



CONSOLIDATED TREATMENT SYSTEMS

1501 Commerce Center Dr.  
Franklin, OH 45005

937-746-2727

Fax: 937-746-1446

Field Sales  
937-550-2215

Customer Sales  
937-550-2222

Customer Relations  
937-550-2221

Production  
937-550-2213

Finance & Accounting  
937-550-2223

Enviro  
GUARD

MULTI-FLO



Over 35 Years of  
Reliable,  
Accountable,  
Professional Service

September 28, 2010

Allen Knapp, Onsite Program Manager  
Division of Onsite Sewage and Water Services  
Virginia Department of Health  
109 Governor St.  
Richmond, VA 23219

Dear Sir:

Subject: Multi-Flo FTB-Series Submittal in Accordance with GMP 147

Attached is additional information submitted in response to the email of September 21, 2010, submitted by Kemper Loyd of your staff. The information includes a completed application form, engineering data for the FTB-Series and an executed third-party contract. Specific details are provided below.

1. **Manufacturer Agreement.** CTS looks forward to executing a dated Manufacturer's Agreement upon approval of our submission. To this end, please find an attached third-party executed between CTS and 3-Engineering, LLC, an Virginia-based engineering firm. Bennette Burks will personally supervise the collection of samples for analysis at Virginia-certified testing laboratories.
2. **Multi-Flo Engineering Manual.** We are requesting approval for the Multi-Flo FTB-Series and the Enviro-Guard ENV-0.75. The FTB-Series consists of the FTB-0.5, 0.6, 0.75, 1.0, and 1., which have rated flows of 500, 600, 750, 1,000, and 1,500 gallons per day, respectively. The Enviro-Guard is a specific Multi-Flo configuration. The Enviro-Guard incorporates primary treatment, flow equalization, and a Multi-Flo FTB-0.75. The concepts in the Multi-Flo Engineering Manual are applicable to both the FTB-Series and ENV-0.75.
3. **Multi-Flo Performance Data.** Mr. Loyd is correct in that the *Multi-Flo Performance* document includes data that exceeds performance expected under GMP 147. Please keep in mind that this data was assembled over the past 30 years under conditions and using techniques over which CTS had no control and often no knowledge. The relative high performance speaks to the resilience of the FTB-Series. Most of the site probably received minimal service, perhaps only when a component failed. Samples may have been collected directly from the unit in violation of *Standard Methods* and/or CTS requirements for sample collection and analysis. Our experience is that systems that receive maintenance in conformance to our guidelines routinely produce effluents have effluent BOD and TSS less than 10 mg/L.

Allen Knapp, Onsite Program Manager  
Multi-Flo FTB-Series Submittal in Accordance with GMP 147  
September 28, 2010  
Page 2 of 2 Pages

4. Technical Plans and Specifications. Attached is additional information regarding the FTB-Series and ENV-0.75. Multi-Flo are relatively simple in design and construction.

Please feel free to contact either Mr. Burks or me if you require additional information. We appreciate your prompt attention to our submittal and look forward to a quick approval.

Sincerely,

A handwritten signature in black ink, appearing to read "Jeff Coomer", with a long horizontal flourish extending to the right.

Jeff Coomer  
Vice President  
Consolidated Treatment Systems, Inc

Attachments

Virginia Department of Health  
Office of Environmental Health Services



**Application Checklist**

**GMP 147 WASTEWATER TREATMENT TECHNOLOGY LISTING**

<http://www.vdh.virginia.gov/EnvironmentalHealth/Onsite/GMP/index.htm>

Please supply all requested information (form will expand as information is entered). Incomplete applications will be returned to the applicant.

Product Identification (Name and Model(s)): Multi-Flo FTB-0.5, FTB-0.75, FTB-1.0, FTB-1.5 and Enviro-Guard Env-0.75	
Is the Unit Generally Approved for Secondary Treatment in Virginia?: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Application Request (Check One): <input type="checkbox"/> Evaluation Completed – Required data set included (see GMP #147) <input checked="" type="checkbox"/> Evaluation Ongoing – Required data set not included	
<b>APPLICANT CONTACT INFORMATION</b> Name and Title: Jeff Coomer   Signature and Date: Sept. 28, 2010  Address: 1501 Commerce Center Drive, Franklin, OH 45005 Telephone: 937-746-2727 Email: Coomer@ConsolidatedTreatment.com	<b>CERTIFYING ENGINEER INFORMATION</b> Name: Bennette D. Burks Company Name: 3-Engineering, LLC  Address: 1605 Hanover Ave, Richmond, VA 23220-3525 Telephone: 804-873-5000 Email: Burks@3-Eng.com

**If you checked 'Evaluation Completed' above, please supply the following information.**

- Technical plans and specifications for the product(s) proposed for GMP 147 listing.
- Data set with completed statistics (minimum of 20 units sampled quarterly for one year). **Electronic submittal (Excel format) is required. All data must be submitted. Review GMP #147 for more information.**
- Discussion of data set validity, including data source(s), verification of independent 3<sup>rd</sup> party from residential units, sampling protocol, sample analytical methods, unit maintenance, justification for data exclusion, etc.
- Virginia-licensed P.E. certification that the unit is expected to comply with GMP 147 treatment standards.
- Operation and Maintenance (O&M) Manual. **Electronic submittal (PDF or Word format) is required.**
- Virginia-licensed P.E. certification that the O&M Manual accurately reflects the service and maintenance requirements of the product.

**If you checked 'Evaluation Ongoing' above, please supply the following information.**

- Technical plans and specifications for the product(s) proposed for GMP 147 listing.
- Signed VDH "Manufacturer Agreement – Memorandum of Understanding and Agreement," including a copy of the 3<sup>rd</sup> party contract for sample collection and analysis.
- If partial data set included, discussion of data set validity, including data source(s), verification of independent 3<sup>rd</sup> party from residential units, sampling protocol, sample analytical methods, unit maintenance, justification for data exclusion, etc.
- Operation and Maintenance (O&M) Manual. **Electronic submittal (PDF or Word format) is required.**
- Virginia-licensed P.E. certification that the O&M Manual accurately reflects the service and maintenance requirements of the product.
- Virginia-licensed P.E. certification that the unit is expected to comply with GMP 147 treatment standards.

**Submit completed form with all attachments to:**

Allen Knapp, Director  
Onsite Water and Sewage, Marina, and Engineering Programs  
Virginia Department of Health  
109 Governor Street, 5th Floor  
Richmond, Virginia 23219 ([Allen.Knapp@vdh.virginia.gov](mailto:Allen.Knapp@vdh.virginia.gov))

**Electronic submittals are encouraged; electronic data and O&M Manual submittals are required.**

# 3-ENGINEERING, LLC

1605 HANOVER AVENUE RICHMOND, VIRGINIA 23220-3525

804-873-5000-VOICE

804-353-3028-FAX

BURKS@3-ENG.COM-EMAIL

WWW.3-ENGINEERING.COM

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September 28, 2010

Jeff Coomer, Vice President  
Consolidated Treatment Systems, Inc.  
1501 Commerce Center Drive  
Franklin, OH 45005-1891

Dear Mr. Coomer:

Subject: Professional Engineering Services  
Virginia Department of Health GMP 147 Sampling and Analysis

**Project Title:** GMP 147

## Scope of Work:

The scope of work for this project are professional engineer activities required under GMP 147, issued by the Virginia Department of Health (VDH). These activities include, but are not limited, to:

- Certification that the Multi-Flo FTB-Series and Enviro-Guard ENV-0.75 can be expected to produce effluent likely to meet treatment expectations identified in the GMP;
- Certification that the operation and maintenance activities accurately reflect the servicing and maintenance activities of the Multi-Flo FTB-Series and Enviro-Guard ENV-0.75;
- Supervision of Sample Collection and analysis for 20 installations. Sampling will be conducted quarterly for 12 months and include BOD<sub>5</sub>, TSS, and fecal coliform. The complete and entire data set will be submitted to the VDH.

## Standards of Performance:

1. A schedule of dates and locations will be established for collecting samples. Sampling will proceed in accordance with the schedule.

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### CERTIFICATE OF AUTHORIZATION

FLORIDA: 27166  
NEW YORK 0006137  
OHIO 03135  
SOUTH CAROLINA: 3536  
VIRGINIA: 0407 004914

### PROFESSIONAL ENGINEER

FLORIDA: 56240  
MARYLAND: 34767  
NEW YORK: 76692  
OHIO: 65162  
SOUTH CAROLINA: 25720  
VIRGINIA: 38597  
WISCONSIN: 26990

2. Samples will be collected from sampling ports and transported to certified laboratories, both in conformance to *Standard Methods for the Examination of Water and Wastewater*. Wastewater analyses will be conducted on effluent BOD<sub>5</sub>, TSS, and fecal coliform.
3. The standard of care for services will be the care and skill ordinarily used in professional engineering practiced under current circumstances and in the Commonwealth of Virginia.

