterior, 36" square landscape access hatch opening of reinforced fiberglass with stainless steel piano hinge attachment, and lock hardware (LOCK BY INSTALLER). Fiberglass construction, with ladder, all required fittings, penetrations, and RCOM-RNF water level sensor installed.

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

DO NOT DRAIN THIS TANK UNLESS IT IS CERTAIN THAT THERE IS NO STANDING GROUND WATER OUTSIDE THIS TANK.

TO DRAIN THIS TANK, DROP A SUMP PUMP (BY OTHERS) IN THE TANK AND PLACE THE SUMP PUMP DISCHARGE HOSE INSIDE THE 4" OVERFLOW PIPE. PLUG THE SUMP PUMP AT THE NEARBY VAULT'S RECEPTACLE THAT HAS GROUND FAULT PROTECTION.



RWST-500 RESERVOIR TANK PLAN VIEW
SCALE: 3/4"=1'-0"

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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.

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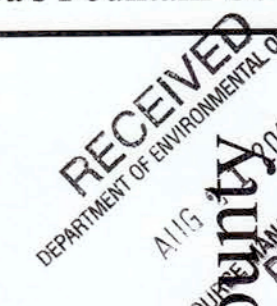
THE SPECIFIER/PURCHASER/INSTALLER/OWNER OF ANY VAULT PRODUCT SHALL MAKE ANY AND ALL DETERMINATIONS AS TO THE SUITABILITY OF SAID PRODUCT FOR THE APPLICATION, INCLUDING GROUND WATER CONDITIONS.

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

- 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.
- 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).
- The tank must be lifted using a properly weighted and balanced fork lift with extended forks or a boom crane and girder straps. The maximum tank weight for transportation and lifting purposes is 1,000 pounds unless otherwise indicated on the installation drawings or submittal data.
- 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.
- 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.
- 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.
- 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.
- 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.**
- Once piping/conduits have all been installed and pressure tested, immediately fill tank with water to the point of overflow.
- 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.
- Spread backfill material in 6" to 8" lifts. Compact to at least 95% of maximum density as determined by ASTM 1557-70.
- 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.
- A second pressure test of piping should be made after backfilling to insure that piping has not been damaged during backfill operations.
- 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.
- 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.



America's Fountain Company!™



ALCOA CELEBRATION SQUARE

Muskegon, MI

For Community Foundation for Muskegon County

Muskegon, MI

ROMAN FOUNTAINS CORP.
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Fax #: (951) 600-8322

Scale: As Shown
Drawn By: C. Bascas
Checked By: J. Mitovich
Date: 4-8-11

Revisions:			
No.	Date	By	Comments
1	4-25-11	CMB	CHANGED POWER, 1-PH TO 3-PH

RWST-500 DIRECT BURIAL RESERVOIR TANK INSTALLATION DETAILS

Drawing Number:

WFM-7

9471 MAR 25 13

AUTHOR: [Signature]



America's Fountain CompanySM

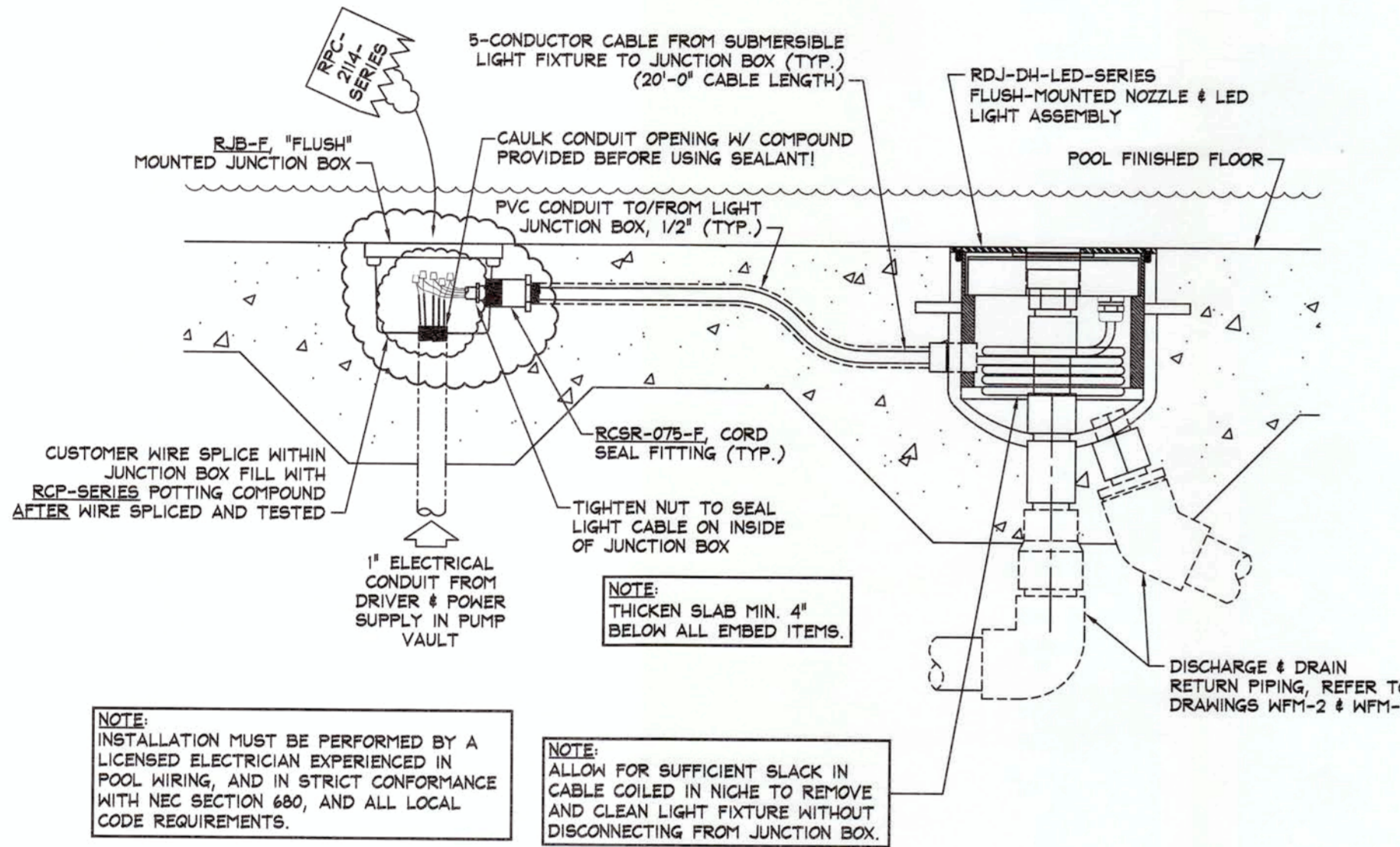
ALCOA CELEBRATION SQUARE
Muskegon, MI
For Community Foundation for Muskegon County
Muskegon, MI

ALCOA CELEBRATION SQUARE (4/21/11)
Equipment List - By Roman Fountains

Item No.	Qty.	Component Number	Description
*01	1	RDJ-SJ-DH-LED (R0B)	Flush-Mount 'Deck' Spritzer Jet with LED Donut Light.
*02	4	RDJ-JC-DH-LED (R0B)	Flush-Mount 'Deck' Jet Cluster with LED Donut Light.
*03	8	RDJ-APJ-DH-LED (R0B)	Flush-Mount 'Deck' Precision Jet with LED Donut Light.
04	1	RWST-500	Water Storage/Storage Tank, 500 gallon.
*05	1	RJB-6-100-FR	Flush Mounted Submersible Junction Box
*06	2	RJB-7-100-FR	Flush Mounted Submersible Junction Box
07	4	RPC-2114-D	Potting Compound, 21.2 oz. size.
08	1	RDP-1-WTS	Series I Direct Burial Water Treatment Vault. Power requirement: 120 volt, single phase + GND.
09	3	RPVC-300	3" PVC Vent Cap.
10	1	RDP-250-300 (Series I)	Series 250 Direct Burial Pump Vault. Power requirement: 120/240 V., 1-phase.
11	2	RPVC-400	4" PVC Vent Cap.

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

⚡ 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.

