LAYOUT _____ INSP 4 _____

INSP 2 _____ INSP 5 _____

INSP 3 _____ INSP 6 _____

ISSUE DATE: 1/20/06 **PERMIT-PEAT BIOFILTER** P 523255

SEPTIC SYSTEM

APPROVAL DATE: _____ A 523255

TAX ID # 03-297934

ON-SITE SEWAGE DISPOSAL SYSTEM

HOWARD COUNTY HEALTH DEPARTMENT

BUREAU OF ENVIRONMENTAL HEALTH

_____ IS PERMITTED TO INSTALL ☒ ALTER ☐

ADDRESS: _____ PHONE NUMBER: _____

SUBDIVISION Yang Property LOT _____

ADDRESS: 12765 Frederick Road PROPERTY OWNER: Wang-Yi Yang

SEPTIC TANK CAPACITY (GALLONS): 1500 **W/Effluent Filter & Top Seamed Compartment Tank**

PUMP CHAMBER CAPACITY (GALLONS): 1500 **Top Seamed**

Install and maintain a water meter on the incoming side of the water system or an event counter on the sewage pumping system. High water alarm on a separate circuit & located in the house.

Install Peat Biofilter system per specifications submitted by Innova, LTD. and dated 12/21/05, and plans approved by MDE on 1/11/06.

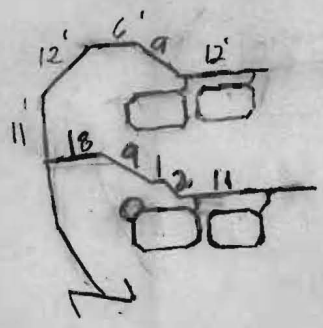
LOCATION:	See approved plans for required location & detail. Call for layout inspection prior to beginning construction.
NOTES:	A test of the pump system & distribution piping is required prior to covering the system. Water tightness test must include the risers. System is sized for a max. of 3 bedroons.

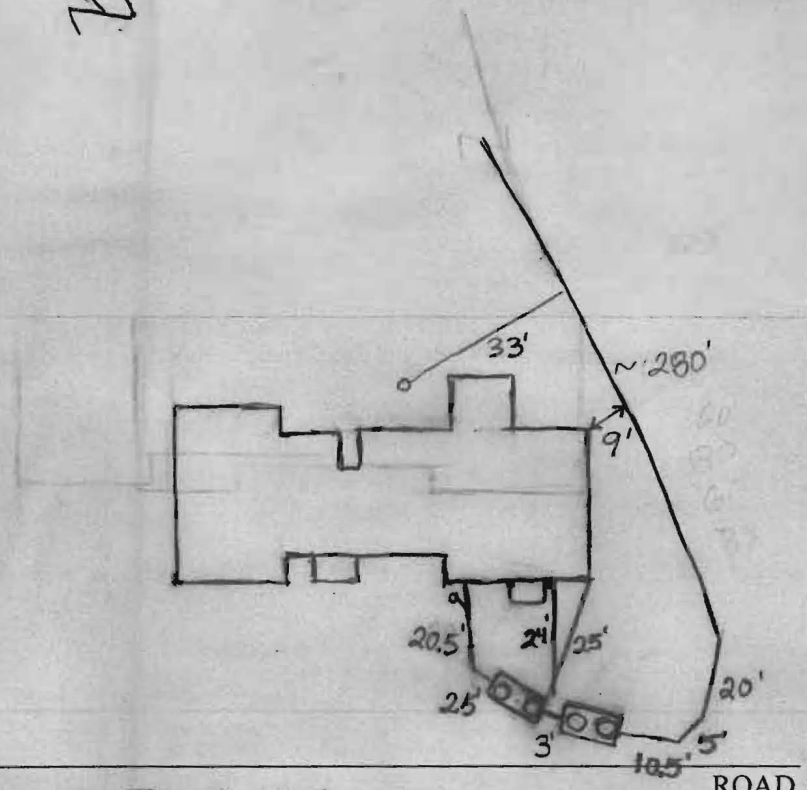
PLANS APPROVED: _____ DATE: 1/20/06

NOTES: PERMIT VOID AFTER 2 YEARS
CONTRACTOR IS RESPONSIBLE FOR SCHEDULING A PRE-CONSTRUCTION INSPECTION FOR ALL INSTALLATIONS
WATERTIGHT SEPTIC TANKS REQUIRED
ALL PARTS OF SEPTIC SYSTEM SHALL BE 100 FEET FROM ANY WATER WELL UNLESS SPECIFICALLY AUTHORIZED
MANHOLE RISERS REQUIRED ON ALL SEPTIC TANKS AND PUMP CHAMBERS UNLESS SPECIFICALLY AUTHORIZED
CONTRACTOR RESPONSIBLE FOR COMPLIANCE WITH APPLICABLE REGULATIONS, GUIDELINES AND THE TERMS OF THIS PERMIT