**Schedule and Activities:**

The Engineer proposes to commence activities upon approval of the contract. Activities will continue until the data set is complete, submitted to the VDH, and a final decision received.

Sincerely,



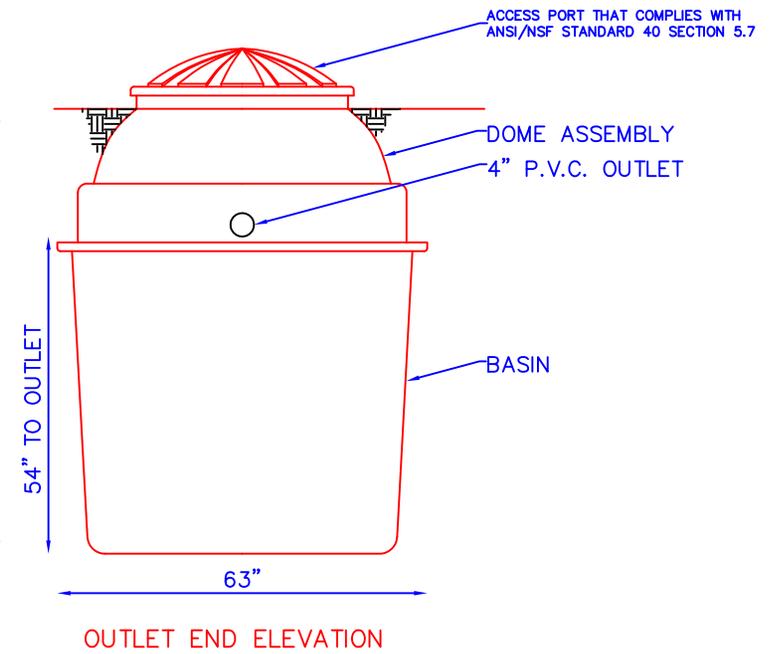
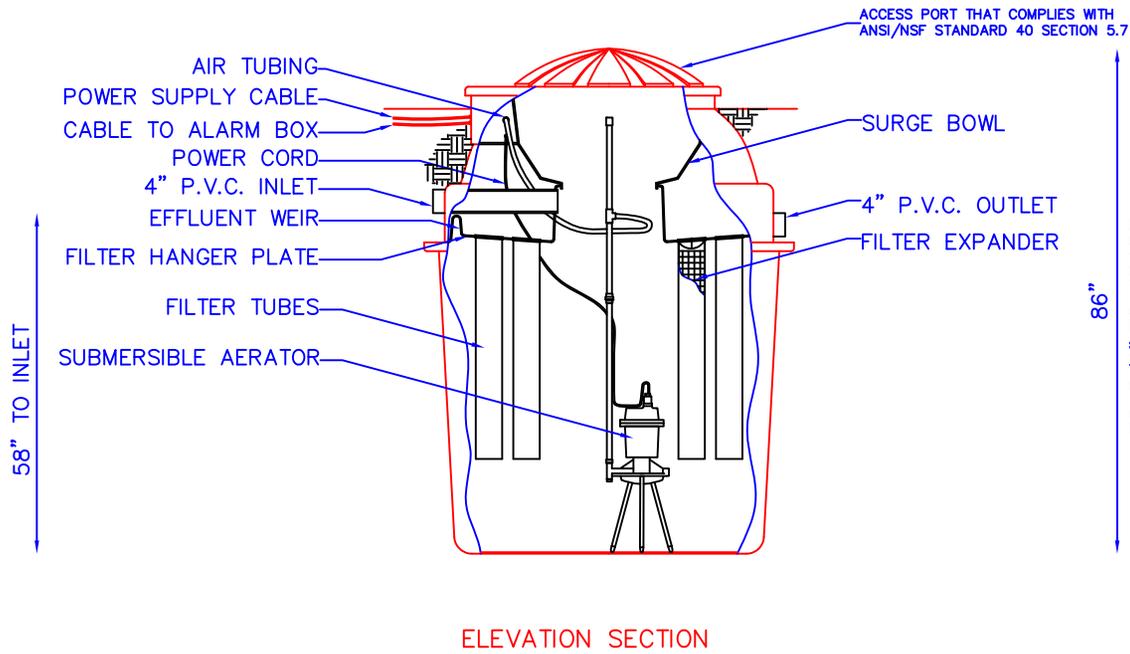
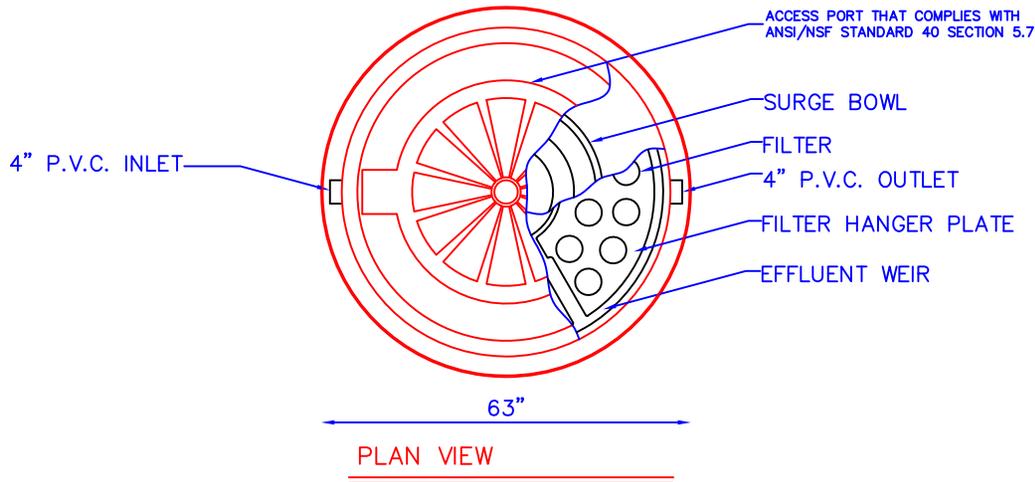
Bennette D. Burks, P.E.  
Principal

ACCEPTED BY CLIENT:



Jeff Coomer

Date: September 28, 2010



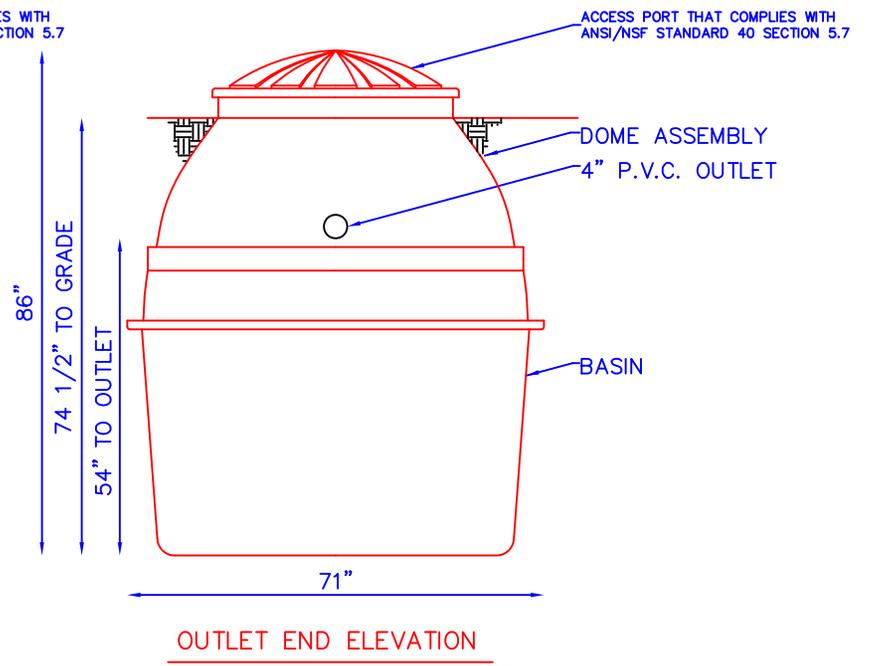
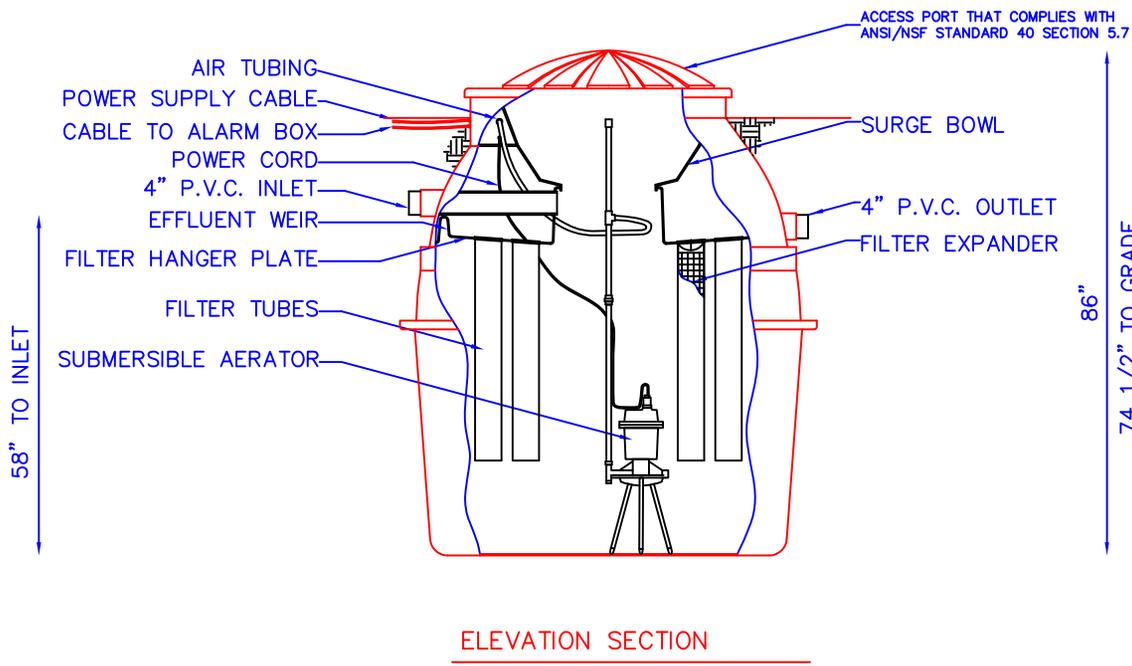
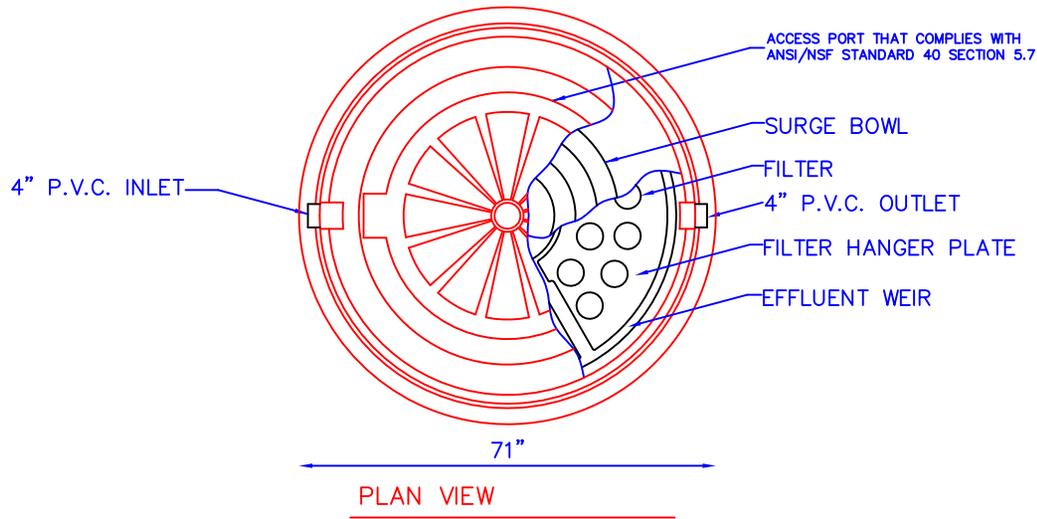
## MULTI-FLO FTB-0.5

Date:  
02/26/2009

Drawn By:  
BDB

Scale:  
NONE

CONSOLIDATED TREATMENT SYSTEMS, INC.  
1501 COMMERCE CENTER DRIVE  
FRANKLIN, OH 45005-1891  
1-937-746-2727      www.multi-flo.com



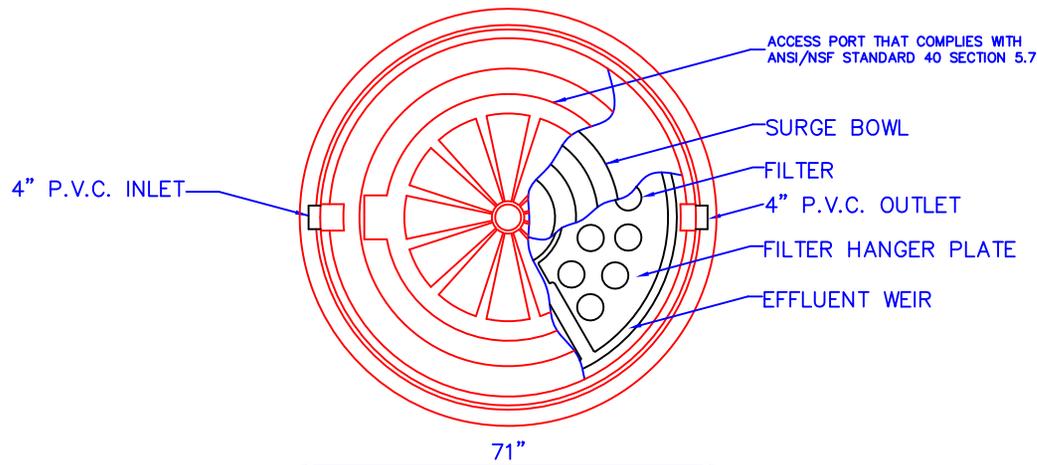
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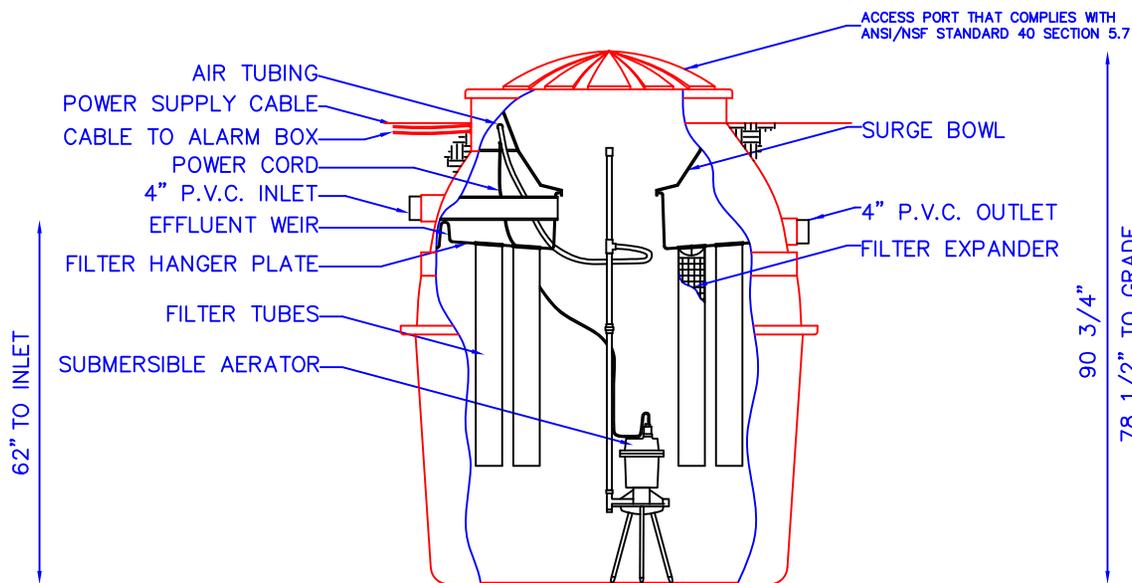
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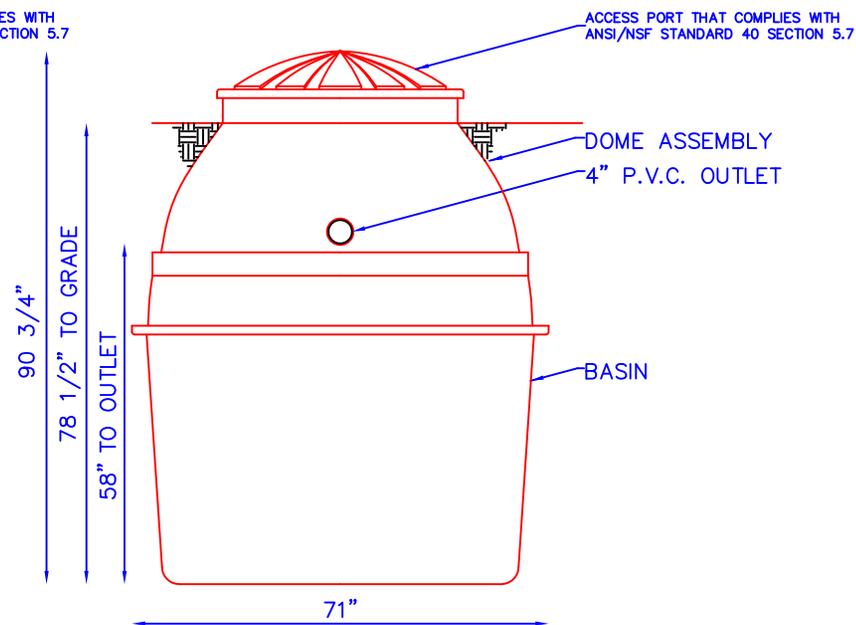
CONSOLIDATED TREATMENT SYSTEMS, INC.  
1501 COMMERCE CENTER DRIVE  
FRANKLIN, OH 45005-1891  
1-937-746-2727      www.multi-flo.com