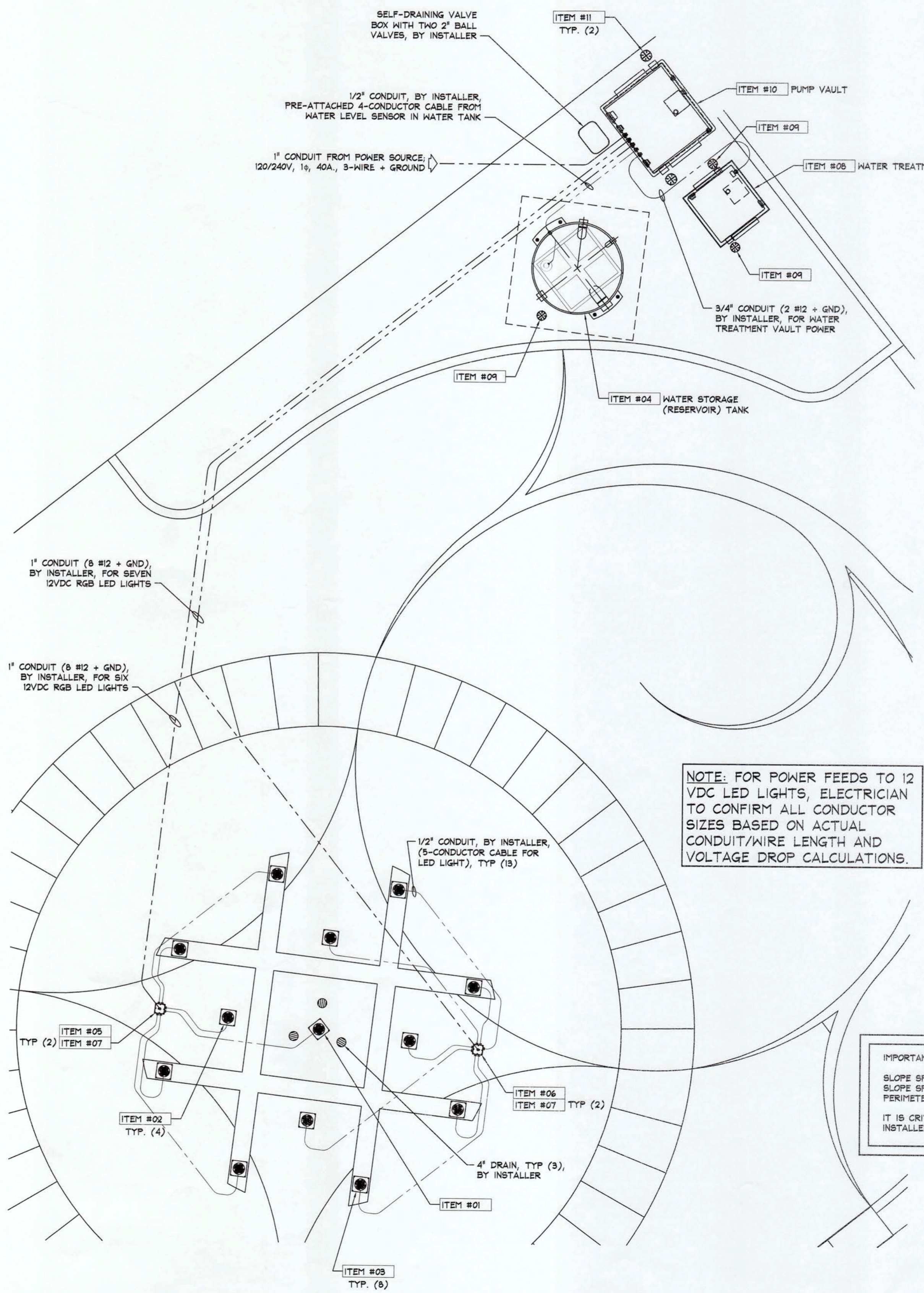


NOTE: INSTALLATION MUST BE PERFORMED BY A LICENSED ELECTRICIAN EXPERIENCED IN POOL WIRING, AND IN STRICT CONFORMANCE WITH NEC SECTION 680, AND ALL LOCAL CODE REQUIREMENTS.

NOTE: ALLOW FOR SUFFICIENT SLACK IN CABLE COILED IN NICHE TO REMOVE AND CLEAN LIGHT FIXTURE WITHOUT DISCONNECTING FROM JUNCTION BOX.

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

RDJ-DH-LED TO RJB-F LIGHT WIRING DETAIL
SCALE: NONE (REF. ITEM #S 01, 02, 03, 05, 06 & 07)



NOTE: FOR POWER FEEDS TO 12 VDC LED LIGHTS, ELECTRICIAN TO CONFIRM ALL CONDUCTOR SIZES BASED ON ACTUAL CONDUIT/WIRE LENGTH AND VOLTAGE DROP CALCULATIONS.

IMPORTANT NOTES!
SLOPE SPLASHPAD FLOOR DOWN TOWARDS CENTER 4" DRAINS AND SLOPE SPLASHPAD FLOOR FROM PERIMETER NOZZLES DOWN TOWARDS PERIMETER DRAINS.
IT IS CRITICAL THAT THE CENTER AND MIDDLE NOZZLE HOUSINGS BE INSTALLED DEAD LEVEL OR THE SPRAY NOZZLES WILL BE OFF CENTER.

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

9471 MAR 25 13
AUTOMATICALLY GENERATED BY THE SOFTWARE
IN ALCOA CELEBRATION SQUARE

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Scale: As Shown

Drawn By: C. Bascas

Checked By: J. Mitovich

Date: 4-8-11

Revisions:

No.	Date	By	Comments
1	4-25-11	CMB	CHANGED POWER, 1-PH TO 3-PH

FOUNTAIN ELECTRICAL PLAN
Drawing Number:
WFE-1

RECEIVED
DEPARTMENT OF ENVIRONMENTAL AFFAIRS
MUSKEGON COUNTY
RESOURCES MANAGEMENT DIVISION

ALCOA CELEBRATION SQUARE
Muskegon, MI
For Community Foundation for Muskegon County
Muskegon, MI

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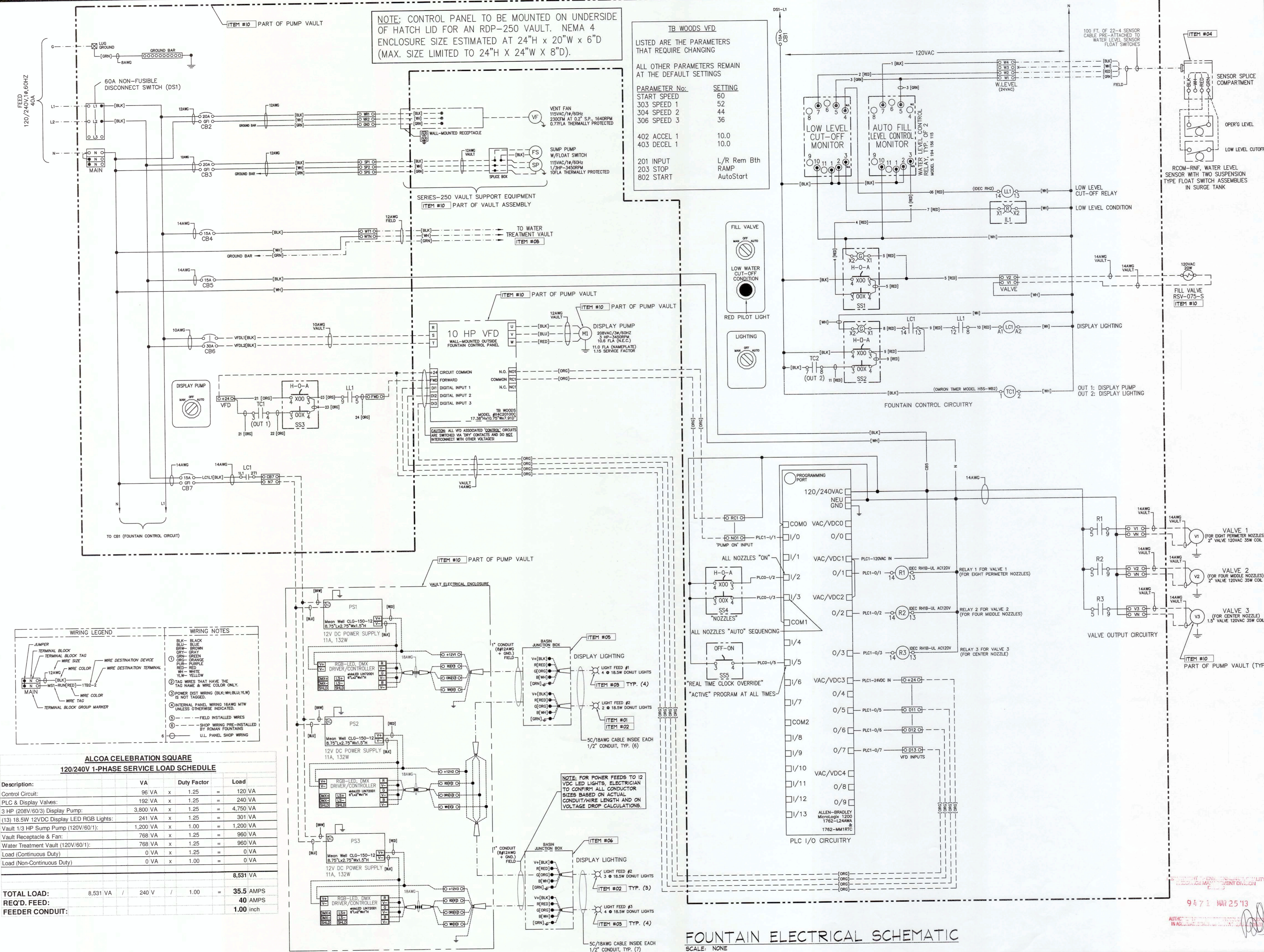
Scale: None
Drawn By: C. Bascas
Checked By: R. Hinkle
Date: 4-8-11