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
ALL 410-313-2640 FOR INSPECTION OF SEPTIC SYSTEM

NOT TO SCALE





ROAD

Frederick

TRENCH/DRAINFIELD DATA

	WIDTH	INLET	BOTTOM

NUMBER OF TRENCHES

TOTAL LENGTH

ABSORPTION AREA

DISTRIBUTION BOX LEVEL

DISTRIBUTION BOX BAFFLE

DISTRIBUTION BOX PORT

SEPTIC TANK DATA

SEPTIC TANK 1 LEVEL Yes

CAPACITY 1500 GAL

SEAM LOC Top

TANK LID DEPTH 0.5'-1.5'

2-comp. Babylon

BAFFLES Yes

BAFFLE FILTER Yes

MANHOLE LOC Front+Rear

6" PORT LOC None

WATERTIGHT TEST Yes

SEPTIC TANK 2 LEVEL Yes

CAPACITY 1500 GAL

SEAM LOC Top

Babylon TANK LID DEPTH 1'-2'

BAFFLES Front Tee

BAFFLE FILTER No

MANHOLE LOC Front+Rear

6" PORT LOC None

WATERTIGHT TEST Yes

PRE-CONSTRUCTION

INSTALLATION

FINAL INSPECTOR DATE OF APPROVAL

12-7-95
c/o
10:00

PERMIT

P 56605-G

SEWAGE DISPOSAL SYSTEM

A REPAIR

DEPARTMENT OF HEALTH AND MENTAL HYGIENE

03-294188

DISTRICT

DATE

HOWARD COUNTY HEALTH DEPARTMENT

BUREAU OF ENVIRONMENTAL HEALTH

[redacted] 313-2640

INDEXED

DATE SYSTEM APPROVED 12/7/95

INSPECTOR M. Ritkin

Jim Foster IS PERMITTED TO INSTALL ____ ALTER X

ADDRESS 12785 Route 144, West Friendship, MD 21794 PHONE 442-8029

SUBDIVISION ____ LOT ____ ROAD 12785 Route 144

PROPERTY OWNER Jim Foster

ADDRESS ____

SEPTIC TANK CAPACITY ____ GALLONS

DIRECTIONS - West of 32 - 4rd house on left.

NUMBER OF BEDROOMS ____

____ SQUARE FEET PER BEDROOM

LINEAR FEET OF TRENCH REQUIRED ____

REPAIR - PURPOSE - FAILING DRYWELL.
Call for inspection when ground is opened so sanitarian can recommend repair.

12/7/95 LINE JOB - NO REPAIR NEEDED MR

PLANS APROVED BY ____ DATE ____

COVER NO WORK UNTIL INSPECTED AND APPROVED

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

NOTE: CLEANOUT REQUIRED EVERY 70 FEET OF SEWER LINE AND/OR AT 90° SWEEPS IN LINES FROM HOUSE TO DRAIN FIELDS, 90° **ELBOWS** NOT ACCEPTABLE.

NOTE: ALL PARTS OF SEPTIC SYSTEMS (I.E. TANK, DISTRIBUTION BOX TRENCHES) TO BE 100 FEET FROM WELL (UNLESS OTHERWISE SPECIFICALLY AUTHORIZED)

NOTE: IF DEEP TRENCH(ES) ARE USED CALL FOR INSPECTION BEFORE AND AFTER PLACING GRAVEL IN TRENCH(ES)

NOTE: NO DRY WELL SHALL EXCEED 15 FOOT IN DIAMETER NO ABSORPTION TRENCH TO EXCEED 100 FEET IN LENGTH

NOTE: ALL PIPE FROM HOUSE TO SEPTIC TANK MUST BE CAST IRON OR SCHEDULE 35/40 PVC OR ABS

PERMIT VOID AFTER TWO YEARS

NOTE: INSTALL STAND PIPE ON SEPTIC TANK AND DRY WELL STAND PIPES MUST BE 6 INCHES IN DIAMETER CAST IRON. CONCRETE OR TERRA COTTA OR PVA OR ABS ACCEPTED. IF TOP OF SEPTIC TANK IS DEEPER THAN 3 FEET. MANHOLE TO GRADE REQUIRED.