PLAN VIEW



ELEVATION SECTION



OUTLET END ELEVATION

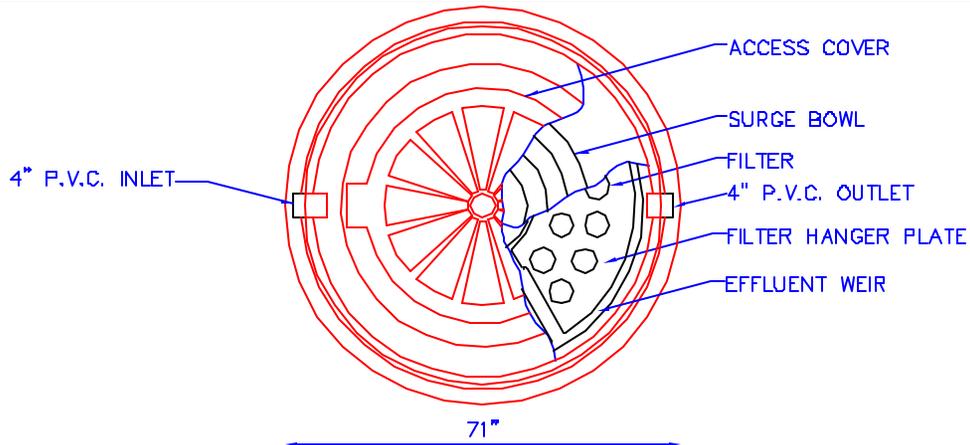
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Date:  
02/26/2009

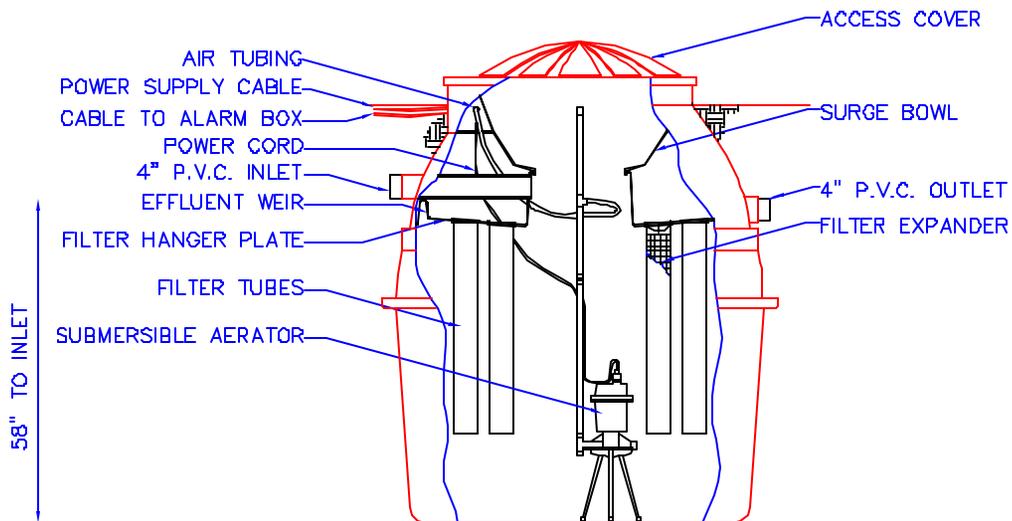
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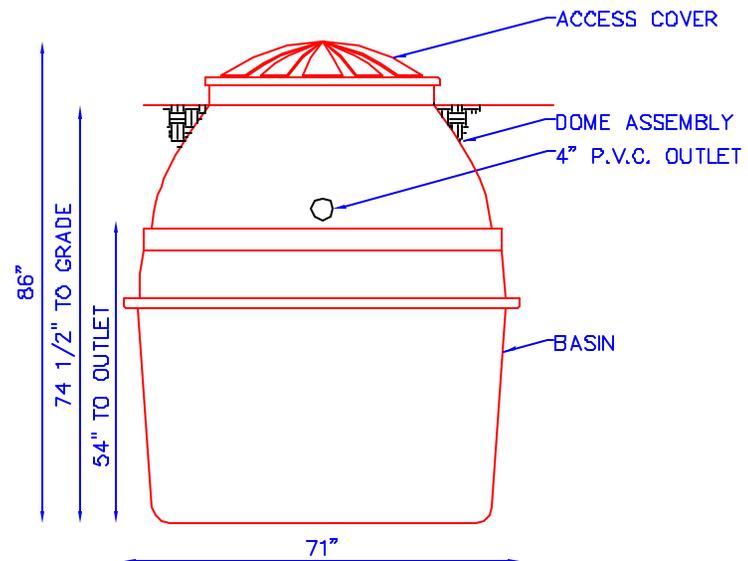
CONSOLIDATED TREATMENT SYSTEMS, INC.  
1501 COMMERCE CENTER DRIVE  
FRANKLIN, OH 45005-1891  
1-937-746-2727      www.multi-flo.com



PLAN VIEW



ELEVATION SECTION

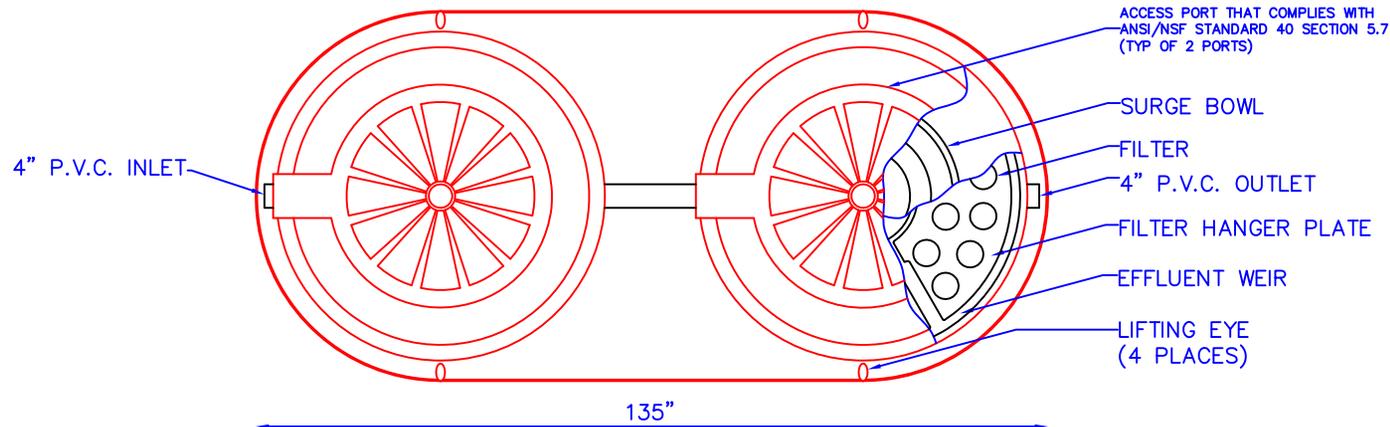


OUTLET END ELEVATION

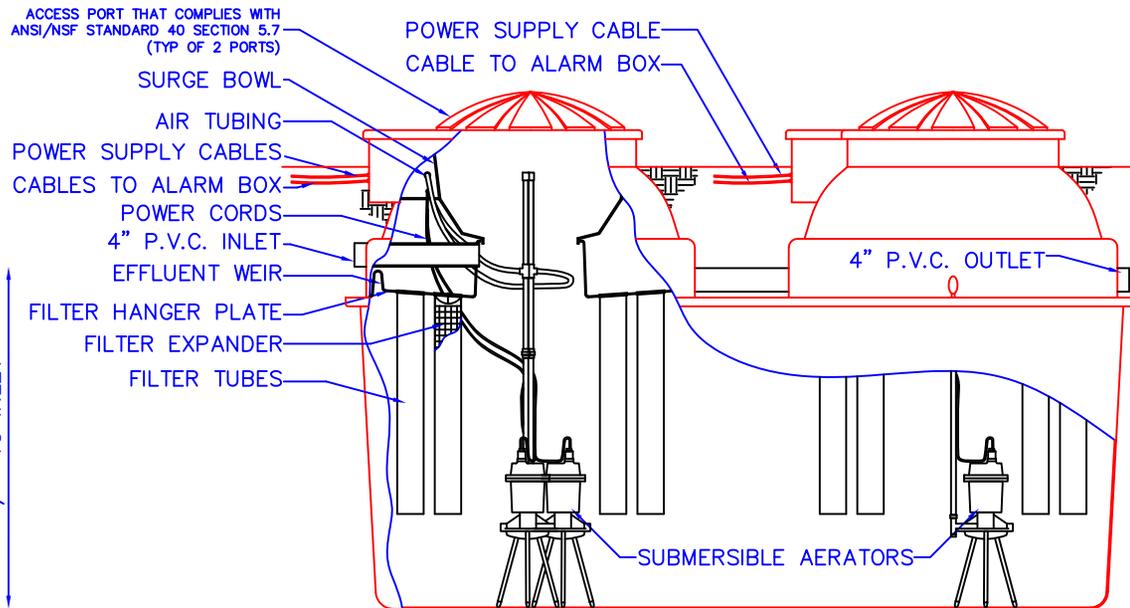
**MULTI-FLO FTB 0.6 VERSION 1.0**

Date:  
10/27/2005  
Drawn By:  
BDB  
Scale:  
N.T.S.

