

**Bureau of Environmental Health**  
 8930 Stanford Boulevard, Columbia, MD 21045  
 Main: 410-313-2640 | Fax: 410-313-2648  
 TDD 410-313-2323 | Toll Free 1-866-313-6300  
[www.hchealth.org](http://www.hchealth.org)  
 Facebook: [www.facebook.com/hocohealth](http://www.facebook.com/hocohealth)

Maura J. Rossman, M.D., Health Officer

RECEIPT DATE: 1-15-16 **ONSITE SEWAGE DISPOSAL SYSTEM** P 557965

APPROVAL DATE: 3/14/16 **PERMIT: CONSTRUCTION** A \_\_\_\_\_

PROPERTY ADDRESS: 7373 Hopkins Way

SUBDIVISION: \_\_\_\_\_ LOT: \_\_\_\_\_ TAX ID: \_\_\_\_\_

CONTRACTOR: Chavis Enterprises EMAIL: office@chavisenterprisesllc.com

CONTRACTOR ADDRESS: PO Box 451, Jarrettsville, MD 21084 PHONE: 410-557-2455

CONTRACTOR CERTIFIED FOR BAT INSTALLATION:  MDE  MANUFACTURER:

PROPERTY OWNER: Chung Wu EMAIL: ciwu56@chwu@aol.com

OWNER ADDRESS: 17700 Hidden Garden Lane, Ashton, MD 20861 PHONE: \_\_\_\_\_

BAT UNIT MODEL: AN 500 245 PUMP SIZE: 0.5HP PUMP TANK CAPACITY: 1500 GAL

OPERATION & MAINTENANCE AGREEMENT DATE SIGNED: 01/08/16 DATE RECORDED: 01/08/16

DISTRIBUTION SYSTEM:  GRAVITY  PRESSURE DOSED BEDROOMS: 4 APPLICATION RATE: \_\_\_\_\_

TRENCHES:	LINEAR FEET REQUIRED: <u>104</u>	INLET DEPTH: <u>1.5</u>
	TRENCH WIDTH: <u>3</u>	MAXIMUM BOTTOM DEPTH: <u>7</u>
	MINIMUM SPACE BETWEEN TRENCHES: <u>13</u>	EFFECTIVE AREA BEGINNING DEPTH: <u>1.5</u>

LOCATION: **PER APPROVED SITE PLAN. SEWAGE DISPOSAL AREA AND BAT UNIT LOCATION MUST BE STAKED BY LICENSED SURVEYOR PRIOR TO PRE-CONSTRUCTION INSPECTION.**

NOTES:

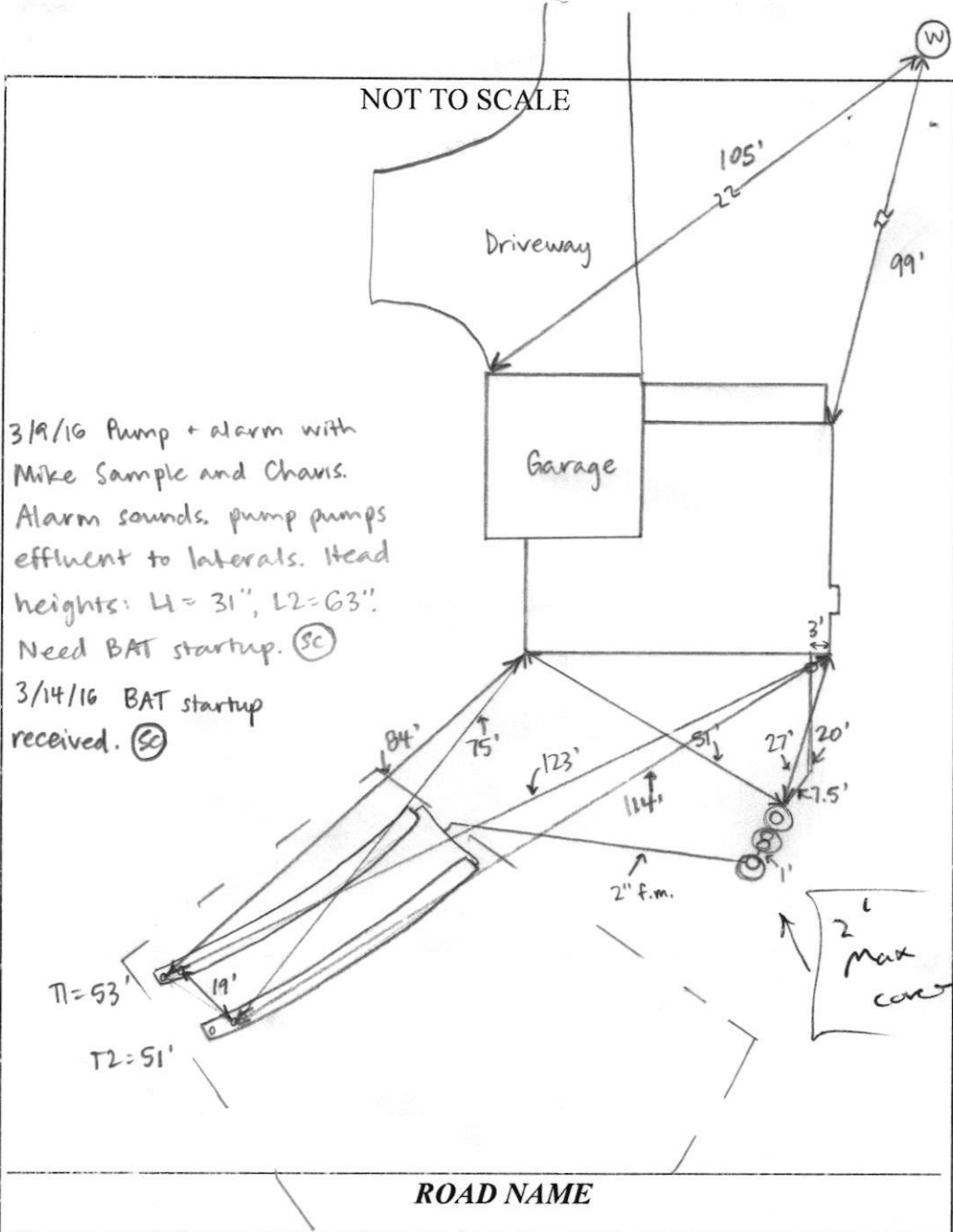
ISSUED BY: Robert Bricker ISSUE DATE: 1-15-16 EXPIRATION DATE: 1-15-17