NOTE: DISTRIBUTION BOXES MUST HAVE BAFFLES

***INSTALLER IS RESPONSIBLE FOR OBTAINING FINAL APPROVAL ON THIS PERMIT**

HD-260(6-90)

***CALL-[redacted] FOR INSPECTION OF SEPTIC SYSTEM.**

A 56605G

INDICATE NORTH - NAME ADJOINING ROADWAY AS BASE LINE

SEPTIC TANK LEVEL 1000 GAL? CLEANOUTS _____

DISTRIBUTION BOX LEVEL _____

DRAIN FIELD/TITLE DEPTH _____ FT. TRENCH WIDTH _____ FT. INLET DEPTH _____ FT.

EFFECTIVE GRAVEL DEPTH _____ FT. TOTAL LENGTH _____ FT.

NUMBER OF TRENCHES _____ ONE SIDEWALL/BOTTOM AREA _____ SQ. FT.

DRYWALL INSIDE DIAMETER _____ FT. EFFECTIVE DEPTH BELOW INLET _____ FT.

ABSORBENT AREA _____ SQ. FT.

REMARKS: 12/7/95 REPAIR NOT NEEDED - LINE CLOGGED, BAFFLE GONE; LINE & S.T. BAFFLE REPLACED MR

DATE SYSTEM APPROVED 12/7/95 INSPECTOR M. Rifkin

AGREEMENT AND EASEMENT FOR INSTALLATION OF AN INNOVATIVE AND ALTERNATIVE ON-SITE SEWAGE DISPOSAL SYSTEM

000181

THIS AGREEMENT is made this 17th day of January 2006, among Wang-Yi Yang & Ping-Ping Tien, hereinafter referred to as "Owner", the Howard County Health Department hereinafter collectively referred to as the "County", and the Department of the Environment, hereinafter referred to as the "Department".

WHEREAS, Owner owns a tract of land located on 12765 Frederick Road, in the 03 Election District of Howard County, Maryland, and the deed to same is recorded among the Land Records of Howard County, Maryland, in Liber 6187 / Folio 633.

WHEREAS, Owner's land is improved and the existing means of sewage disposal has been found to be prejudicial to the environment and/or public health.

20
20
PT

WHEREAS, Owner's land is unsuitable for the installation of a conventional on-site sewage disposal system and owner has requested the Department's approval to install an innovative/alternative system of sewage disposal.

NOW, THEREFORE, the parties hereto agree as follows:

A. Owner must install and maintain a water meter on the incoming side of the water system or an event counter on the sewage pumping system.

B. Owner hereby grants to the Department and the County the right to enter upon the property at any reasonable time for access to the system to make periodic inspections and the Owner agrees to provide any information and data requested and needed by the Department to develop accurate and thorough test results.

C. Owner acknowledges and agrees that the proposed innovative/alternative system is experimental and that his or her participation is voluntary. Owner agrees that there shall be no liability on the part of the County or Department to Owner if this innovative/alternative system fails, and that the

County and the Department do not warrant or guarantee that the system will adequately or properly function.

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

E. The Owner will devote such care and effort to the maintenance of the system so that a system malfunction is not the result of poor maintenance, faulty operation, or neglect.

F. The Owner agrees, that, should the system be determined by the Department to pose a threat to the public health, safety or comfort, the Department may order any necessary changes or corrections and the Owner agrees to pay for all such changes or corrections. System modifications may include requirements for holding of sewage waste in tanks and regular pumping from the holding tanks. Upon the Department's request, the Owner agrees to enter into a contract acceptable to the Department to allow and pay either Howard County, Maryland, its agents or a private entity to pump on a regularly scheduled basis an approved holding tank system.

G. The Owner agrees to contact both the Water Management Administration, On-Site Systems Division of the Wastewater Permits Program and the County at least forty-eight (48) hours prior to system installation, so that the Department may lay out the system in the field with the contractor. The Owner must install this system according to the plans and specifications approved by the Department and any changes required by the Department as a result of the field layout. If installation deviates substantially from the approved plans or changes such that experimental data will be compromised or reduced, the Owner agrees to pay for all necessary corrections.

H. This agreement shall run with the land and binds the Owner, his heirs, successors, assigns except that the provisions of paragraph A & B shall be binding for a period of 5 years only after installation of the system and occupation of the home. Owner further agrees that he shall inform in writing

any purchaser or lessee of the property that the system may require maintenance or other attention. The Owner agrees to record this agreement in the land records of Howard County.