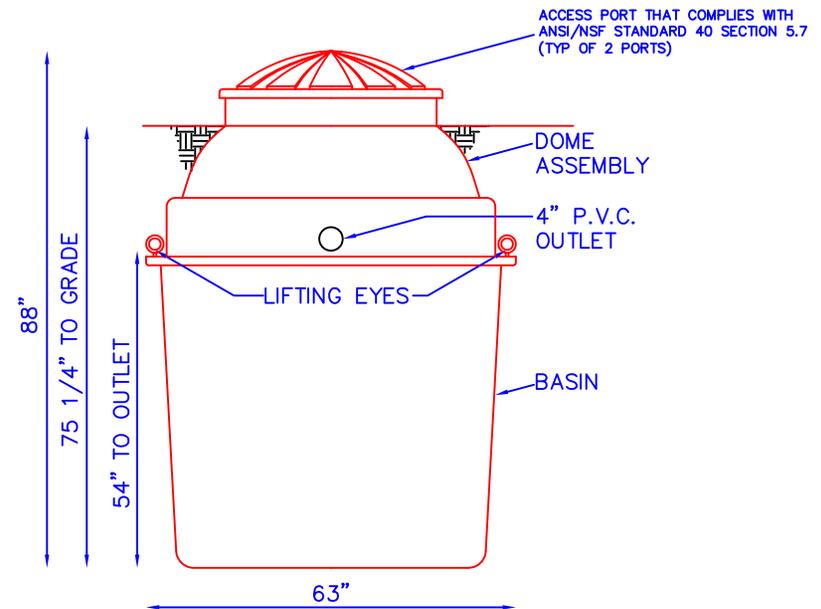
**Consolidated Treatment Systems, Inc.**  
1501 Commerce Center Drive, Franklin, OH 45005-1891  
1-800-416-0324      www.nayadic.com  
Bennete D. Burks, P.E.



PLAN VIEW



ELEVATION SECTION

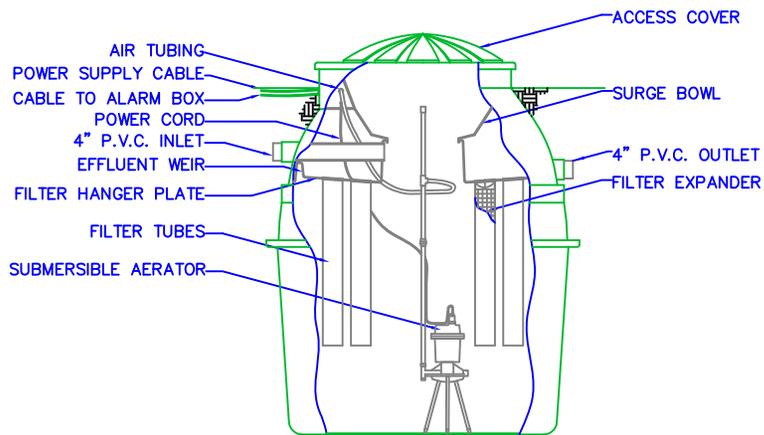
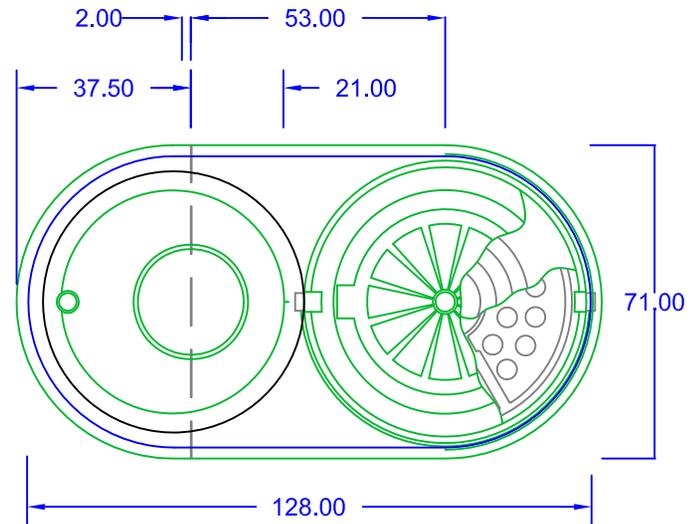
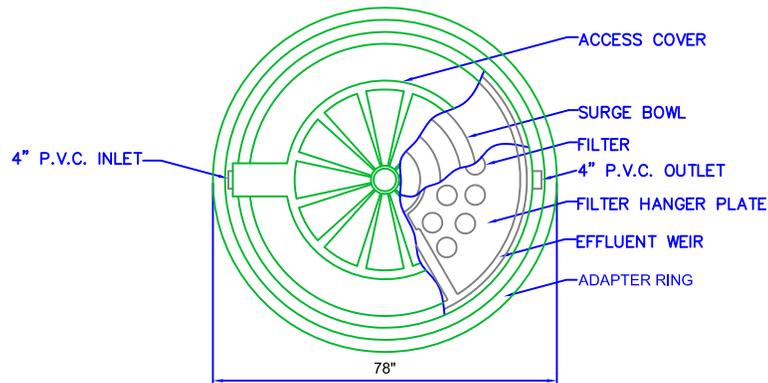


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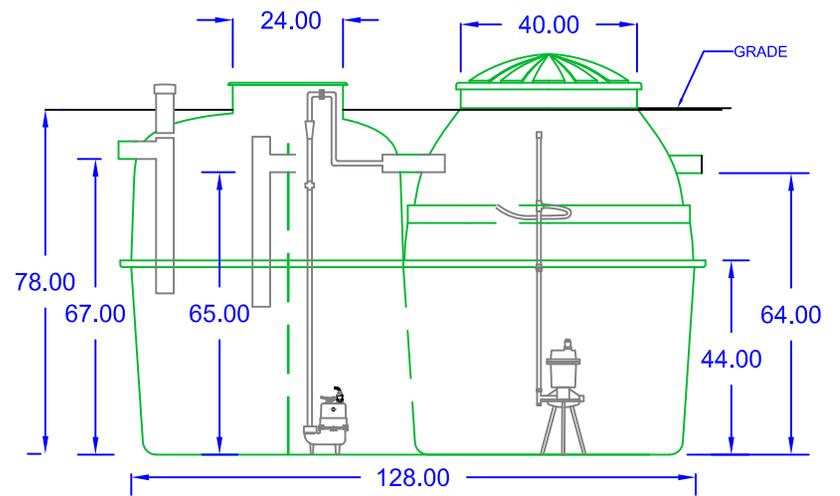
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Date:  
02/26/2009  
Drawn By:  
BDB  
Scale:  
NONE

CONSOLIDATED TREATMENT SYSTEMS, INC.  
1501 COMMERCE CENTER DRIVE  
FRANKLIN, OH 45005-1891  
1-937-746-2727      www.multi-flo.com



TREATMENT TANK DETAILS



525-GAL TRASH TANK  
 610-GAL DOSE TANK  
 750-GPD TREATMENT TANK

## ENVIRO-GUARD ENV-0.75

Date:  
07/19/2007  
 Drawn By:  
BDB  
 Scale:  
NONE

CONSOLIDATED TREATMENT SYSTEMS, INC.  
 1501 COMMERCE CENTER DRIVE  
 FRANKLIN, OH 45005-1891  
 1-937-746-2727      www.multi-flo.com

## MULTI-FLO AND ENVIRO-GUARD MATERIAL AND COMPONENT SPECIFICATIONS

### Tank:

Polyester Laminated FRP A-610, or equal, with over 33 percent glass content, Owens Corning fiberglass 825-DA-211, producing cured properties as follows:

<i>Flexural Strength:</i>	<i>36,350 PSI</i>
<i>Flexural Modulus:</i>	<i>1.49 X 106 PSI</i>
<i>Tensile Strength:</i>	<i>16,210 PSI</i>
<i>Heat Distortion Temperature:</i>	<i>183°F</i>
<i>Nominal Thickness:</i>	<i>3/16 in+ 1/16 in -0 in</i>