No.	Date	By	Comments
1	4-25-11	OMB	CHANGED POWER, 1-PH TO 3-PH

FOUNTAIN ELECTRICAL SCHEMATIC

Drawing Number:

WFE-2



ALCOA CELEBRATION SQUARE
120/240V 1-PHASE SERVICE LOAD SCHEDULE

Description:	VA	Duty Factor	Load
Control Circuit:	96 VA	x 1.25	= 120 VA
PLC & Display Valves:	192 VA	x 1.25	= 240 VA
3 HP (208V/60/3) Display Pump:	3,800 VA	x 1.25	= 4,750 VA
(13) 18.5W 12VDC Display LED RGB Lights:	241 VA	x 1.25	= 301 VA
Vault 1/3 HP Sump Pump (120V/60/1):	1,200 VA	x 1.00	= 1,200 VA
Vault Receptacle & Fan:	768 VA	x 1.25	= 960 VA
Water Treatment Vault (120V/60/1):	768 VA	x 1.25	= 960 VA
Load (Continuous Duty)	0 VA	x 1.25	= 0 VA
Load (Non-Continuous Duty)	0 VA	x 1.00	= 0 VA
TOTAL LOAD:	8,531 VA	/ 240 V	= 35.5 AMPS
REQ'D. FEED:			40 AMPS
FEEDER CONDUIT:			1.00 inch

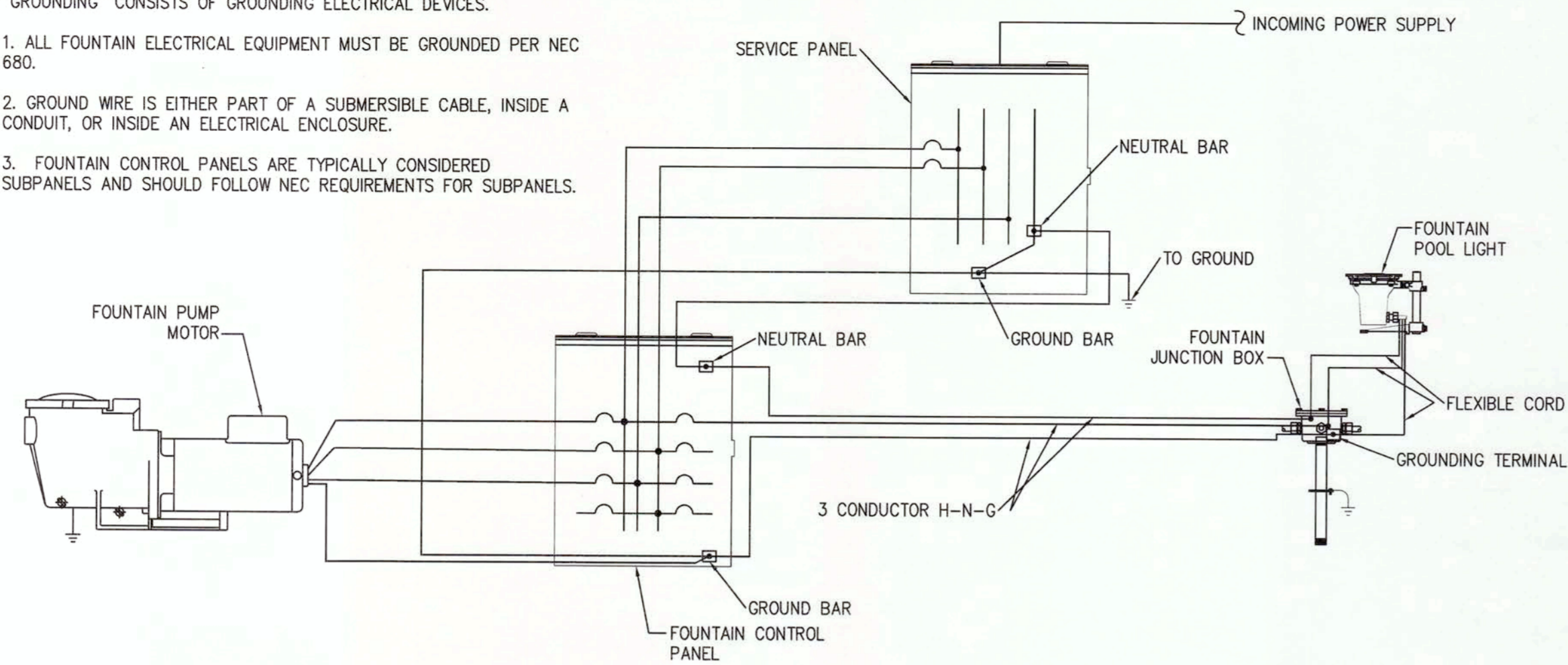
FOUNTAIN ELECTRICAL SCHEMATIC
SCALE: NONE

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P.O. Drawer 10190
Albuquerque, N.M. 87184
Phone #: (800) 794-1801
Fax #: (505) 343-8086
<http://www.romanfountains.com>

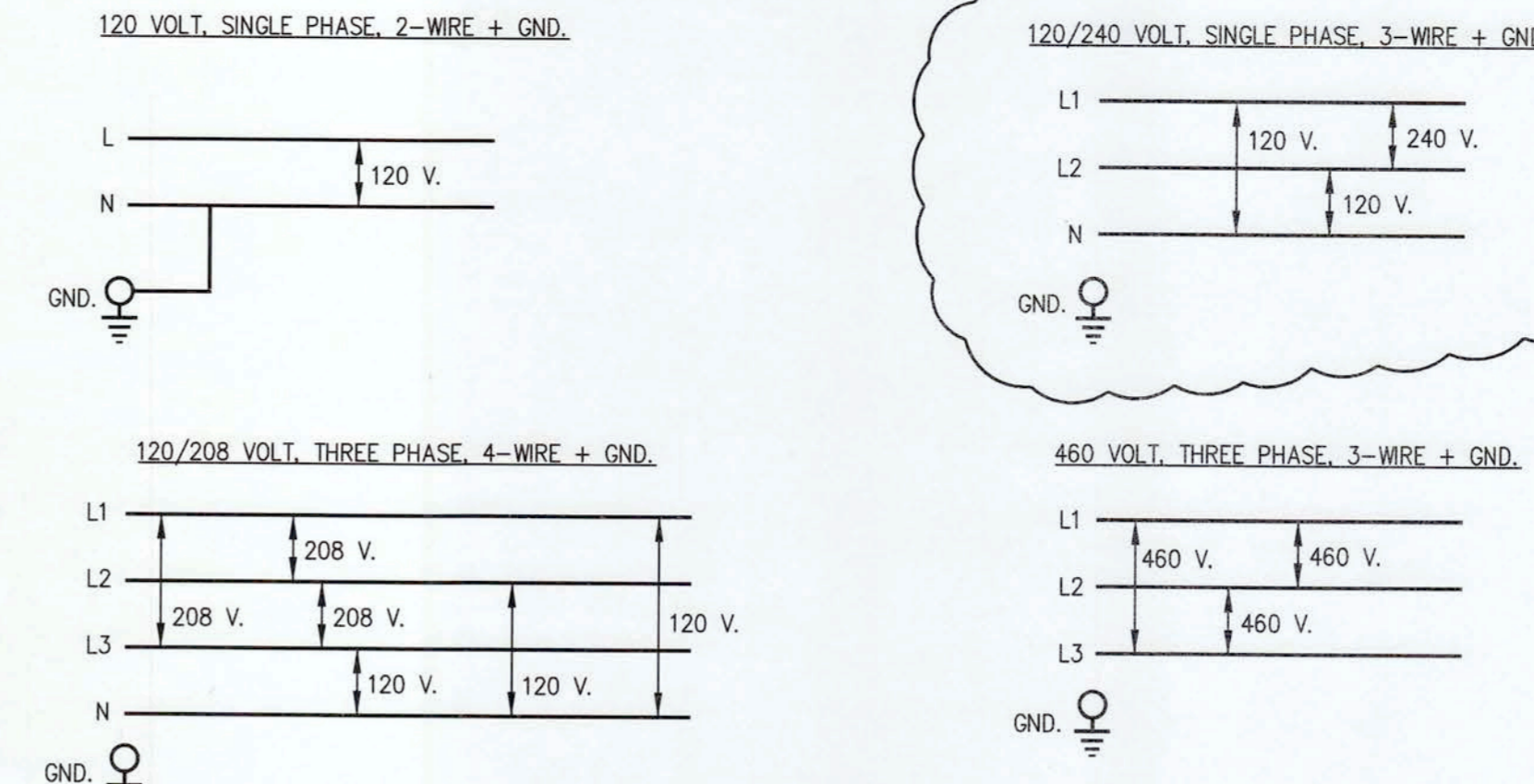
ROMAN FOUNTAINS CORP.
Eastern Engineering & Sales Office
3070-K Business Park Drive
Norcross, GA 30071
Phone #: (877) 794-1802
Fax #: (770) 300-0074