- NOTE: **CONTRACTOR MUST SCHEDULE A PRE-CONSTRUCTION INSPECTION PRIOR TO BEGINNING ANY INSTALLATION**
- NOTE: CONTRACTOR MUST SCHEDULE AN INSPECTION AND GAIN APPROVAL OF ALL COMPONENTS PRIOR TO COVERING
- NOTE: STONE MUST BE APPROVED BY HEALTH DEPARTMENT AND GRAVEL TICKET MUST BE AVAILABLE FOR REVIEW.
- NOTE: WATERTIGHT SEPTIC TANKS REQUIRED
- NOTE: ALL PARTS OF SEPTIC SYSTEM SHALL BE AT LEAST 100 FEET DOWNGRADIENT FROM ANY WATER WELL
- NOTE: MANHOLE RISERS REQUIRED ON ALL SEPTIC TANKS AND PUMP CHAMBERS
- NOTE: **AN ELECTRICAL PERMIT IS REQUIRED FOR INSTALLATION OF ANY ELECTRICAL COMPONENTS OF THE SYSTEM**  
 ELECTRICAL PERMIT ISSUED E 1500661
- NOTE: **AN INDIVIDUAL CERTIFIED BY MDE AND THE MANUFACTURER FOR BAT INSTALLATION MUST BE PRESENT AT ALL TIMES DURING BAT INSTALLATION.**
- NOTE: MDE RECOMMENDS SEPTIC TANKS, BAT, AND OTHER PRETREATMENT UNITS BE PUMPED AT A FREQUENCY ADEQUATE TO ENSURE THAT SOLIDS ARE NOT DISCHARGED TO THE DISPOSAL AREA

**NEITHER THE HOWARD COUNTY COUNCIL NOR THE HEALTH DEPARTMENT IS RESPONSIBLE FOR THE SUCCESSFUL OPERATION OF ANY SYSTEM.**

**PERMITTEE RESPONSIBLE FOR OBTAINING FINAL APPROVAL ON THIS PERMIT.**

**CALL 410-313-1771 TO SCHEDULE INSPECTIONS.**



TRENCH/DRAINFIELD DATA		
WIDTH	INLET	BOTTOM
3'	1.5'	7'
NUMBER OF TRENCHES		2
TOTAL LENGTH		104'
ABSORPTION AREA		208' + SIDEWALL
DISTRIBUTION BOX LEVEL		_____
DISTRIBUTION BOX BAFFLE		_____
DISTRIBUTION BOX PORT		_____

SEPTIC TANK DATA	
SEPTIC TANK I LEVEL	YES
MANUFACTURER	HYDROACTION
CAPACITY	1500 GAL
SEAM LOC	TOP
TANK LID DEPTH	2'
BAFFLES	YES
BAFFLE FILTER	NO
MANHOLE LOC	FRONT, MID, REAR
6" PORT LOC	NONE
WATERTIGHT TEST	NO
SLOTTED	NO
DATE ON LID	_____

PUMP/SEPTIC TANK LEVEL	
PUMP/SEPTIC TANK LEVEL	YES
MANUFACTURER	HYDROACTION
CAPACITY	1500 GAL
SEAM LOC	TOP
TANK LID DEPTH	2' +
BAFFLES	YES / FILTER BASKET
BAFFLE FILTER	NO
MANHOLE LOC	FRONT
6" PORT LOC	NONE
WATERTIGHT TEST	NO
SLOTTED	NO
DATE ON LID	_____

3/19/16 Pump + alarm with Mike Sample and Chavis. Alarm sounds, pump pumps effluent to laterals. Head heights: L1 = 31", L2 = 63". Need BAT startup. (SC)

3/14/16 BAT startup received. (SC)

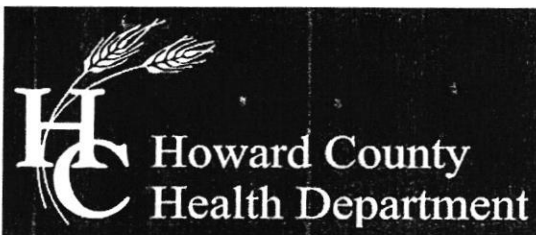
**PRE-CONSTRUCTION:**

1/19/16 On site with Chavis and Mike Sample from Onsite Wastewater. No tank, SDA, or trench stakes present. Pipe coming out under footer is > 1' deeper than shown on BAT plan - would not make fall to tank. Elevation at SDA is higher than shown on plan. Contact engineer to get revised BAT plan. (SC) 2/23/16 Met Chavis on site for layout. All SDA + tank stakes present. Adjusted start of trenches to be within 6" of ends (start now 1.5' downhill from original stake). Middle of T2 higher - dig at same depth as ends

**INSTALLATION:**

2/29/16 Chavis making measurements to dig tank hole. (SC) 2/29/16 Tankset. Pump (SC) tank currently has > 2' cover - they will cut down to 2' cover at finish. House connection made, 19" fall to tanks. (SC) 3/1/16 Mike Sample on site for Hydroaction install. Chavis will dig force main today. Okay to come out side of pump tank straight shot to manifold. (SC) 3/2/16 T2 dug. Chavis filling with stone. #2 at bottom, #57 3" below lateral and above. Force main installed from pump tank to manifold. (SC) 3/2/16 T2 complete, 1.5' to stone on ends and 2.5' in middle. (SC) 3/2/16 T1 dug, Chavis adding stone. 7' to bottom. Large rocks hit 3' depth + shallower for ~10' 10-20' from trench start. (SC) 3/3/16 site inspection, Chavis onsite, trenches back-filled w/ 2 observation pipes each, backfill at front end and back end of BAT tanks less or equal to 2", BAT Startup needed (AR) and pump + alarm

FINAL INSPECTOR Sarah Collins DATE OF APPROVAL 3/14/16



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www.hchealth.org

Facebook: www.facebook.com/hocohealth

Twitter: HowardCoHealthDep

Maura J. Rossman, M.D., Health Officer

**OPERATION AND MAINTENANCE AGREEMENT  
FOR AN ON-SITE SEWAGE DISPOSAL SYSTEM  
HAVING AN ADVANCED PRE-TREATMENT SYSTEM**

THIS AGREEMENT is made this 8<sup>th</sup> day of January, <sup>2016</sup>, among Chung-Lung Wu  
and Liu Ping Wu, hereinafter collectively referred to as  
"Owner", and the Howard County Health Department hereinafter referred to as the "County".