### Filtration Media:

11-ounce polyester felt having a nominal filtration of 100-micron and an air permeability of 400 cfm

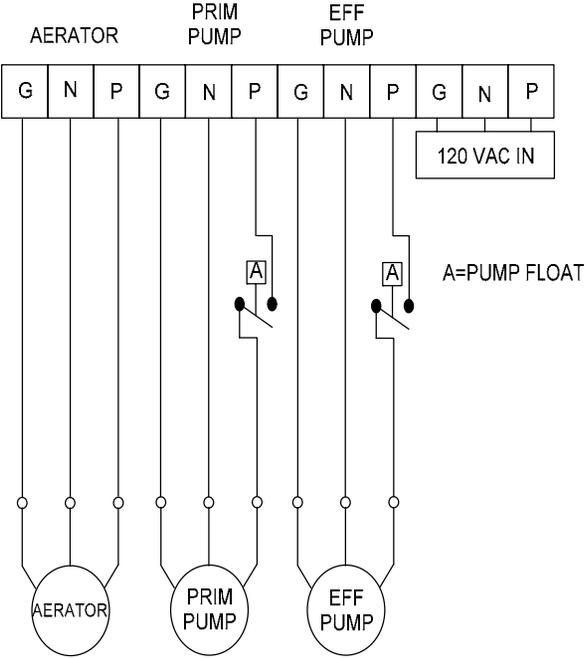
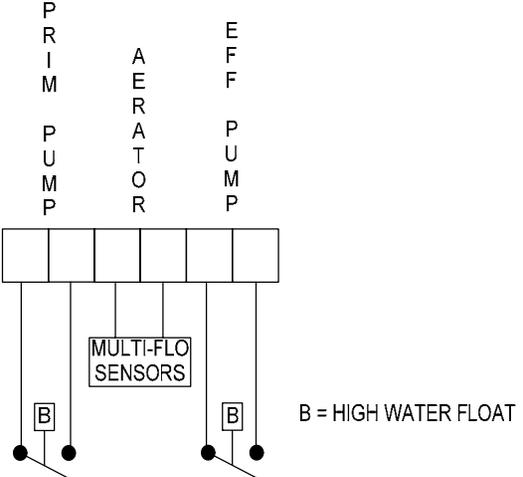
### Aeration:

Submerged open impeller aerator with a nominal rating of 1/6 hp drawing no more than 2 A during operation. The aerator shall be rated for continuous operation.

## MULTI-FLO AND ENVIRO-GUARD SPECIFICATIONS

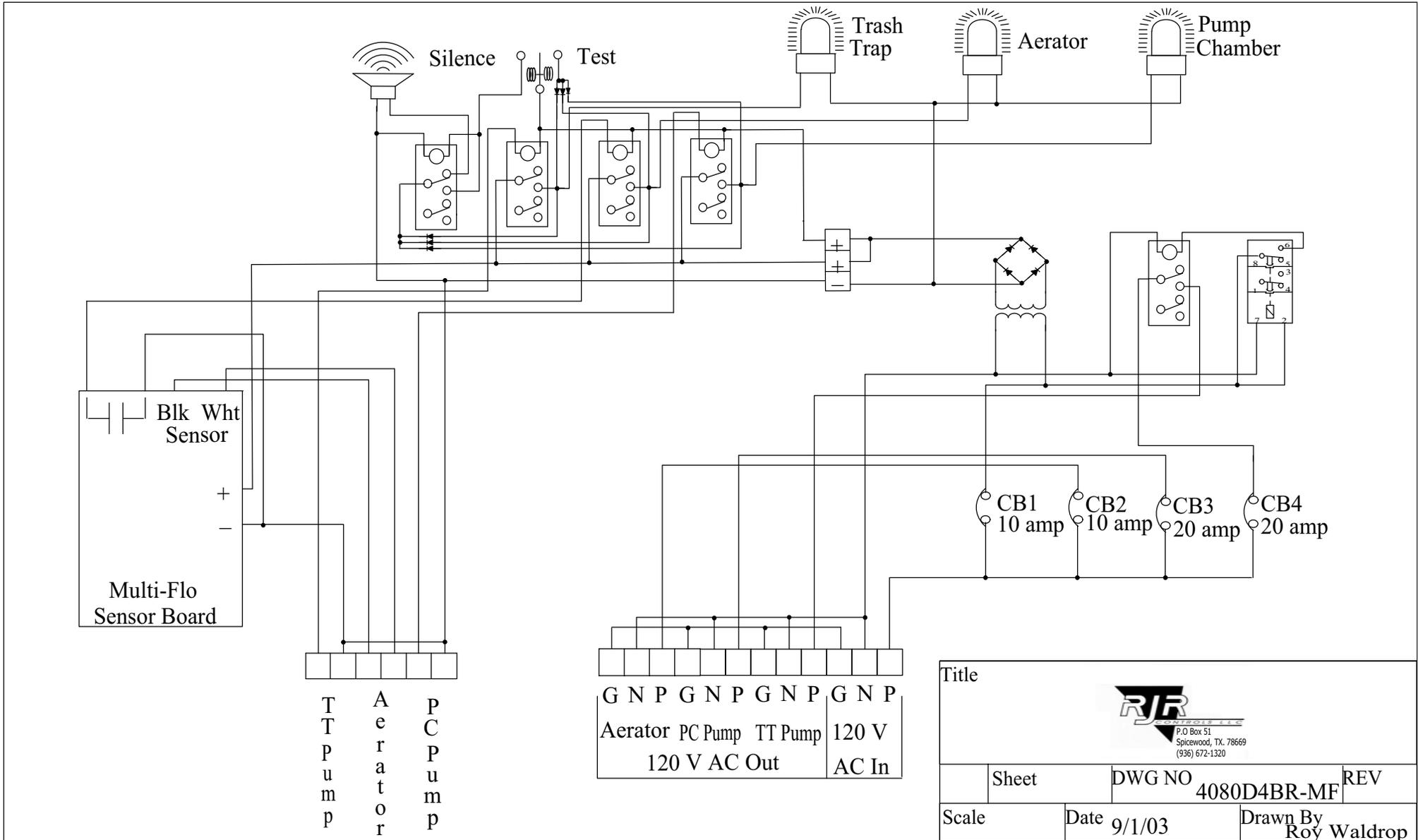
Date: 02/26/2009	CONSOLIDATED TREATMENT SYSTEMS, INC. 1501 COMMERCE CENTER DRIVE FRANKLIN, OH 45005-1891 1-937-746-2727      www.multi-flo.com
Drawn By: BDB	
Scale: NONE	