ROMAN FOUNTAINS CORP.
Western Design & Sales Office
24680 Corte Delgado
Murrieta, CA 92562
Phone #: (888) 803-1803
Fax #: (951) 600-8322

"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



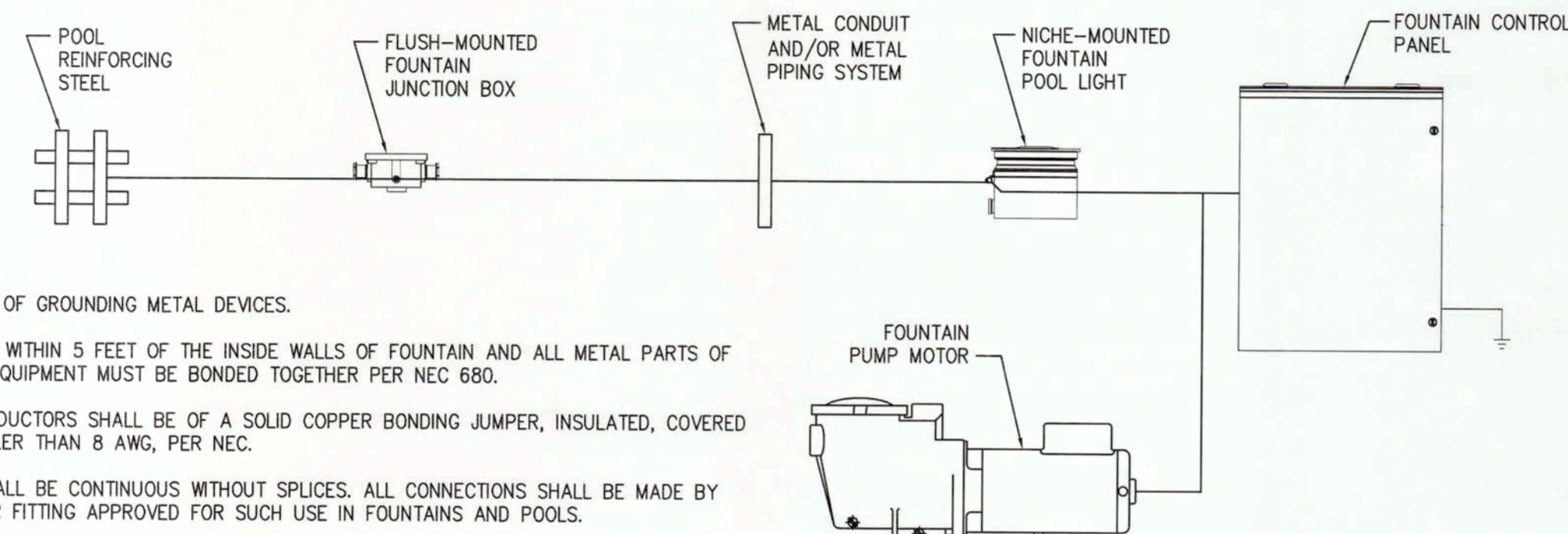
INSTALLER NOTE: POWER REQUIRED FOR THIS PROJECT IS "CLOUDED"

ELECTRICAL POWER SUPPLY OPTIONS
SCALE: NONE

"BONDING" CONSISTS OF GROUNDING METAL DEVICES.

- 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.
- ALL BONDING CONDUCTORS SHALL BE OF A SOLID COPPER BONDING JUMPER, INSULATED, COVERED OR BARE, NOT SMALLER THAN 8 AWG, PER NEC.
- 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.
- 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).
- 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.
- 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 2011 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.
- 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.
 - 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.
 - 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):
 - Have the lens adequately guarded to prevent contact by any person
 - Be listed for use without a guard
 - 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.
 - 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.
 - 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.
 - Stability. Equipment shall be inherently stable or be securely fastened in place.

680.52 Junction Boxes and Other Enclosures.

- General. Junction boxes and other enclosures used for other than underwater installation shall comply with 680.24.
- Underwater Junction Boxes and Other Underwater Enclosures. Junction boxes and other underwater enclosures shall meet the requirements of 680.52(B)(1) and (B)(2).
 - Construction.
 - Underwater enclosures shall be equipped with provisions for threaded conduit entries or compression glands or seals for cord entry.
 - Underwater enclosures shall be submersible and made of copper, brass, or other approved corrosion-resistant material.
 - Installation. Underwater enclosure installations shall comply with (a) and (b).
 - Underwater enclosures shall be filled with an approved potting compound to prevent the entry of moisture.
 - 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:
- 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
 - All electrical equipment associated with the recirculating system of the fountain
 - Panelboards that are not part of the service equipment and that supply any electrical equipment associated with the fountain

680.55 Methods of Grounding.

- 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.
- 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.

- Ground-Fault Circuit Interrupter. All electrical equipment, including power-supply cords, shall be protected by ground-fault circuit interrupters.
- 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.
- 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.
- 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

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Scale:	None		
Drawn By:	C. Bascas		
Checked By:	J. Mitovich		
Date:	4-8-11		
Revisions:			
No.	Date	By	Comments
1	4-25-11	CMG	CHANGED POWER, 1-PH TO 3-PH

**TYPICAL ELECTRICAL
DETAILS & ARTICLE
680 NEC
REQUIREMENTS**

Drawing Number:

WFI-1

9471 MAR 25 '13
AUTHENTIC COPY
IN ACCORDANCE WITH THE
NATIONAL ELECTRICAL CODE

ALCOA CELEBRATION SQUARE

Muskegon, MI

For Community Foundation for Muskegon County

Muskegon, MI

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Fax #: (951) 600-8322

Scale: None

Drawn By: C. Bascas

Checked By: J. Mitovich

Date: 4-8-11

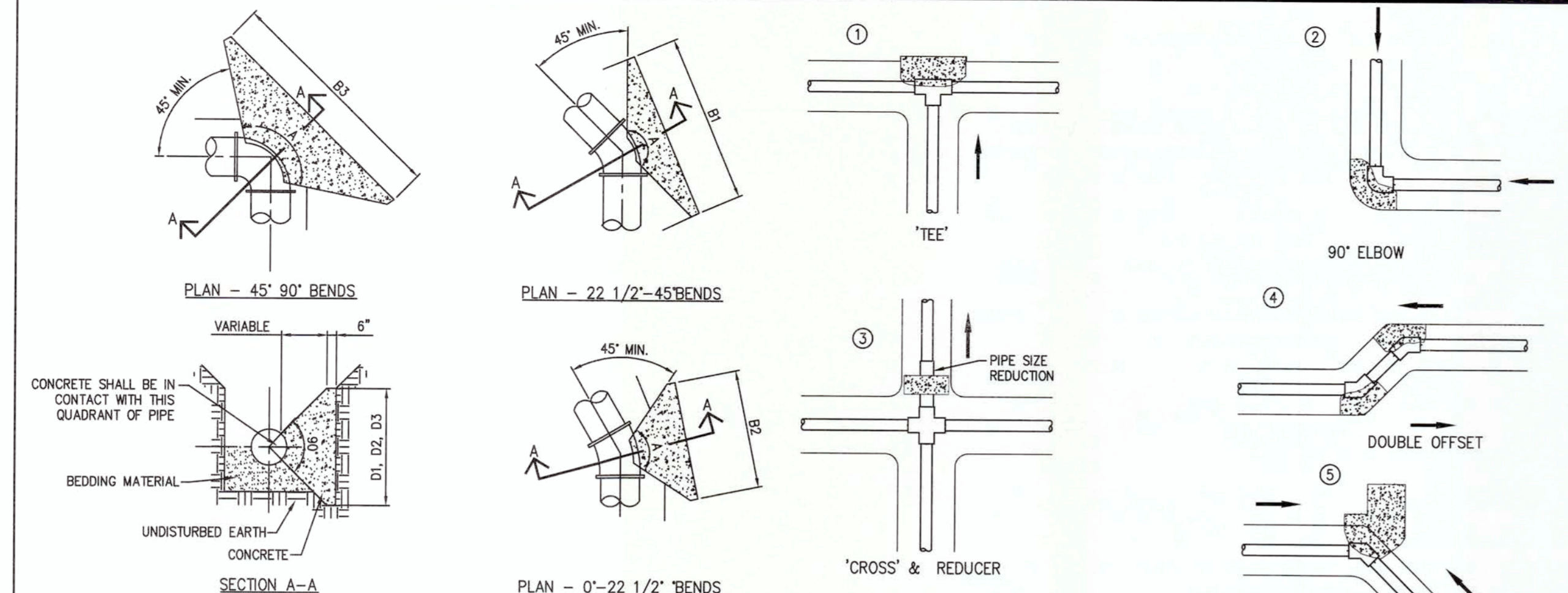
Revisions:

No.	Date	By	Comments
1	4-25-11	CMB	CHANGED POWER, 1-PH TO 3-PH

TYPICAL PIPING AND PENETRATION DETAILS

Drawing Number:
WFI-2

RECEIVED
DEPARTMENT OF ENVIRONMENTAL QUALITY
AUG 21 2011
RESOURCE MANAGEMENT DIVISION



TYPICAL "THRUST BLOCKING" FOR FOUNTAIN SYSTEM PIPING
SCALE: NONE

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

BUTTRISS DIMENSIONS

PIPE SIZE	22 1/2" BEND			45° BEND			90° BEND		
	B1	D1	B2	D2	B3	D3	B4	D4	
4"	1'-5"	1'-5"	1'-5"	1'-5"	2'-1"	1'-8"	1'-8"	1'-8"	
6"	1'-5"	1'-5"	1'-5"	1'-5"	2'-1"	1'-8"	1'-8"	1'-8"	
8"	1'-5"	1'-5"	2'-1"	1'-6"	2'-8"	2'-0"	2'-0"	2'-0"	
10"	1'-8"	1'-8"	2'-11"	1'-10"	4'-0"	2'-4"	2'-4"	2'-4"	
12"	1'-10"	1'-10"	3'-4"	2'-0"	4'-9"	2'-6"	2'-6"	2'-6"	
16"	3'-0"	2'-0"	3'-10"	3'-0"	6'-2"	3'-8"	3'-8"	3'-8"	
18"	3'-3"	2'-4"	4'-6"	3'-4"	7'-0"	4'-0"	4'-0"	4'-0"	
20"	3'-6"	2'-8"	5'-6"	3'-4"	8'-4"	4'-0"	4'-0"	4'-0"	
24"	4'-4"	3'-0"	6'-10"	3'-10"	9'-8"	5'-0"	5'-0"	5'-0"	

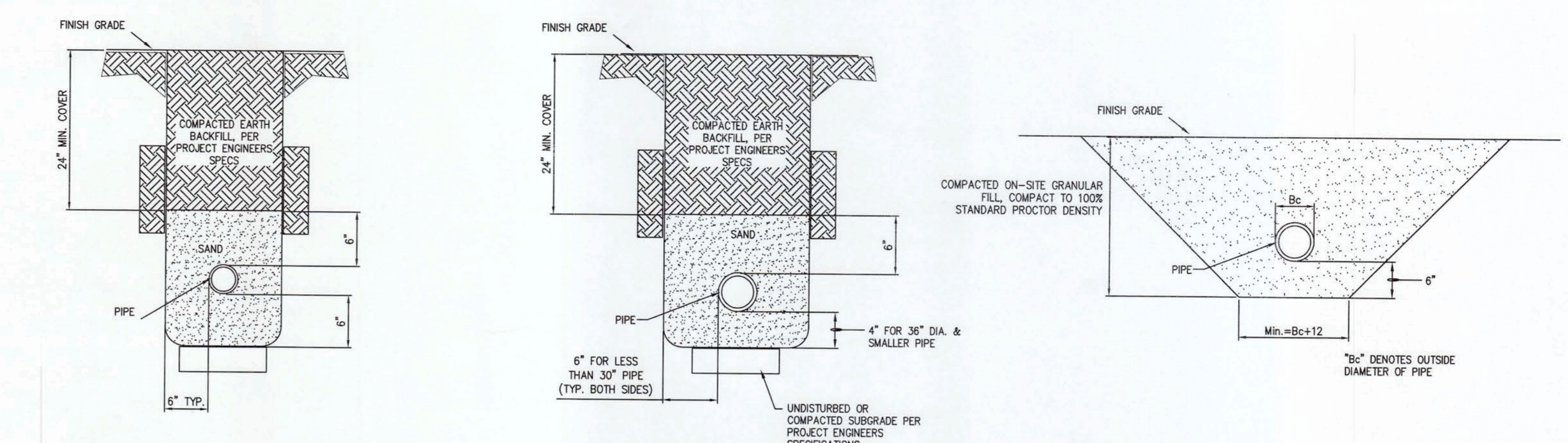
NOTE:
1. SHAPE OF BACK OF BUTTRISS MAY VARY AS LONG AS POUR IS AGAINST FIRM UNDISTURBED EARTH.
2. DIMENSION 'A' SHOULD BE AS LARGE AS POSSIBLE.
3. PLAN FOR 45°-90° BENDS & SECTION A-A SHALL APPLY TO TEES.

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.