I. This agreement shall not be construed to limit any authority of the Department 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.

J. This agreement may be voided at the discretion of the Department if the system construction is not completed within six (6) months of the effective date of this agreement.

K. This agreement contains the entire agreement and understanding between the County and the Owner and the Department. 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.

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

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

WANG-YI YAN
Owner

DATE: 1/17/06

PING-PING TI
Owner

DATE: 1/11/06

Eric Dougherty, Acting Chief, On-Site Systems Division
Wastewater Permits Program
Maryland Department of the Environment

DATE: 1/17/06

Dir. Env. Health
Howard County

TO: Howard County, Bureau of Environmental Health
Well & Septic Program

FROM: Wang-Yi Yang

DATE:

RE: Temporary Holding Tank Agreement for 12765 Frederick Road

I, Wang-Yi Yang have recorded the I&A Agreement with the Land Records of Howard County. I will finish installing the new septic system design (Peat Biofilter) within 90 days. In the interim I will use the septic tank and pump tank as temporary holding tanks with an alarm and they will be properly maintained as holding tanks. These holding tanks will be pumped out by a septic contractor as needed.

Sincerely,

Wang-YI Yang

INNOVA, Ltd.

H. Dale Gray
Principal

INNOVATIVE WASTEWATER TREATMENT SYSTEMS

410-875-9370 Office P.O. BOX 363 NEW WINDSOR, MD 21776 410-635-2883 FAX

TO: Howard County Bureau of Environmental Health
Attn. Brian Baker, R.S.

FAX: (410) 313-2648

FROM: Dale Gray - INNOVA Ltd.

PAGES: 1

DATE: 12/21/05 Re. Yang Property/Repair - West Friendship

Mr. Baker,

This is a follow up to my tel. msg of 12/21

Clarification: I got Yang's full name:
Mr. Wang-Yi Yang
3896 Papillon Dr. - Ellicott City, MD 21043

Plan Change: Met with Barry Glotfelty on 12/16 at his visit to Dave Gatchell - Frederick County Health - Barry had reviewed Yang's plan - Had 2 changes.
(1) To meet your concern - Move septic tank outside 50' radius from well, also
(2) Relocate disposal pads and place as 2 separate pads (reasonably spaced) along an axis from test pit 'B' to test pit 'A' keeping them closer to the test pit 'B' area, and about 35' from pit 'C' which was a poor depth.
Here to get these revision to your office by 12/23

Note: Yang says the address of the property is not 12775, but rather 12765 - I told him I would pass the information along.

Dale Gray

INNOVA, Ltd.

INNOVATIVE WASTEWATER TREATMENT SYSTEMS

MAIN & HIGH STREETS

410-875-9370 Office P.O. BOX 363 NEW WINDSOR, MD 21776 410-635-2883 FAX

December 22, 2005

To: Holders of the wastewater system repair plan for the Wang-Yi Yang property
12765 Old Frederick Road West Friendship, MD 21794

Attached are plan revisions dated 12/21/05, concerned with the move of the planned disposal area, up contour to the 129' (R) line, and the increased setback of the septic tank to 50' from the well placed behind the home.

Drawing pages #1 & #2 show the changes, and subordinate drawing pages #3, #6, and #7 reflect the effect of the changes. Sheets I, ii, and iii are narrative format that speaks to the system and reflect the changes made to the original submission of 12/6/05.

Note: the owner advised that the address of 12775 Old Frederick Road was in error.

H. Dale Gray

Please replace pages with those enclosed

YANG PROPERTY
[redacted]Frederick Road West Friendship, MD

ONSITE WASTEWATER SYSTEM REPAIR
CONTENTS

ATTACHMENT:
Homeowner Operation and Maintenance Reference (five sheets)

12/ 6/05

WASTEWATER TREATMENT & DISPOSAL SYSTEM
Design for Mr. Wang-Yi Yang
8896 Papillon Dr. Ellicott City , MD
Design Property Location: 12765 Old Frederick Road, West Friendship MD

OVERVIEW - SITE CONDITIONS

Description: 3 Bedroom residence with a partial basement, beneath left side, and crawl space below right side (when facing front of home). The building sewer exits the front of the home from the crawl space area. The well is located approximately 22' from center-rear of the home.

No records are available that describe the on site wastewater disposal system that served the property since construction of the home by the previous owner.

The lot slopes from the rear to the front lot line bordering Old Frederick Rd. (MD Rt. 144). Elevation drops approximately 35' over a 100' span, at lot mid point, from the meadow-like rear lot area, to the lower portion, containing the home.