# MULTI-FLO CONTROL PANEL SCHEMATIC

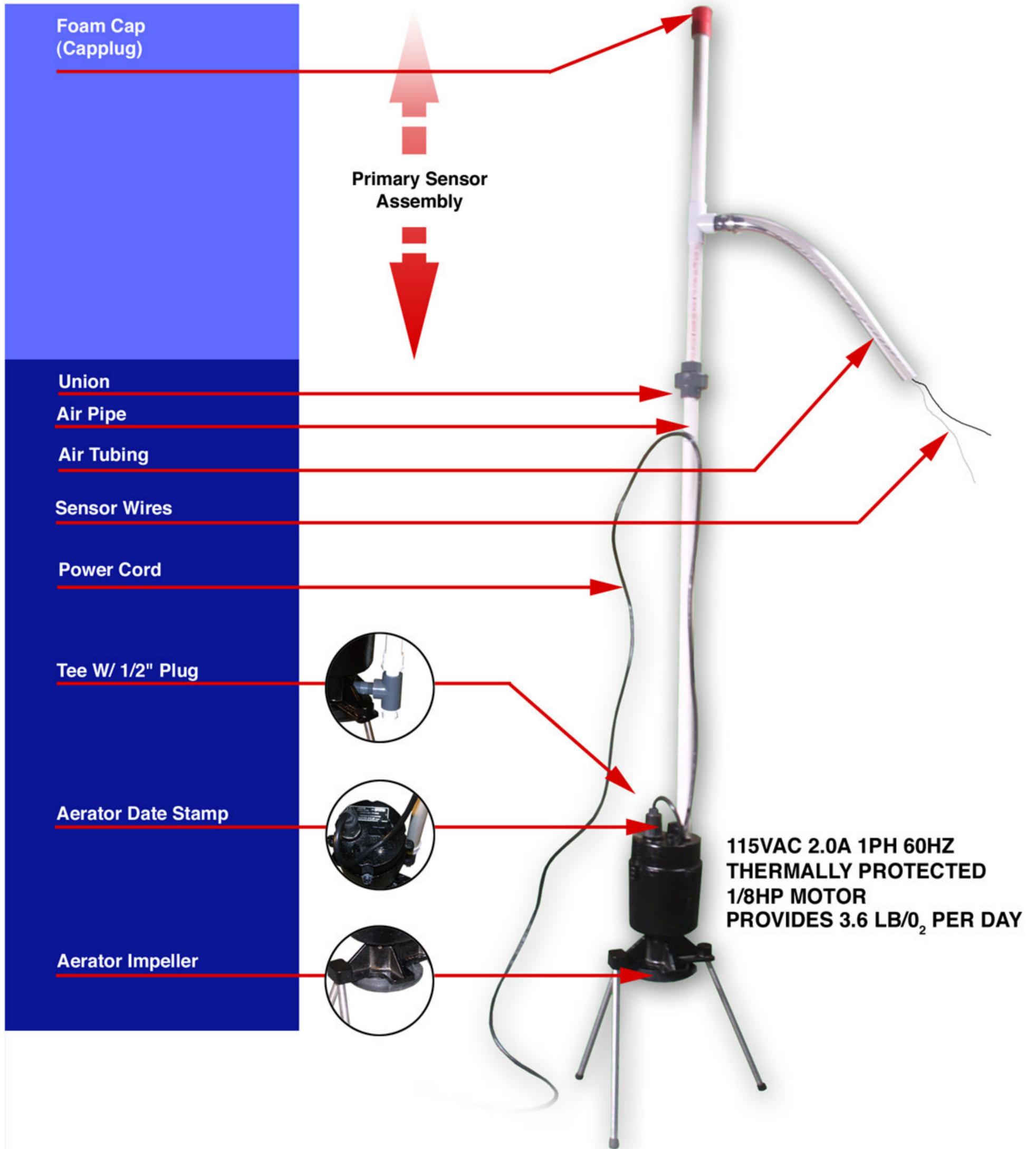


		TITLE	
		4080D4B-MF	
SIZE	CAGE CODE	DWG NO	REV
A2		021407RW-FW	2

# ENVIRO-GUARD CONTROL PANEL



 P.O. Box 51 Spicewood, TX. 78669 (936) 672-1320			
Title		REV	
Sheet	DWG NO	4080D4BR-MF	
Scale	Date	9/1/03	
		Drawn By Roy Waldrop	



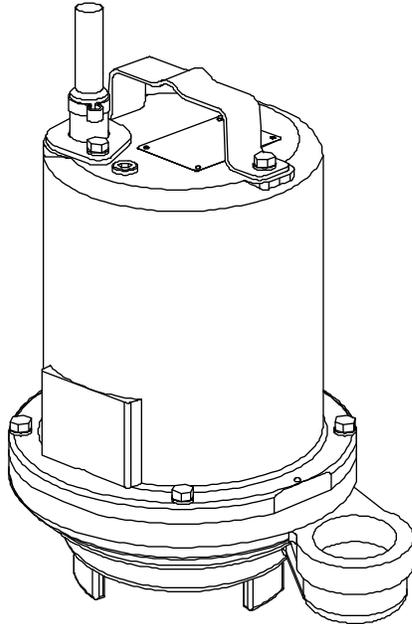
Manufactured by:  
Consolidated Treatment Systems, Inc.  
1501 Commerce Center Dr. • Franklin, Ohio 45005  
937-746-2727 • [www.consolidatedtreatment.com](http://www.consolidatedtreatment.com)

# BARNES<sup>®</sup> STEP-SS

## SUBMERSIBLE EFFLUENT PUMPS

### 3/4" Spherical Solids Handling Single Seal

SECTION	3A
PAGE	1
DATE	11/02
REPLACES	3/02



**Series: STEP .5 & 1.0 HP  
3450 RPM**



CSA 108 - File No. LR16567  
UL 778

NRTLIC

### Description:

PUMP IS DESIGNED FOR HANDLING SEWAGE EFFLUENT IN TYPICAL SEPTIC TANK/EFFLUENT APPLICATIONS.

[Sample Specifications: Section 3 Page 2.](#)

### Specifications:

<b>DISCHARGE:</b>	2" NPT, Vertical
<b>LIQUID TEMPERATURE:</b>	104°F (40°C) Continuous.
<b>VOLUTE:</b>	Cast Iron ASTM A-48, Class 30.
<b>MOTOR HOUSING:</b>	Cast Iron ASTM A-48, Class 30.
<b>SEAL PLATE:</b>	Cast Iron ASTM A-48, Class 30.
<b>IMPELLER:</b>	<i>Design:</i> Single Vane, Enclosed. <i>Material:</i> Polypropylene with Threaded 300 Series Stainless Steel Insert, Dynamically Balanced, ISO G6.3.
<b>SHAFT:</b>	416 Stainless Steel
<b>SQUARE RINGS:</b>	Buna-N
<b>HARDWARE:</b>	300 Series Stainless Steel
<b>PAINT:</b>	Air Dry Enamel.
<b>SEAL:</b>	<i>Design:</i> Single Mechanical. <i>Material:</i> Rotating Face - Carbon Stationary Face - Ceramic Elastomer - Buna-N
<b>CABLE ENTRY:</b>	Hardware - 300 Series Stainless 15 ft. (4.5M) Cord. Plug on 120 Volt & 240 Volt 1 Phase. Quick Connect, Custom Molded For Sealing And Strain Relief.
<b>SPEED:</b>	3450 RPM (Nominal).
<b>UPPER BEARING:</b>	<i>Design:</i> Single Row, Ball <i>Lubrication:</i> Oil <i>Load:</i> Radial
<b>LOWER BEARING:</b>	<i>Design:</i> Single Row, Ball <i>Lubrication:</i> Oil <i>Load:</i> Radial & Thrust
<b>MOTOR:</b>	<i>Design:</i> NEMA L-Single Phase, NEMA B-Three Phase Torque Curve. Completely Oil-Filled, Squirrel Cage Induction. <i>Insulation:</i> Class B
<b>SINGLE PHASE:</b>	Permanent Split Capacitor (PSC). Includes Overload Protection In Motor.
<b>THREE PHASE:</b>	200-240/480 is Tri Voltage motor. 600V. Requires Overload Protection to be Included in Control Panel.
<b>FLOAT, AUTOMATIC MODELS:</b>	A - Wide Angle, PVC Mechanical, 15 Ft. (4.6M) Cable with Piggy-Back Plug, Pipe Mounted
<b>OPTIONAL EQUIPMENT:</b>	Seal Materials, Impeller Trims, N/C Temperature Sensor with Cable for 3 Phase Pumps (Requires Relay in Control Panel), Additional Cable.

**CRANE**<sup>®</sup>

A Crane Co. Company

**PUMPS & SYSTEMS**

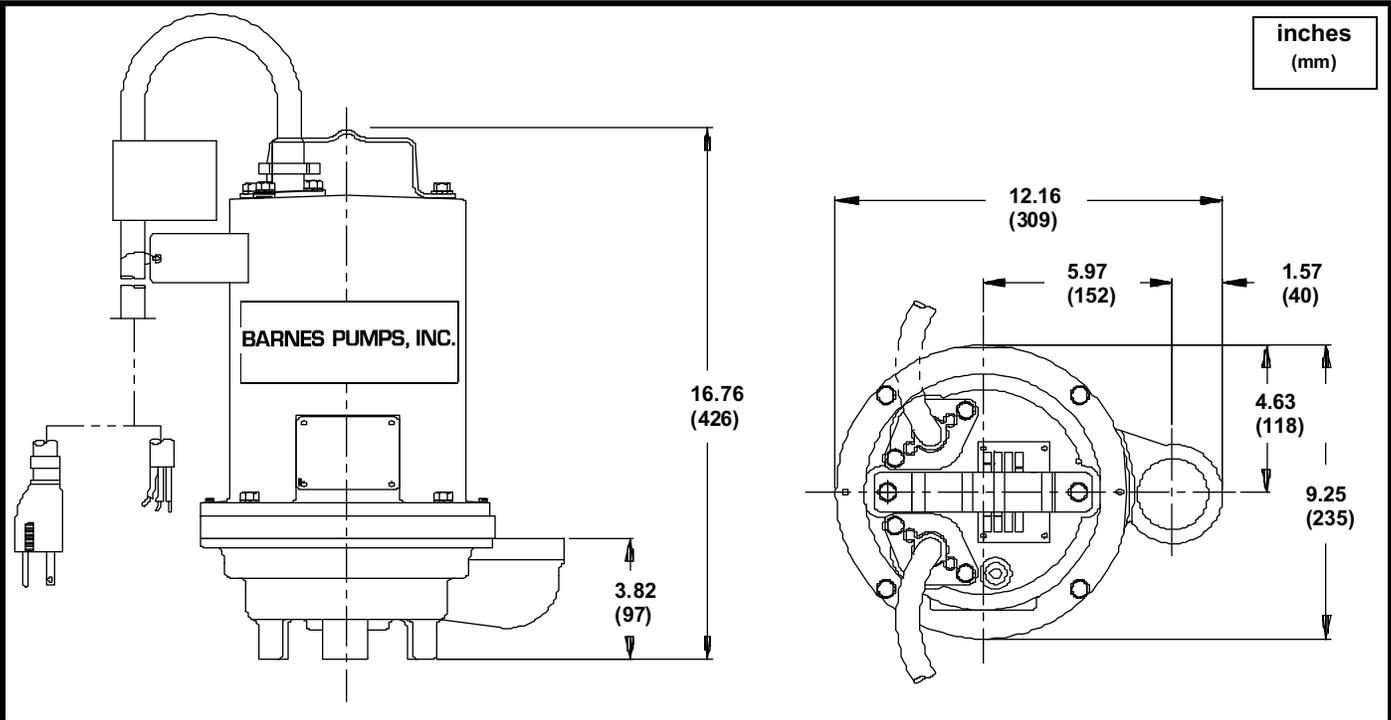
1485 Lexington Ave.  
Mansfield, Ohio 44907-2674  
Ph: (937) 778-8947  
Fax: (419) 774-1530  
www.barnespumps.com