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



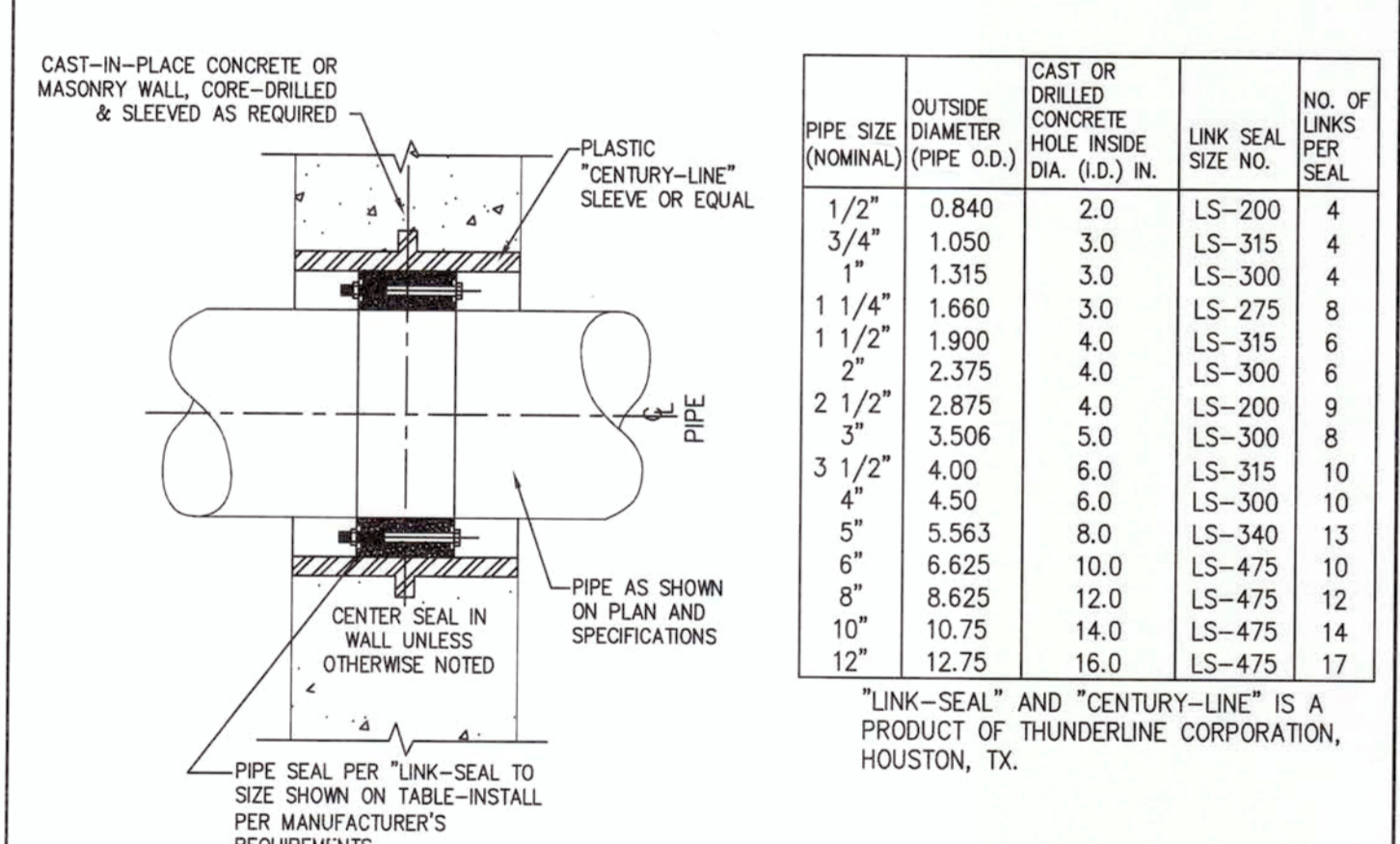
3" & SMALLER PIPE-TRENCH DETAIL
SCALE: NONE

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

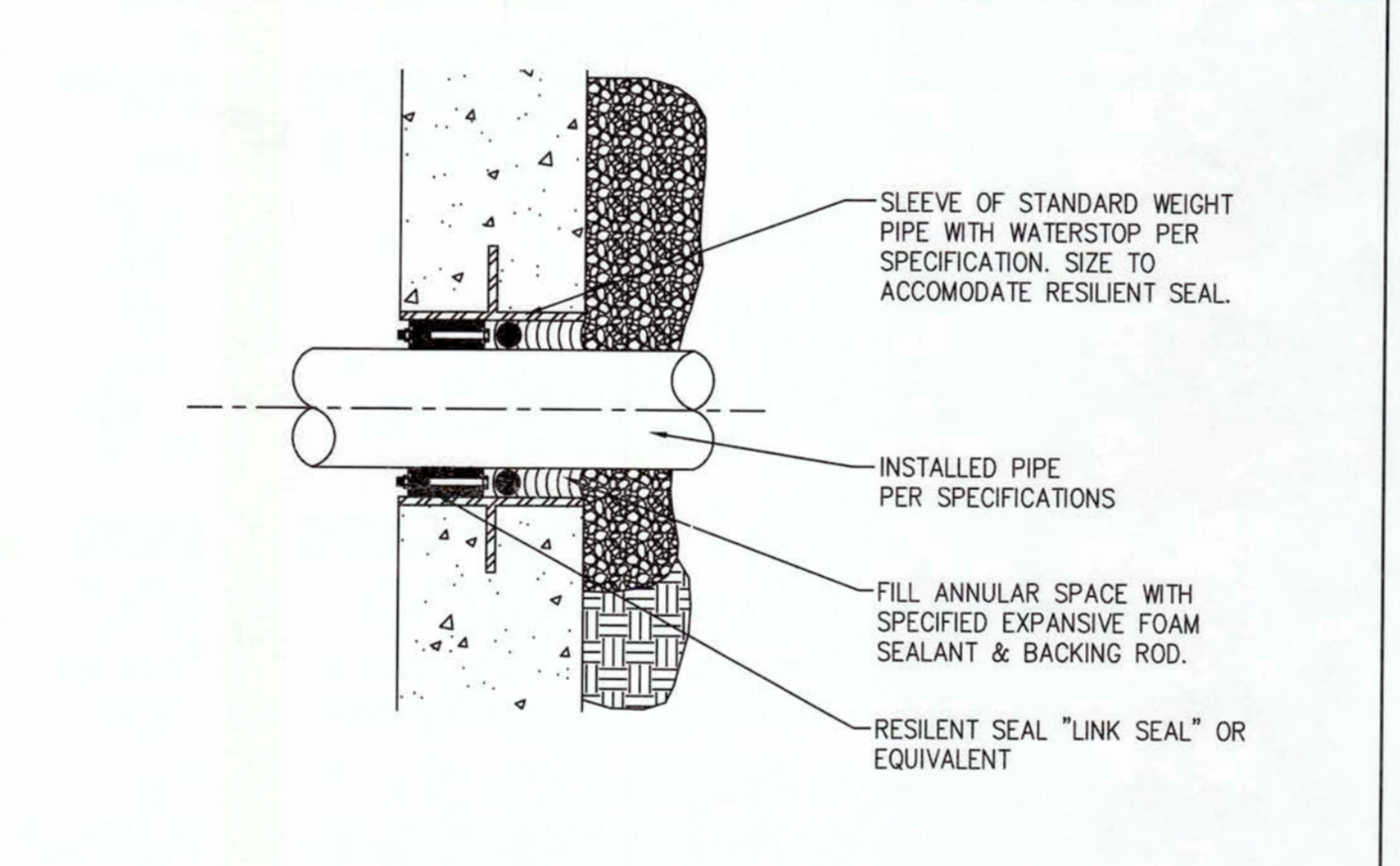


PIPE SEAL/SLEEVE SIZE TABLE
SCALE: NONE

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

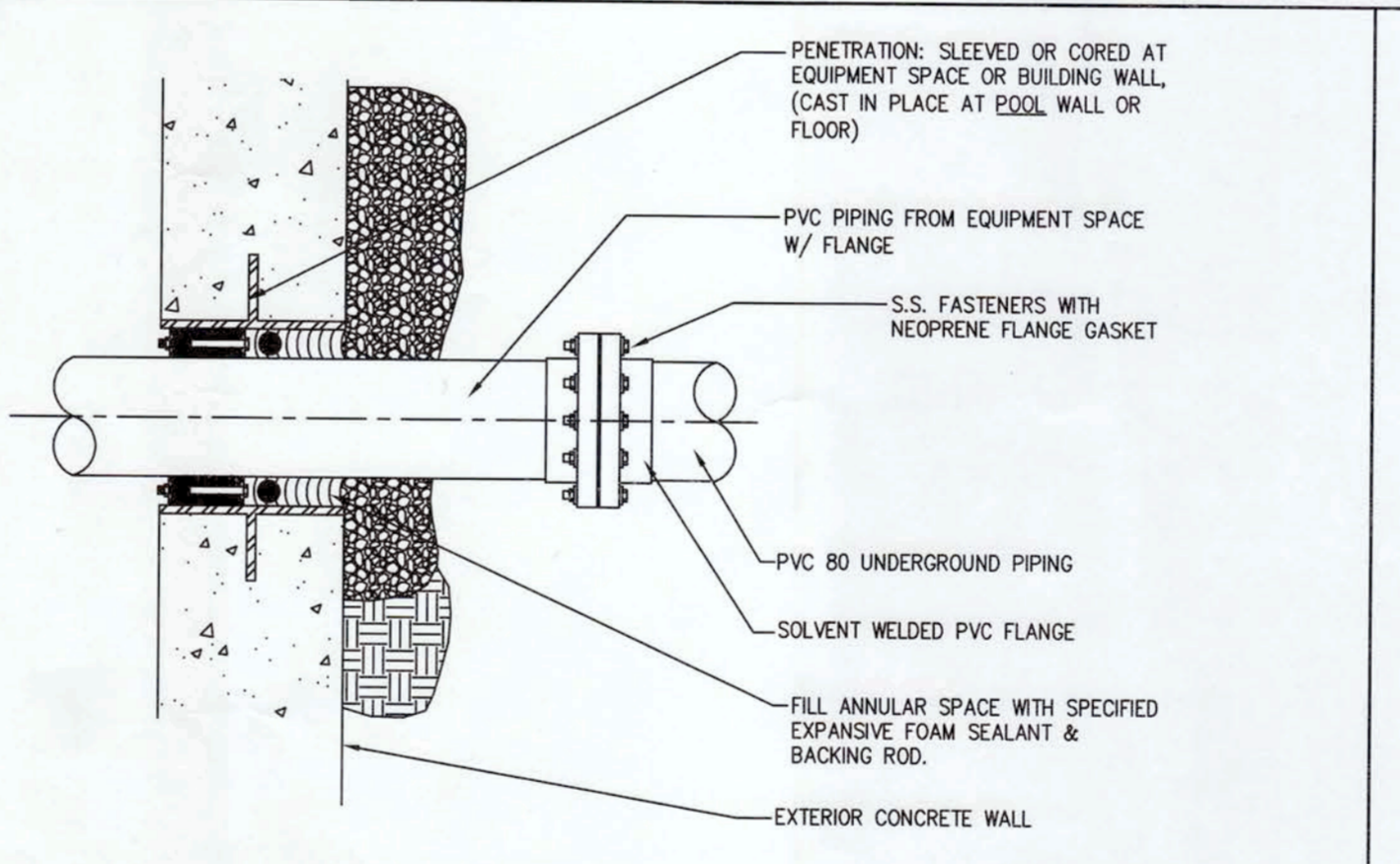
"LINK-SEAL" AND "CENTURY-LINE" IS A PRODUCT OF THUNDERLINE CORPORATION, HOUSTON, TX.