To determine suitable septic disposal area (SDA) for wastewater, several pits were dug on the property. Test pit (E) at the immediate rear of the house indicated the presence of groundwater at a depth of less than seven feet. Several additional test pits were excavated on the rear part of the property that demonstrated a disposal capability. Testing (infiltration rate/minute), and soil profile analysis showed the soils demonstrated rapid infiltration characteristics, some very rapid, and tended to be shallow (less than a 4' unsaturated soil zone below the test depth, or a 50% + rock fragment count, at less than the 4' depth] for conventional septic disposal.
Based on topography, soil profile observation and infiltration rate tests, the Howard County Bureau of Environmental Health (HCHD) and Maryland Department of the Environment (MDE) representatives determined that a non-conventional, repair system would be possible, but the wastewater would require pretreatment (cleaning) before disposal to the soil.

TESTING

HCHD and MDE investigated the site to determine what alternatives could be available to the owner based on conditions revealed by testing and site analysis.
Test pit E, below the 100' (R) contour line, and near the well demonstrated rising ground water at 7'. The bowl-like topography of the front yard area convinced the authorities that top seam tanks are necessary with attention to the sealing of all tank openings against ground water infiltration [tank testing is required]. As described, four test pits, in the high terrace area found acceptable soils, and those adjacent to test pits 'A', 'B' & 'D' the most promising. The tests of A &D showed an unsaturated soil depth of 4', also shared by test pit 'B', but not test pit 'C' [rock 18-24" below the surface]. The slowest infiltration time observed for any test was a 1" drop in 11 minutes [this was adopted, as a safety margin] and used as the soil loading rate 0.8 gpd/ft^2.

12/21/05

WASTEWATER TREATMENT & DISPOSAL SYSTEM
Design Property Location: 12765 [redacted] Frederick Road, West Friendship MD

DESIGN

To enable the repair, the owner met and discussed alternatives with the authorities, and elected to pretreat the wastewater using a Single Pass Puraflo® Peat Biofilter by Bord Na Mona Environmental Products U.S. Inc.

SEPTIC TANK - PUMP TANK - PEAT BIOFILTER

Install new, 1500 gallon, two compartment septic tank (primary treatment step) equipped with an effluent filter* on the tank outlet, which filters the discharge using 1/32 " screened openings at a rate up to 3000 gpd. The filter is a requirement by the Manufacturer (Bord na Mona Environmental Products U.S. Inc.) as a part of the pretreatment process. The filtered sewerage, or wastewater called effluent (outflowing) flows from the septic tank by gravity into the 1500 gallon pump chamber that modulates flow and stores the wastewater, allowing timed, pressured application of the primary quality influent (inflowing) to the peat biofilter pretreatment containers (4 modules).
The Influent is applied every two hours [max. 12 times in 24 hours], to the peat moss [certain type of peat] filled containers, referred to as modules. The incoming wastewater [influent] is distributed evenly, by internal pipe manifolds, across the upper peat layers in each module. The influent trickles down through the peat moss media to the floor of the module. During the trickling flow through the biofilter's media, chemical, as well as biological interreactions occur, that form the contamination cleansing/reducing capability of the system. The biofilter cleansing provides a significant reduction of biological contamination (BOD), physical debris (TSS), and the virtual elimination of harmful pathogens.
Pretreated wastewater reaching the bottom/floor of the biofilter module exits by 'weep' holes in the floor. The modules sit (level condition) on a 6" bed of gravel/crushed stone referred to as the "pad". The pad permits leveling of each module for optimum operation, and allows free flow exit for draining and provides a short term storage of [treated] effluent. The PAD thickness is specified by the Manufacturer and the depth of PAD (base) below the surface has been specified by MDE (PAD top, at grade with the native surface to provide maximum unsaturated soil depth).

The SDA required for repair, to properly distribute the wastewater from the three bedroom home was based on HCHD tests, and then compared with the infiltration modeling tables for the peat bio-filter. The manufacturer of the Puraflo® peat biofilter, Bord na Mona Environmental Products U.S. Inc. has generated the tables based on volume, and soil loading rates to provide guidance in formatting possible module absorption structure variations that agree with local disposal area regulatory requirements.

PAD DISPOSAL - SIZING

Eleven minute loading rate = 0.8 gpd/ft^2 (MDE preferred)
3 bedrooms/150 gpd = 450 gpd Design Flow
450 ÷ 0.8 gpd/ft^2 = 562.5 ft^2/ say **563 ft^2 disposal field**, for the SDA

[additional area (s) (not contiguous) might be available to form a reserve.]