420 Third Street/P.O. Box 603  
Piqua, Ohio 45356-0603  
Ph: (937) 778-8947  
Fax: (937) 773-7157  
www.cranepumps.com

83 West Drive  
Brampton, Ontario  
Canada L6T 2J6  
Ph: (905) 457-6223  
Fax: (905) 457-2650

Submersible Wastewater  
Pump Association  
**SWPA**  
MEMBER

SECTION	3A
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DATE	11/02
REPLACES	3/02



MODEL NO.	PART NO.	HP	VOLT	PH	RPM (NOM)	NEMA START CODE	FULL LOAD AMPS	LOCKED ROTOR AMPS	CORD SIZE	CORD TYPE	CORD O.D.
STEP512SS	105045	0.5	120	1	3450	G	11.9	24.6	14/3	SJTOW	0.375
STEP512SSA	105045A	0.5	120	1	3450	G	11.9	24.6	14/3	SJTOW	0.375
STEP522SS	105046	0.5	240	1	3450	E	5.1	10.2	14/3	SOW	0.530
STEP592SS	105047	0.5	200/240	3	3450	P/R	4.5/4.5	19.9/18.4	14/4	SOW	0.570
STEP542SS	105048	0.5	480	3	3450	R	2.2	9.1	14/4	SOW	0.570
STEP552SS	105049	0.5	600	3	3450	T	1.8	8.7	14/4	SOW	0.570
STEP1022SS	105054	1.0	240	1	3450	F	8.3	21.8	14/3	SOW	0.530
STEP1022SSA	105054B	1.0	240	1	3450	F	8.3	21.8	14/3	SOW	0.530
STEP1092SS	105055	1.0	200/240	3	3450	H/J	5.9/5.6	19.9/18.4	14/4	SOW	0.570
STEP1042SS	105056	1.0	480	3	3450	J	2.8	9.1	14/4	SOW	0.570
STEP1052SS	105057	1.0	600	3	3450	L	2.2	8.7	14/4	SOW	0.570

Optional - Temperature sensor cable for 3 phase models is 14/3 SOW, .530 O.D.

**IMPORTANT !**

- 1.) PUMP MAY BE OPERATED "DRY" FOR EXTENDED PERIODS WITHOUT DAMAGE TO MOTOR AND/OR SEALS.
- 2.) THIS PUMP IS APPROPRIATE FOR THOSE APPLICATIONS SPECIFIED AS CLASS I DIVISION II HAZARDOUS LOCATIONS.
- 3.) THIS PUMP IS **NOT** APPROPRIATE FOR THOSE APPLICATIONS SPECIFIED AS CLASS I DIVISION I HAZARDOUS LOCATIONS.
- 4.) INSTALLATIONS SUCH AS DECORATIVE FOUNTAINS OR WATER FEATURES PROVIDED FOR VISUAL ENJOYMENT MUST BE INSTALLED IN ACCORDANCE WITH THE NATIONAL ELECTRIC CODE ANSI/NFPA 70 AND/OR THE AUTHORITY HAVING JURISDICTION. THIS PUMP IS NOT INTENDED FOR USE IN SWIMMING POOLS, RECREATIONAL WATER PARKS, OR INSTALLATIONS IN WHICH HUMAN CONTACT WITH PUMPED MEDIA IS A COMMON OCCURRENCE.



**PUMPS & SYSTEMS**

A Crane Co. Company

1485 Lexington Ave.  
Mansfield, Ohio 44907-2674  
Ph: (937) 778-8947  
Fax: (419) 774-1530  
www.barnespumps.com

420 Third Street/P.O. Box 603  
Piqua, Ohio 45356-0603  
Ph: (937) 778-8947  
Fax: (937) 773-7157  
www.cranepumps.com

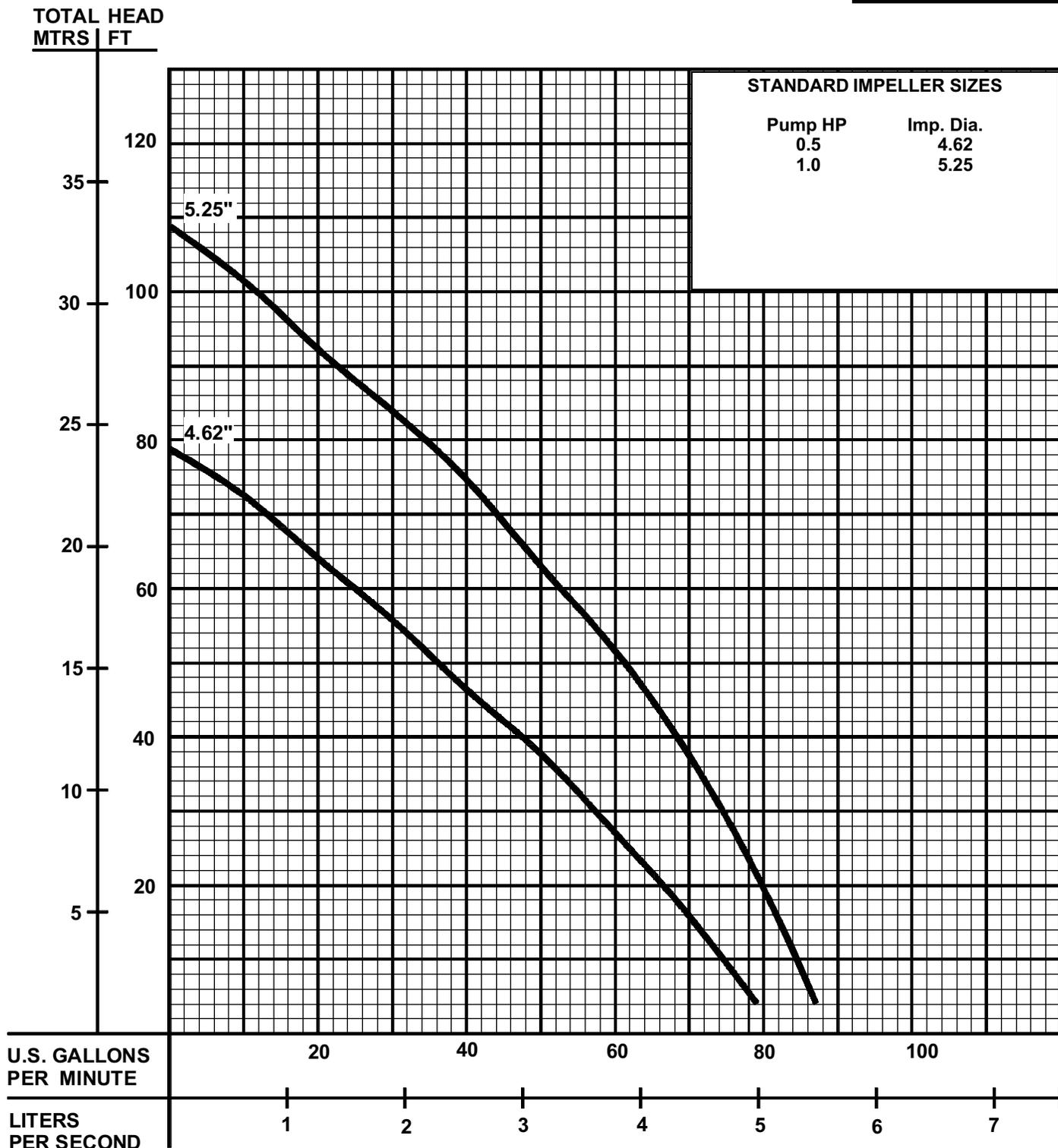
83 West Drive  
Brampton, Ontario  
Canada L6T 2J6  
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# PERFORMANCE CURVE

## Series: STEP-SS .5 & 1.0 HP, 3450RPM

SECTION	3A
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REPLACES	12/99



Testing is performed with water, specific gravity of 1.0 @ 68° F, other fluids may vary performance.



A Crane Co. Company

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