INSTALLATION DETAIL (TYP.)



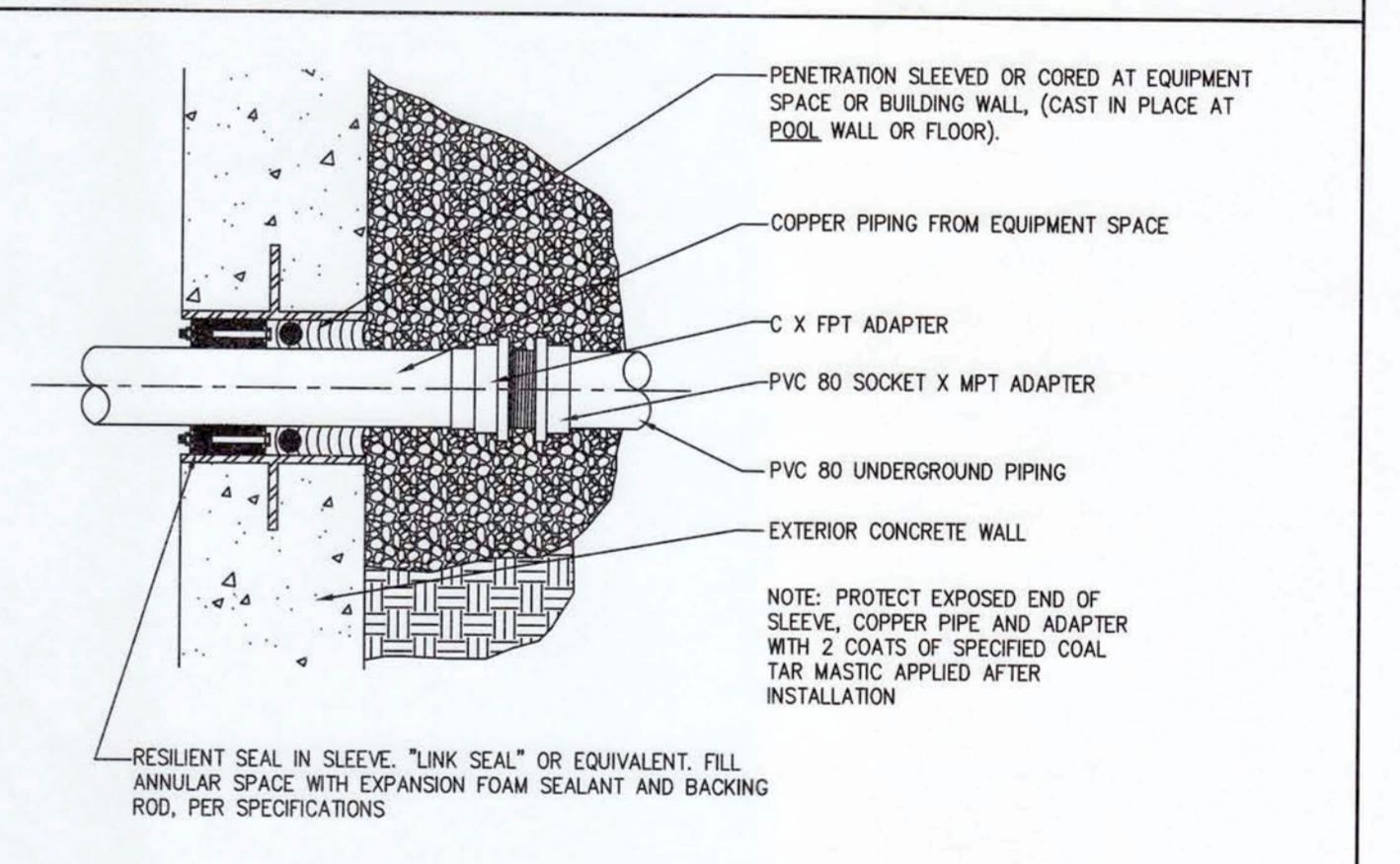
PENETRATION, SLEEVED (EXTERIOR WALL)
SCALE: NONE

INSTALLATION DETAIL (TYP.)



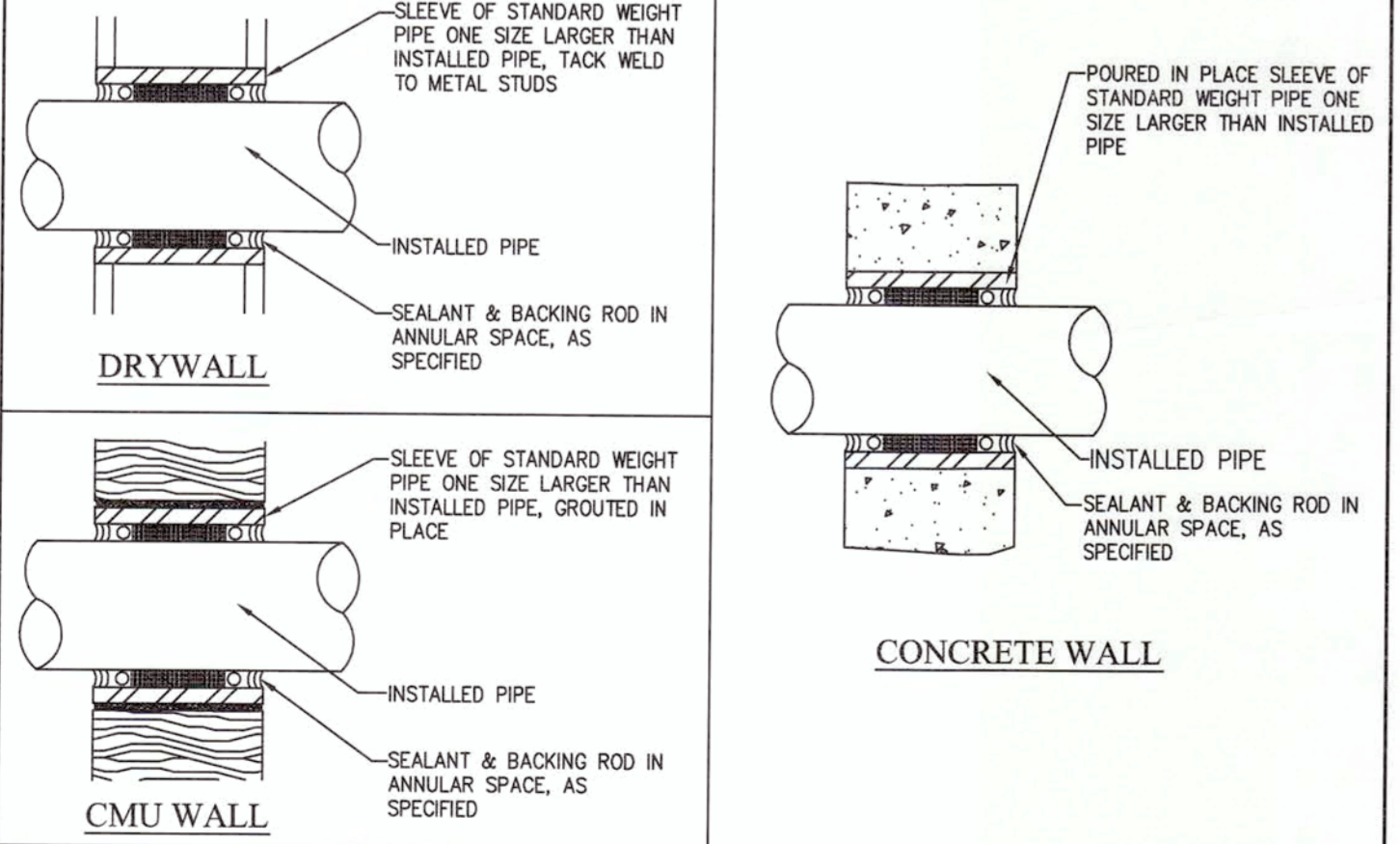
UNDERGROUND PVC PIPING TRANSITION
SCALE: NONE

INSTALLATION DETAIL (TYP.) (EXTERIOR WALL)