PAD area = 563 ft^2 (long on contour is preferred, if conditions permit).
Modules ea., @ 7.08' L X 4.58' W ea. X 4 (units) = 28.32' X 4.58', module footprint
Selected PAD Width: 12' (terrain relatively level across field)
Thus: 563 ft^2 ÷ 12' = 46.9', or 47' the total pad length required - PAD length: 47' \ PAD width: 12'
PAD depth (specified by Manufacturer): 6" crushed stone
PAD base: locate approximately 6" below native surface (MDE has specified an at grade configuration).

(Manufacturer's tables agree that a PAD application, using the specified Design Flow of 450 gpd and 11 minute infiltration rate is satisfied by a 12' X 47' PAD , or two 12' X 23.5' PADS.

* Zabel A 300 effluent fiter: Zabel Environmental Technology™ www.zabel.com

12/21/05

WASTEWATER TREATMENT & DISPOSAL SYSTEM

Design Property Location: 12765 [redacted] Frederick Road, West Friendship MD

DESIGN

Module placement [four modules] as two groups

Preferred Manufacturers' arrangement [end to end] of long on contour, is used in a modified format with two groups of two modules eachy [end to end], placed on two equal sized Pads, axis along the contour. Pads are about twelve feet apart, creating an 'upper' pad, and a 'lower' Pad. Module installation consists of the Modules, packed with peat, internal manifolds piped, covered with a layer of peat and the lids securely fastened. Exposed Pad stone is covered with spun geotxtile and buried (see schematic) the vented lids must be clear of the soil, to allow proper air circulation to the module interior. Grading must assure proper drainage away from the lids.

Three "blue" modules [have weep holes in all parts of module floor], and one green module [has a compartment in the floor with no weep holes that pipes a portion of treated effluent to a sampling port/chamber that extends to the PAD base.

PUMP REQUIREMENT

312' Force Main/Manifold: 2" PVC sh 40 (press) Pipe (vol./100' = 17.4 gal.)

Timed dosing @ 37.5 gal./dose + 54.1 gal.run back = 91.69 gal. pumped each event

TDH (Total Dynamic Head)

Static Lift: module manifolds/ 131.5'(R) - 91.63'(R)pump off float = 39.87' difference

Friction Loss (with velocity @ 2-5fps)

2" Force Main/Manifold run: 312'

2" Fittings (as pipe equivalent length)

12 - couplings	@ 2'	= 24
4 - 45° ell	@ 4'	= 16
2 - 90° ell	@ 7'	= 14
5 - side tee	@ 10'	= 50
1 - HP gate valve	@ 1.3'	= 1.3
Equiv./ft, 2" pipe		= 105.3'

Total pipe - friction loss: 312' + 105.3' = 417.3'

Checked Manufacturers' friction/pressure loss tables for modules (see page 6)]. Verified four module arrangement at equivalent pipe length of 400 feet (400 column). Pump delivery rate is determined by adding the static lift head (39.87') to the friction head figure from the 400 foot column, and plotting TDH at 10 gpm increments. The resulting TDH (system) curve is plotted on an appropriate pump performance curve. The pump will operate at gpm shown where the two curves intersect. Optimum delivery per the Manufacturer, is between 7 and 12 gpm/module (this system distributes at 8.7 gpm/ module)

pump curves, page 7 @ 34.8 gpm/ 59.0' TDH , 34.8 gpm ÷ 4 modules = 8.7 gpm per module - OK

TIMED DOSING

450 GAL. - 12 events (optimum) = 37. 5 gal./event

Drain back of 312' pipe = 54.1 gal. ea. event

Dose 91.69 gal. to net 37.5 gal.

Pumping Rate:34.8 gpm

91.6 gal. ÷ 34.8 gpm delivery rate = 2.6 minutes, pump run time

Hence: **pump on, two one half minutes then off for 117 one half minutes,** the rest period between the doses.

12/21/05

WASTEWATER TREATMENT & DISPOSAL SYSTEM
Design Property Location: 12775 Old Frederick Road, West Friendship MD

PERFORMANCE VIEW - Puraflo® Peat Biofilter
AVERAGE TEST RESULTS

PARAMETER	INFLUENT	EFFLUENT	% REDUCTION
B.O.D. (mg/L)	280	less than 10	96 +
T.S.S. (mg/L)	190	less than 10	95+
NH_3 - N (mg/L	50	less than 5	90+
Total Coliforms	3.9×10^6	6.0×10^3	99.9+
E. coli	9.1×10^5	7.6×10^2	99.9+
Pathogenic Bacteria	Present	Absent	100

SOME USEFUL AND CAUTIONARY NOTES

Provided to the SYSTEM INSTALLATION CONTRACTOR, by the treatment unit Manufacturer, Bord na Mona U.S. Inc.