WHEREAS, Owner is the owner or contract owner of a parcel of land located at  
7373 Hopkins Way, Clarksville, MD 21209, in the 5<sup>th</sup> Election District of Howard  
County, Maryland, and the deed to same is recorded or shall be recorded among the Land  
Records of Howard County, Maryland in Liber 15392 Folio 00091.

WHEREAS, The Lot is suitable for the installation of a conventional on-site sewage disposal  
system with an advanced pre-treatment system, utilizing best available technology to perform  
nitrogen reduction, in accordance with the Code of Maryland Regulations 26.04.02.07, effective  
January 1, 2013. The pre-treatment device being installed is Hydro - Action.

NOW, THEREFORE, the parties hereto agree as follows:

A. Owner hereby grants to the County the right to enter upon the Lot at any reasonable time for  
access to the system to make periodic inspections and the Owner agrees to provide any  
information and data in Owner's possession reasonably requested and needed by the County to  
develop accurate and thorough test results.

B. Owner acknowledges and agrees that neither the County nor any of its agents or employees,  
either officially or individually, underwrites the operation of any system approved by them.

C. The Owner will devote reasonable care and effort to the operation and maintenance of the  
system in perpetuity or until a public sewer connection is made so that a system malfunction is  
not the result of poor maintenance, faulty operation, or neglect.

D. The Owner agrees to enter into a contract reasonably acceptable to the Owner and the County  
with a private entity to operate and maintain on a regularly scheduled basis an approved  
advanced pre-treatment system. The owner shall supply a copy of the contract to the County  
when it is renewed or altered.

E. This agreement shall run with the land and upon Owner's taking title to the Lot shall bind the  
Owner, their heirs, successors, and assigns to the provisions of the agreement as long as the  
property is in existence and after installation of the system. Owner further agrees that they shall  
inform in writing any subsequent purchaser or lessee of the Lot that the system shall require

maintenance or other attention. Upon taking title to the Lot, the Owner agrees to cause this agreement to be recorded in the Land Records of Howard County and assure that it becomes part of the Deed for the subject property in order that prospective buyers may be aware of the special conditions affecting this property.

F. This agreement shall not be construed to limit any authority of the County to protect the public health, safety or comfort or to issue any other orders to take any other action which is now or may hereafter be within its authority.

G. This agreement may be voided at any time at the discretion of the County.

H. This agreement contains the entire agreement and understanding between the County and the Owner. There are no additional terms other than as contained in this agreement. This agreement may not be modified, except in writing signed by each of the parties or by their authorized representatives.

I. The laws of the State of Maryland govern the provisions of all transactions pursuant to this agreement.

J. Owner acknowledges and agrees that interior renovations to increase the number of bedrooms or an increase in living space shall not be permitted without approval from the County.

IN WITNESS WHEREOF, the parties have signed and sealed this agreement on the date indicated above.

Bert Ripon 1/8/2016  
Howard County Health Department

Chang Wu 01/06/2016  
Owner #1 Signature                      Date

Chang-Lung Wu  
Owner #1 Print Name

\_\_\_\_\_  
Buyer #1 Signature                      Date

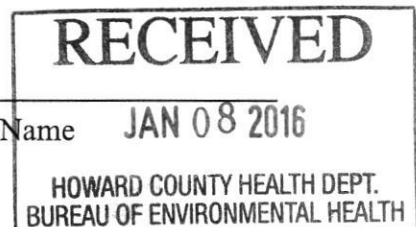
\_\_\_\_\_  
Buyer #1 Print Name

Ling Wu 1/6/2016  
Owner #2 Signature                      Date

Liu Ping Wu  
Owner #2 Print Name

\_\_\_\_\_  
Buyer #2 Signature                      Date

\_\_\_\_\_  
Buyer #2 Print Name





### Hydro-Action/AK Industries, Inc.

1919 Jim Neu Drive Plymouth, Indiana 46563  
(574) 936-2542 phone (574)276-9193 fax

## Letter of Satisfaction

### Hydro-Action System Installation

Address of Property: 7373 Hopkins way  
Clarksville, mo 21029

Date of Final Inspection: 3/9/16

Installer: Chavis Enterprises LLC

Hydro-Action Inspector: Mike Sample

I hereby certify that the Hydro-Action system installed at the property listed above has been installed according to proper Hydro-Action installation practices. I have also verified the startup of the system and it is proper working order.

Sincerely,

H. Michael Dargatzis  
Name of Inspector

T.E.S. CONSULTANT L.L.C.  
P.O.Box 10123 , Silver Spring, MD. 20914  
Phone (301) 515-1514 Fax (301) 515-5589.

7373 Hopkins Way  
Howard County MD

### Low Pressure Dosing System Calculation

*AK*  
*reb* 2/18/2016

Professional Certification: I hereby certify that these document were prepared or approved by me, and that I am a duly Licensed Professional Engineer under the laws of the State of Maryland.

License No21694.

Expiration Date: 8-24-17



## Pressure Network Design

- Design Flow:  $4 \times 150 = 600$  gpd
- The absorption beds in the Initial System are each 52.0' long and the distribution network is an End Feed Network.
- For Perforation Size, Number, and Spacing see Pressure Distribution table on plan 2 of 2.
- Diameter of lateral = 2.0"
- Spacing between laterals = 13'
- Number of laterals = 2
- Diameter of force main = 2.0"
- Diameter of manifold = 2.0"
- Material: Schedule 40 PVC

## Pumping System Design

- Dose Calculations:  
Design Flow: 600 gpd  
Length of force main = 75' of 2" pipe  
Length of Manifold = 16' of 2" pipe

Volume of force main:

$$75.0' \times 17.4 \text{ gallons per } 100' = 13.1 \text{ gallons}$$

Volume of Manifold:

$$26.0' \times 17.4 \text{ gallons per } 100' = 2.8 \text{ gallons}$$

$$\text{Length of } 2'' \text{ laterals: } 50.375 + 48 = 98.375'$$

Volume of laterals:

$$98.375' \times 17.4 \text{ gallons per } 100' = 17.1 \text{ gallons}$$

Minimum dose is the greater of:

Volume of force main and manifold + (5 x Volume of the laterals):

$$13.1 + 2.8 \text{ gallons} + (5 \times 17.6 \text{ gallons}) = 101.3 \text{ gallons}$$

Or

- 1/6th the design flow:

$$- 1/6 \times 600 \text{ gallons} = 100.0 \text{ gallons}$$

OK!  
reb  
2/18/2016

• **Pump Design:**

- Pump flow required: 52 gpm (see Pressure Distribution table on plan 2 of 2)
- Dose amount: 100 gallons
- Pump run time: 3.7 minutes
- Static head (see Pump Chamber detail): 18.4'

Friction head calculation (Table 4.3):

Pipe size		2.0"
1/4 Bend (90°)	-	3 @ 7.0' = 21.0'
1/8 Bend (45°)	-	2 @ 4.0' = 8.0'
Gate Valve	-	
Standard Tee	-	1 @ 1.3' = 1.3'
Run Tee	-	
Cross	-	-
Reducer	-	
Couplings		6 @ 2.0' = 12.0'
Total Equivalent Length of pipe		42.3'

Flow at 2.0" pipe = 52 gpm

Friction loss per 100' (Table 4.4) of 2.0" schedule 40 plastic pipe: ~~3.27~~ 4.31

Total equivalent length of 2.0" FM, manifold and appurtenances =

$$75.0' + 8.0' + 42.3' = 125.3'$$

- Friction loss in 2.0" pipe =  $125.3' / 100 \times 3.27 = 4.1'$

4.31 = 5.4' *reb*

Total Friction Head = ~~4.1'~~ 5.4'

**Total Dynamic Head = Static head + Distal Head + Friction head**

$$18.4 + 2 + 4.1' = 24.5 \text{ use } 26'$$

$$+ 5.4' = 29.9$$

*reb*

'OK'  
*reb* 2/10/2016

- **Pump Chamber Design:**

-For pump tank dimensions and detail, see plans.

-Pump chamber elevations (assumes maximum 2.0' of cover over tank):

Proposed grade at top of tank (at inlet): 408.5

Top of pump tank: 406.5

Pump chamber invert in: 405.3

High Water Alarm: 402.72

Pump On: 401.3 — 402.22

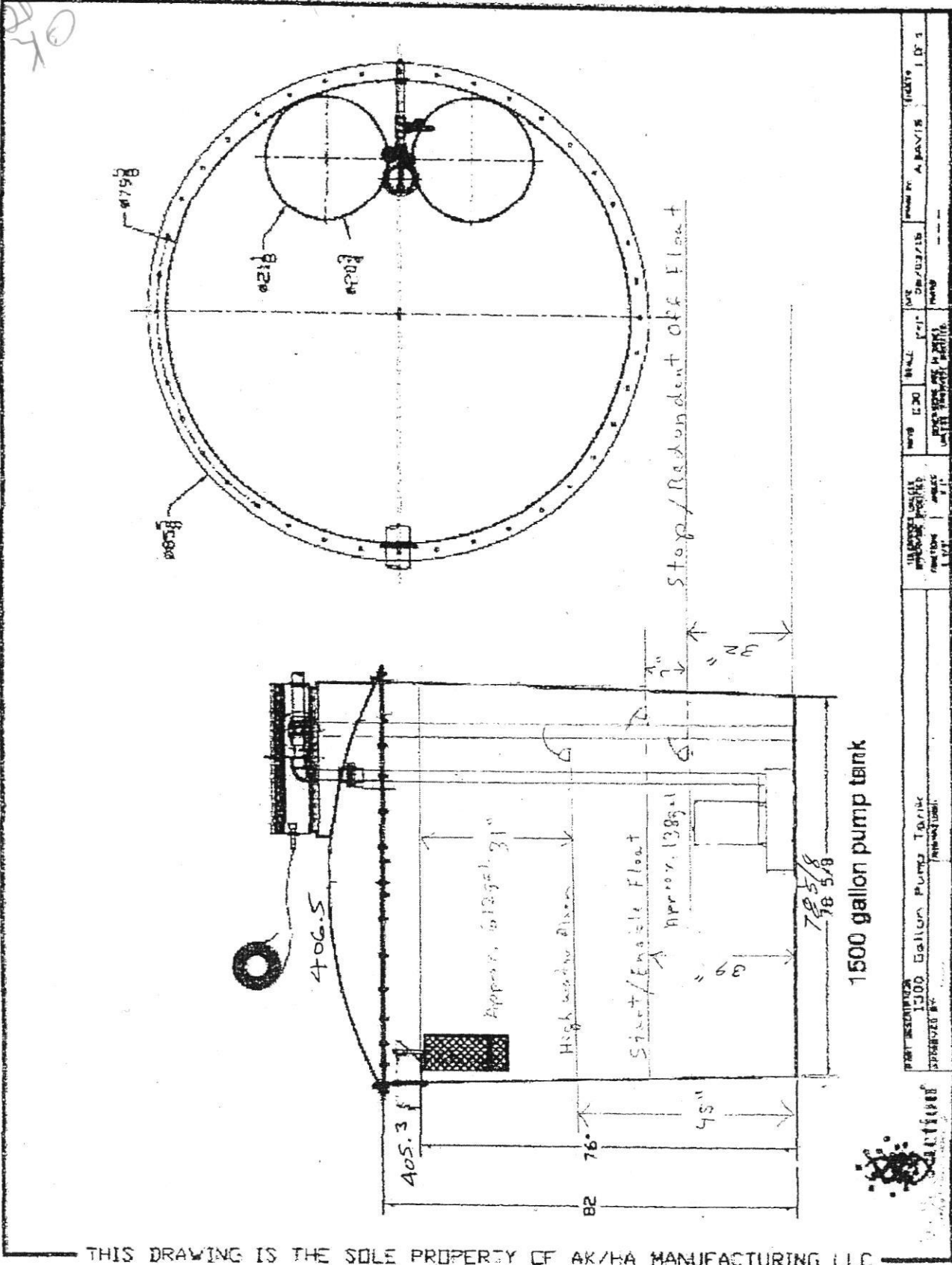
Pump Off: 400.72 — 401.64

Bottom slab of tank: 398.97

- Pump type: see plans 2 of 2  
Meyers MW50H series PUMP

'OK'  
2/18/2016

OK  
 2/18/2012



THIS DRAWING IS THE SOLE PROPERTY OF AK/HA MANUFACTURING LLC

7373 Hopkins Way, Clarksville, MD

Clerk of the Circuit Court for  
Howard County  
Land Records/Licensing - 2

The Thomas Dorsey Building  
9250 Bendix Road  
Columbia, MD 21045  
410-313-5855