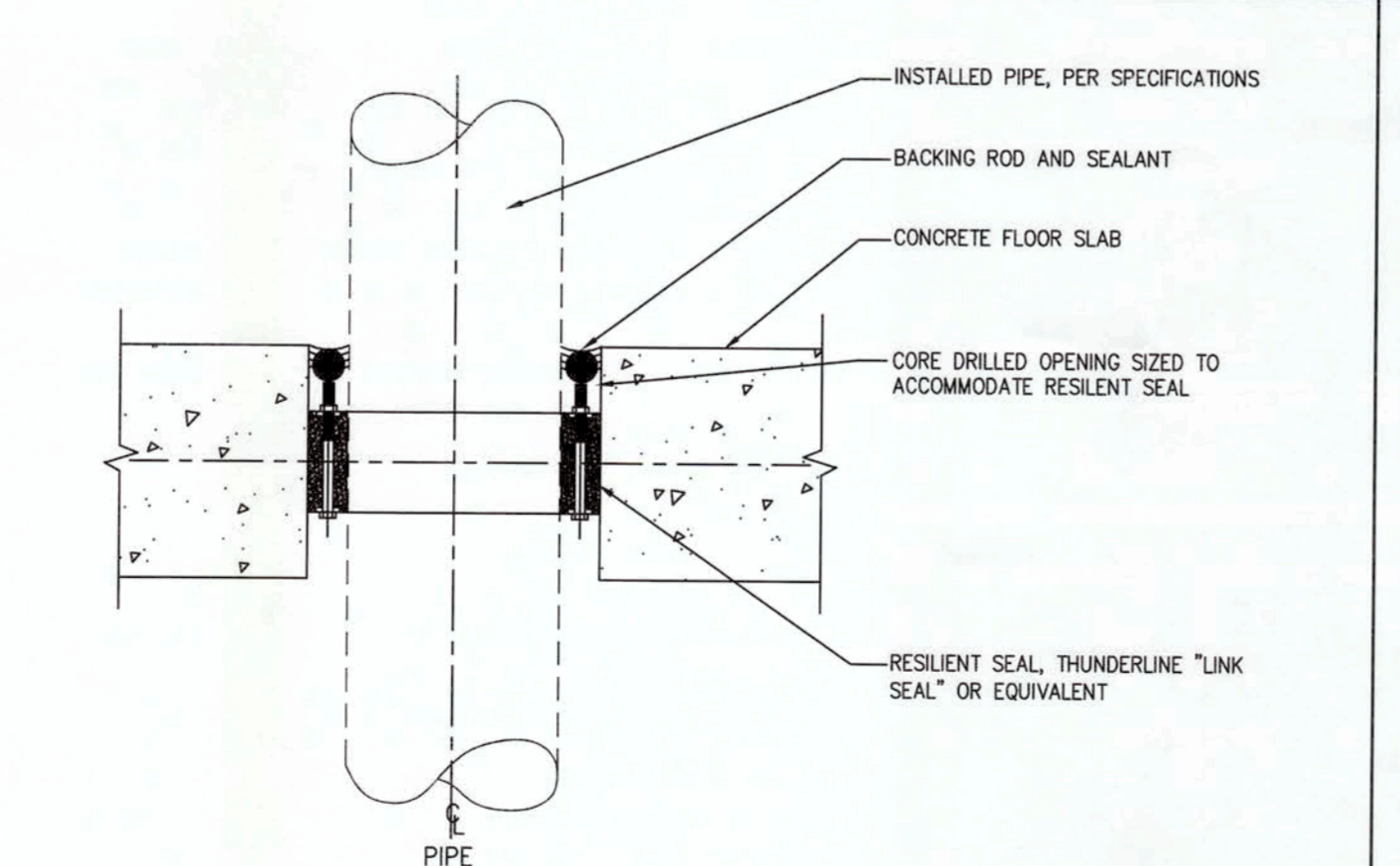
UNDERGROUND PIPING TRANSITION
SCALE: NONE

INSTALLATION DETAIL (TYP.) (THREADED)



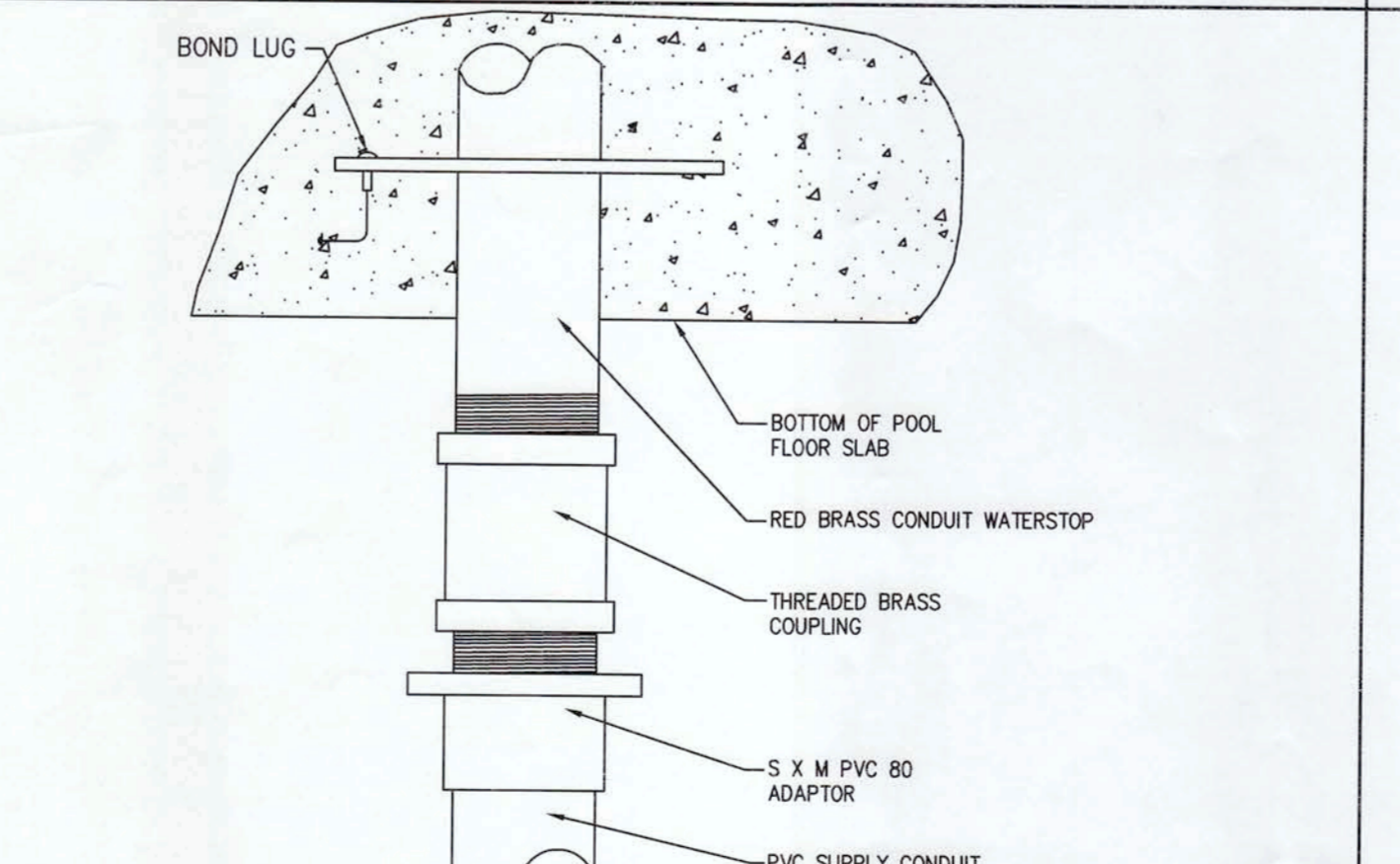
PENETRATION, SLEEVED (INTERIOR WALL OR FLOOR)
SCALE: NONE

INSTALLATION DETAIL (TYP.)



PENETRATION, CORE DRILLED
SCALE: NONE

INSTALLATION DETAIL (TYP.)



CONDUIT WATER STOP TRANSITION
SCALE: NONE

INSTALLATION DETAIL (TYP.)

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9471 MAR 25 13
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