General

1. All construction materials and methods must conform to applicable Local and State Sewage Handling and Disposal Regulations
2. all pressure joints shall be primed and chemically fused
3. (not used)
4. Any deviation from this design must be approved by the designer prior to installation
5. The Contractor shall contact Bord na Mona prior to construction for a pre- construction conference
6. Electrical wiring to be installed under the direct supervision of a licensed electrical contractor according to NEC, State, and Local Electrical Codes, as applicable
7. Contractor is to install concrete tanks on uniformly firm and stable, compacted ground, crushed stone is recommended to provide uniform support to tank bottom
8. Septic and pump tanks should be water-tight and conform to applicable Local and State sewage handling and Disposal Regulations
9. Contractor must contact Miss Utility prior to any digging on the site

Biofibrous Peat Specifications

1. Peat fiber is residue of *Eriophorum* (cotton grass) plants carefully extracted from raised bog peats (other natural residues and peat fines are present in small quantities)
2. Moisture content on wet basis is 50-70%
3. Min. Organic content on anhydrous basis is 95%
4. Water adsorption capacity, 72 hr. test , is 400 -700 %
5. Average air filled porosity (AFP) is 51%

Site Preparation Work

1. Hand clear wooded sites
2. machinery should not traverse the percolation area (PAD/Trenches)
3. Machinery must never traverse excavated/exposed percolation area
4. Contractor must provide adequate access for correct installation
5. Avoid installation under wet site conditions

Percolation Area

1. Install trenches level and along contour where applicable
2. Cover stone in trench/pad with filter fabric
3. Observe code distance for interval between trenches (at least 3 times trench width)
4. Do not smear trench/pad base or sides during excavation

Circuit Court for
HOWARD COUNTY
Clerk of the Court,
MARGARET D. RAPPAPORT
8360 COURT AVENUE
ELLICOTT CITY, MD 21043-
(410) 313-2111

Transaction Block: 1413
Ref: 181

AGREEMENT	AMOUNT
IMP FD SURE $5	20.00
RECORDING FEE $20.00	20.00
SUBTOTAL:	40.00
TOTAL CHARGES:	40.00
PAYMENTS	
CHECK	40.00
TOTAL TENDERED:	40.00

Cashier: PAT Reg # CH05
Rcpt # 45393
Date: Jan 18, 2006 Time: 09:10 am

Land Records

X5850

Paul Thompson

Fax (410) 313-5390

AGREEMENT AND EASEMENT
FOR INSTALLATION OF AN
INNOVATIVE AND ALTERNATIVE
ON-SITE SEWAGE DISPOSAL SYSTEM
LAND RECORDATION
AFFIDAVIT

I, WANG-YI YANG hereby swear under penalty of perjury that on the 17 day of JAN, 2006, I paid all necessary recording fees and submitted to the clerk of the circuit court of Howard County for recordation in the land records, an Agreement and Easement for Installation of an Innovative/Alternative On-Site Sewage Disposal System on my property, the agreement being between myself and the Howard County Health Dept. and the MD Dept. of the Environment

Owner [signature] Date 1/17/2006

Owner [signature] Date 1/17/2006

I, _____ acknowledge receipt of payment for recordation of above referenced Agreement and Easement for Installation of an Innovative/Alternative On-Site Sewage Disposal System in the Howard County land records.

_____ _____

Clerk of the Circuit Court Date

Howard County

Brian FYI
RW
1/12/06

MARYLAND DEPARTMENT OF THE ENVIRONMENT
1800 Washington Boulevard • Baltimore MD 21230
MDE 410-537-3000 • 1-800-633-6101

Robert L. Ehrlich, Jr.
Governor

Michael S. Steele
Lt. Governor

Kendl P. Philbrick
Secretary

Jonas A. Jacobson
Deputy Secretary

January 11, 2006

Mr. Robert Weber, Director
Bureau of Environmental Health
Howard County Health Department
7178 Columbia Gateway Drive
Columbia, Maryland 21046

RE: Yang Property
12773 Frederick Road
12765

Dear Mr. Weber:

I have reviewed the plans for the referenced property. Based on this review the plans are approved. The sewage disposal permit should include a requirement that all tanks used in the system have a watertightness test.