LR - Agreement Recording 1x 20.00  
Grantor/Grantee Name: health  
#: 42  
charge 1x 40.00

SubTotal: 60.00  
Total: 60.00

CRD-Credit 60.00  
Credit Card Confirmation : 08629d

01/08/2016 11:17 CC13-NN  
#5411302 /396/109  
\*\*\*\*\* DUPLICATE #001 \*\*\*\*\*

01/08/2016 11:10 NN

E15006612  
issued 12/2/15



HOWARD COUNTY HEALTH DEPARTMENT

57965

DATE 11/13/16

Received From

Chris Enterprises LLC

PHONE #

25  
410 557 243

P.O. Box 451 Joppa, MD 21084-0451

For

Septic Permit - 7373 Hopkins Way

- CASH
- CHECK

NO.

11994

Three hundred ninety six

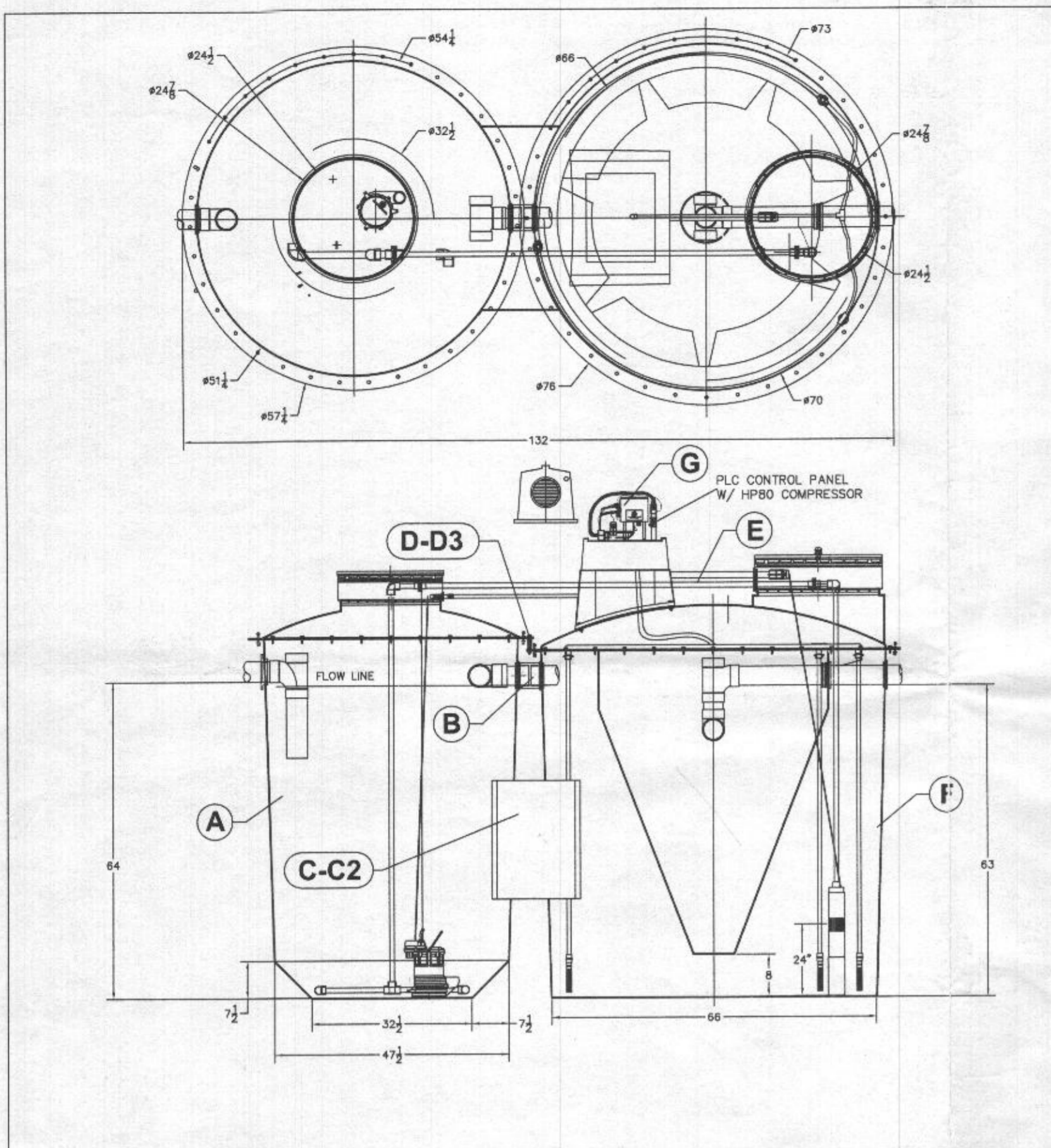
Dollars

\$ 396.00

Received By

[Signature]

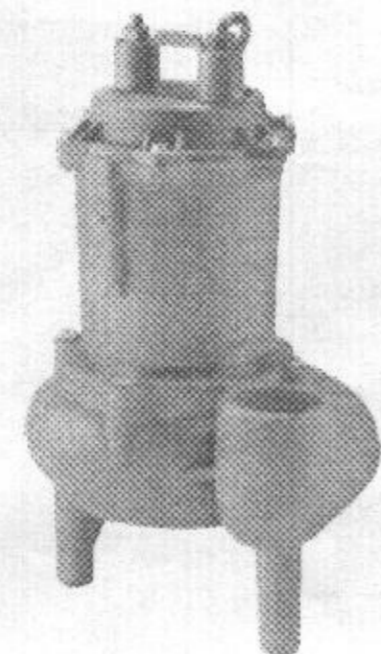




RESIDENTIAL AND LIGHT COMMERCIAL SEWAGE PUMP

# MYERS® MW50

The Myers MW50 series sewage pumps are constructed of the most durable combination of materials to withstand the harshest sewage environments. The non-clog impeller can pass up to 2" solids. Provides the flow and head required residential and light commercial applications. Models available for manual operation with external controls, or automatic operation with tethered, piggyback mechanical float switch.



**APPLICATIONS**  
Sewage, high-capacity sump, effluent

**SPECIFICATIONS**  
**Capacities** - 135 GPM (510 LPM)  
**Shut-off Head** - 27' (8.23 m)  
**Operation** - Manual or automatic  
**Solids Handling** - 2" (50.8 mm)  
**Liquids Handling** - Domestic sewage and drain water  
**Intermittent Liquid Temperature** - Up to 140°F (60°C)  
**Motor/Electrical Data** - 1/2 HP, 1625 RPM, PSC (1Ø), oil-filled, 115V, 9A, 1Ø, 60Hz; 230V, 4.5A, 1Ø, 60Hz  
**Acceptable pH Range** - 5-9  
**Discharge, NPT** - 2" (50.8 mm)  
**Housing** - Cast Iron  
**Power Cord** - 20', 16/3, SJTW  
**Impeller** - Thermoplastic  
**Volute Case** - Class 30 cast iron  
**Shaft Seal** - Type 6, carbon and ceramic  
**Minimum Sump Diameter** - Simplex: 24" (61 cm); Duplex: 36" (91.4 cm)

**FEATURES**  
**Two-vane Impeller** - Provides maximum efficiency and eliminates jamming between impeller and volute - engineered thermoplastic composition  
**Restore Performance** - Original performance standards can be restored by easily replacing a worn volute seal ring  
**High-capacity Handling** - Passes full 2" solids  
**Cool Running** - Durable, oil-filled motor for continuous bearing lubrication and maximum heat dissipation  
**Powerful Starts** - High-torque, permanent split capacitor (PSC) motor; no starting switches or relays to wear out  
**Protects Against High Head** - Low amp draw from the efficient PSC motor means less heat build-up  
**Longer-Lasting Motor** - Lower ball bearing eliminates sleeve bearing wear and reduces motor wear  
**Improved Sealing** - Long, flexible Type 6 seal provides high-pressure sealing with improved seal face protection by location



## BILL OF MATERIALS

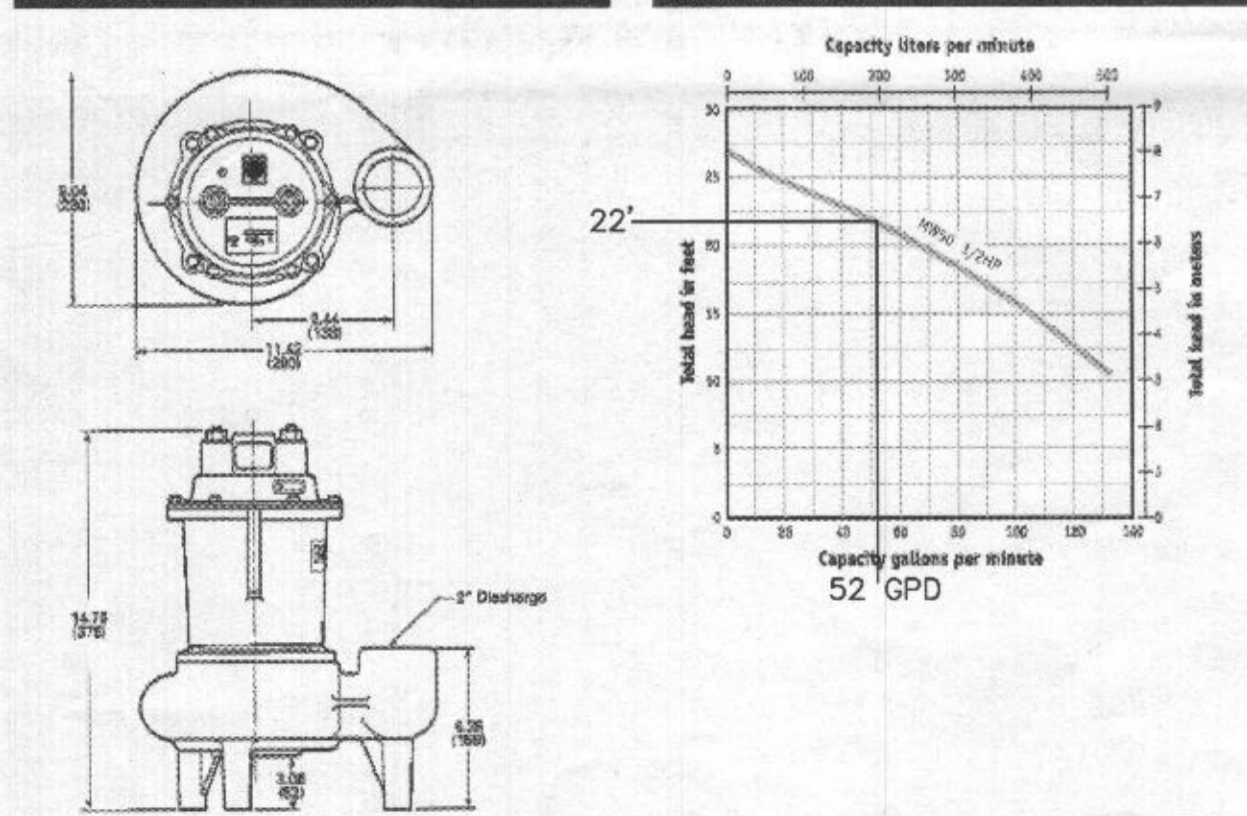
ITEM	PIN	DESCRIPTION	QTY.
	HA-180056	TANK, AN500 245 NITROGEN REDUCTION	
A	180055	TANK, AN500 245 PRETREATMENT	
B	100118	COUPLING, 4" SCH 35 PVC SXS	
C	240018	FG CONNECTING PANEL 24X19	
C1	160028	ADHESIVE, CARTRIDGE	
C2	240031	SCREW, 1/4" SELF-TAP, PPH, ZINC	
D	780066	FASTENER, 3/8"-16 X 3 3/4" AT HHCS	
D1	200013	NUT, 3/8"-16 SS	3
D2	200006	WASHER, 3/8"-16 SS	4
D3	200034	WASHER, SS 3/8" LOCKWASHER	1
E	100110	ASSEMBLY, RE-CIRCULATION 245 COMPLETE	
F	AP600-P	AP600 ATU W/ PLATFORM COMPLETE	
G	EC50-30-L100-PLC	EC50-30-L100-PLC	

AN500 245 NITROGEN REDUCTION SYSTEM  
 APPROVED BY: [Signature] DATE: 8/21/13 REV: 6 PART# HA-180056

## ORDERING INFORMATION

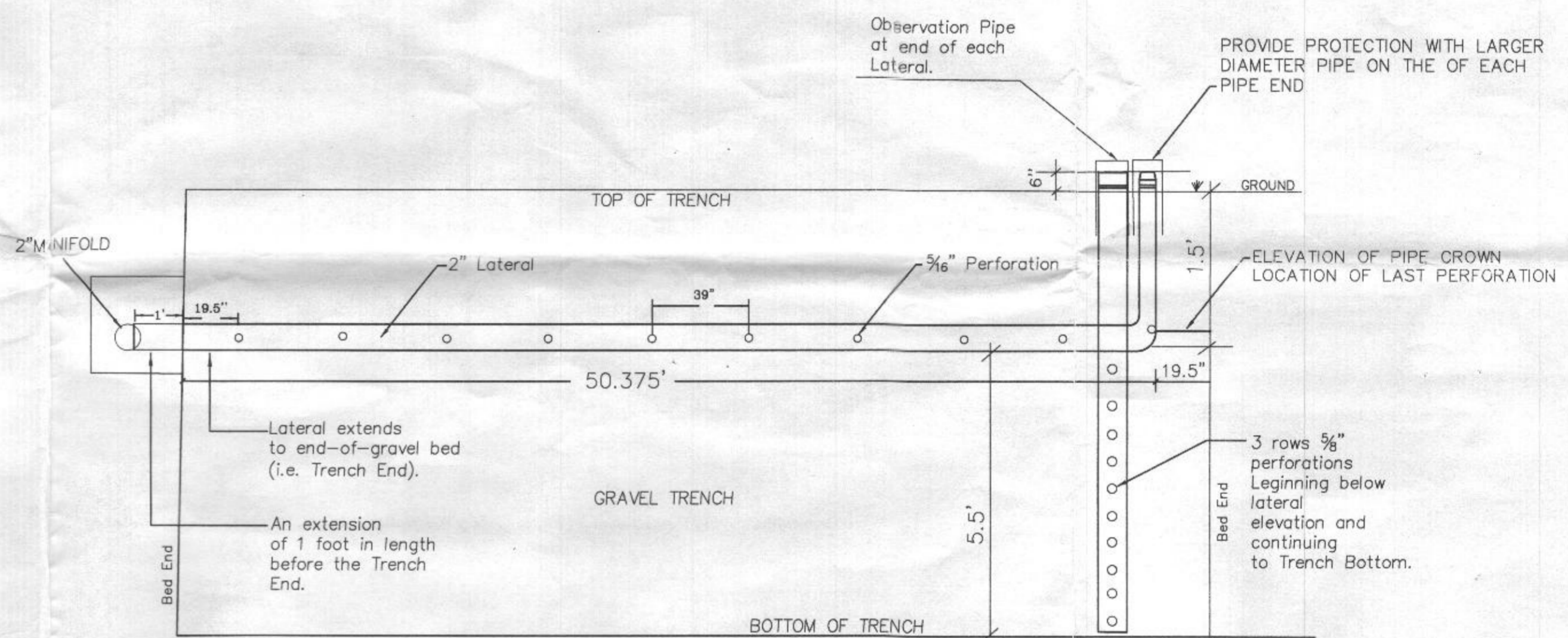
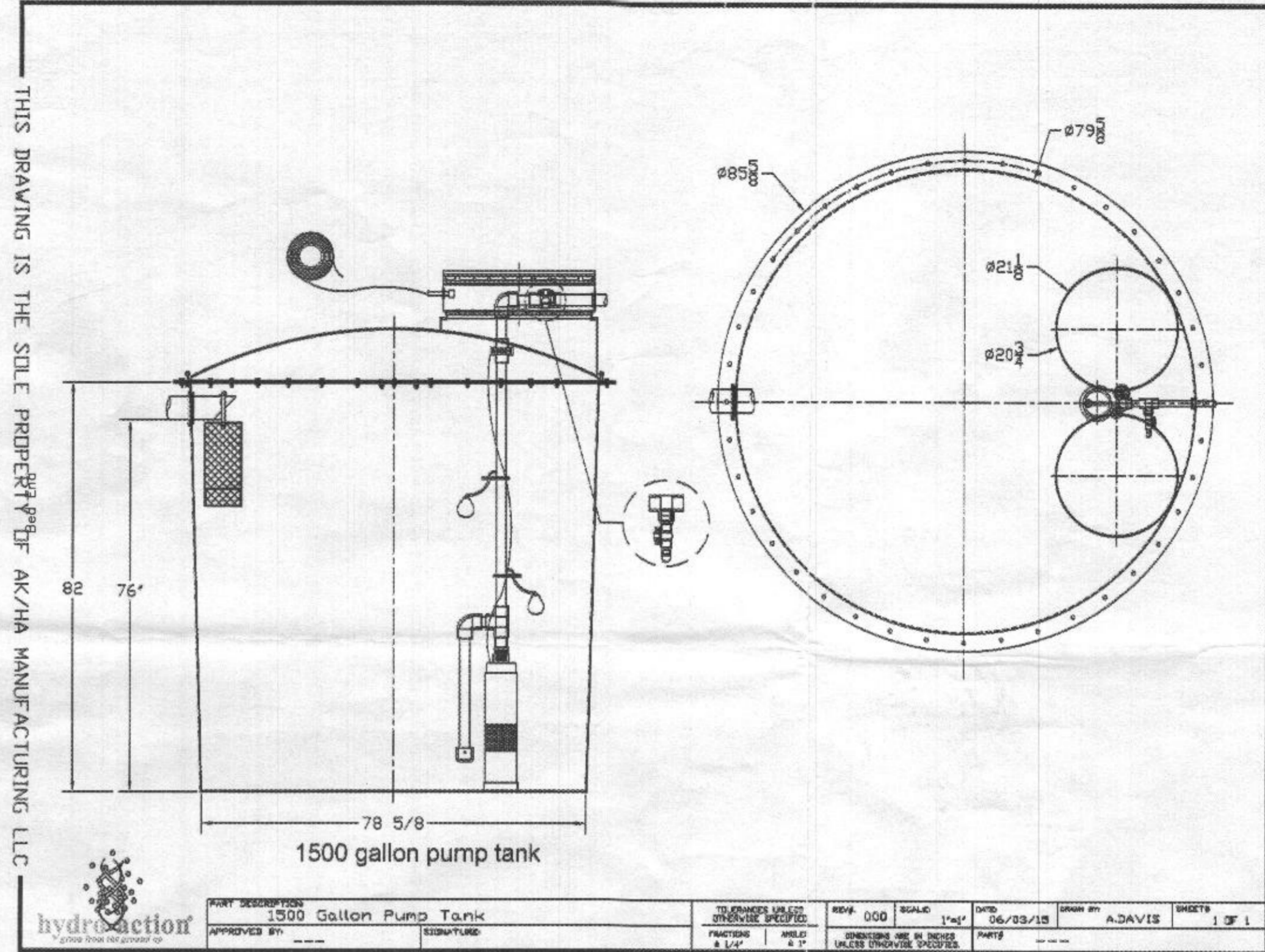
Model	HP	Volts	Phase/Cycles	Amps	Discharge Size	Switch Type	Cord Length	Approx. Wt. Lbs.
MW50-11	1/2	115	1/60	9.0	2"	Manual	25'	42
MW50-11P	1/2	115	1/60	9.0	2"	Tethered Automatic*	20'	43
MW50-21	1/2	230	1/60	4.8	2"	Manual	25'	42
MW50-21P	1/2	230	1/60	4.8	2"	Tethered Automatic*	20'	43

## DIMENSIONS

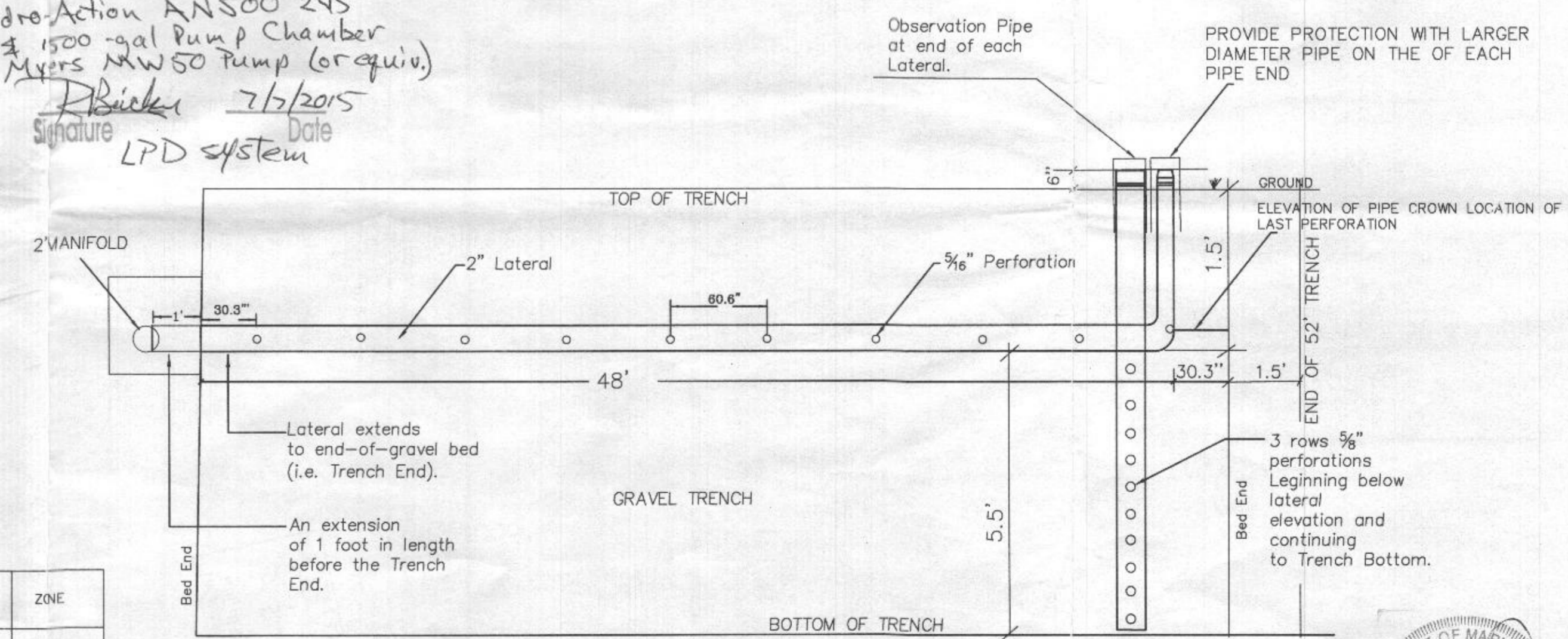


## PRESSURE DISTRIBUTION TABLE

LATERAL NO.	EX.GRD ELEV.(FT)	INVERT ELEV.(FT)	TRENCH BOTM. ELEV.(FT)	LATERAL LENGTH(FT)	HEAD(FT.)	ORIFICE DIAMETER(IN)	ORIFICE FLOW(RATE) (gpm)	ORIFICE SPACING(IN)	NUMBER OF ORIFICE	TRENCH FLOW RAT (gpm)	ZONE
1	421.8	420.3	414.8	50.375	2	5/16	1.63	39	16	26.08	INITIAL
2	419	417.5	412.0	48	4.8	5/16	2.57	60.6"	10	25.57	INITIAL
TOTAL				98.375						51.78 OR 52	



Approved Septic System Plan  
 Howard County Health Department  
 Hydro-Action AN500 245  
 1500-gal Pump Chamber  
 Myers MW50 Pump (or equiv.)  
 [Signature] 7/6/2015  
 LPD system



Total Perforations per lateral #2 : 10  
 (Not to Scale)

**TLES**  
 TOTAL ENGINEERING SERVICES  
 PLANNERS, ENGINEERS, SURVEYORS  
 P.O. BOX 10123  
 SILVER SPRING, MD 20914  
 TEL: (301) 515 1514 FAX: (301) 515 5589

REVISION :

--	--

PROJECT NAME  
**7373 HOPKINS WAY**  
 CLARKSVILLE  
**1ST PARCEL 109/294**  
**LIBER: 12349 FOLIO: 209**  
 HOWARD COUNTY, MARYLAND

DRAWING TITLE :  
**SITE PLAN FOR BAT INSTALLATION LPD SEPTIC FIELD / TANK**

Drawn :	Approved :	Job No. :
In Charge :	Project Manager :	Project Architect :
Scale :	Drawing No. :	

NONE  
 Date 06-2-15  
**2 OF 2**