Agreement and Easement
The Agreement and Easement must be signed by all parties, recorded in the land records and returned to the local Approving Authority before permits to construct can be issued. The Agreement and Easement establishes the regulatory conditions associated with the experimental project and provides monitoring access for State and County personnel.

Linked Deposit
Financial assistance may be available for this project through the Department of the Environment's Linked Deposit Program. Information concerning this loan program can be found by entering linked deposit in the search box on the MDE website at www.mde.state.md.us.

A copy of the signed signature block was forwarded to the consultant providing the plans for the project. The block should be included on two copies of the plans provided to both your office and mine. If you have questions regarding this matter please call me at (410) 537-4156.

Sincerely,

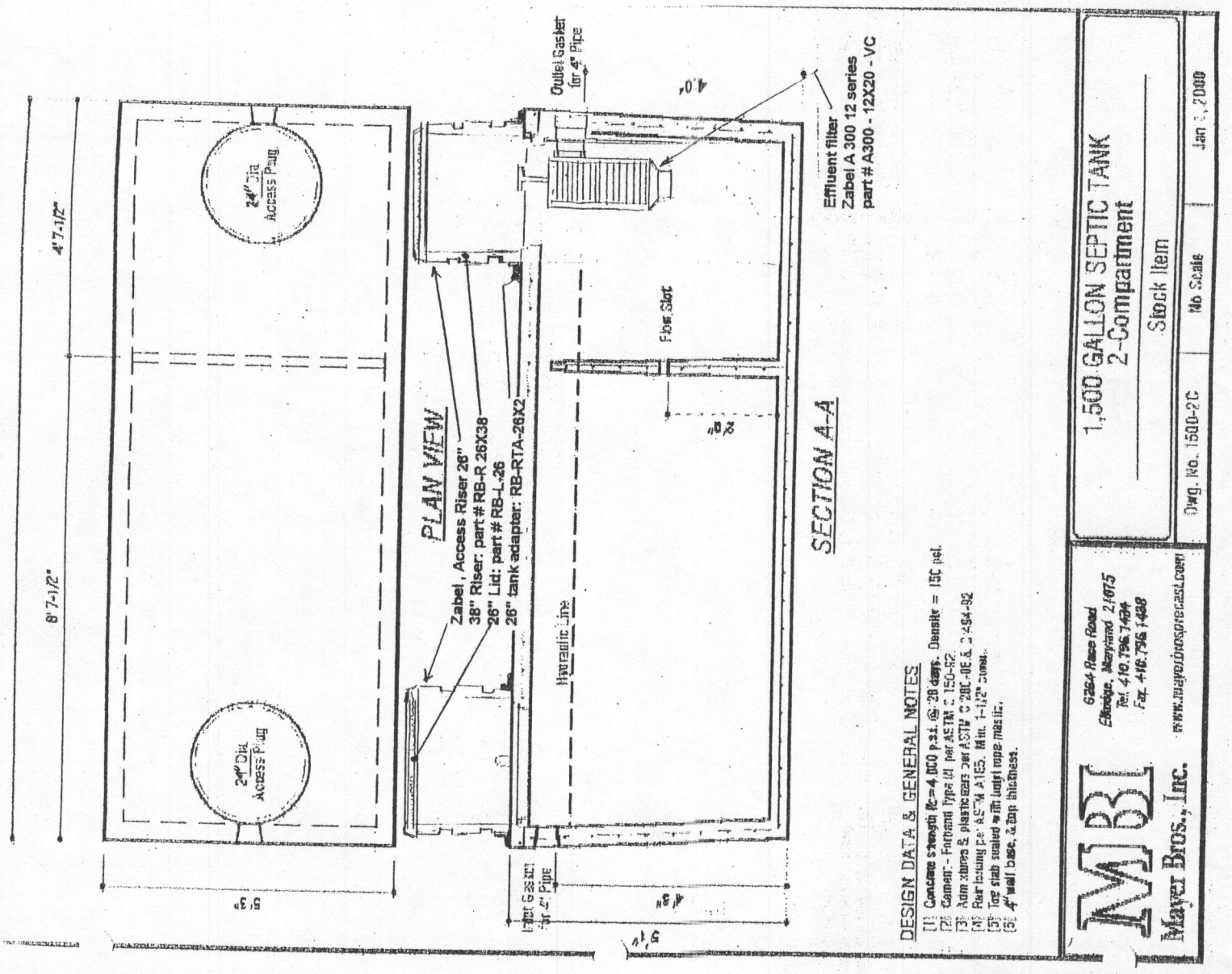
Barry Glotfelty

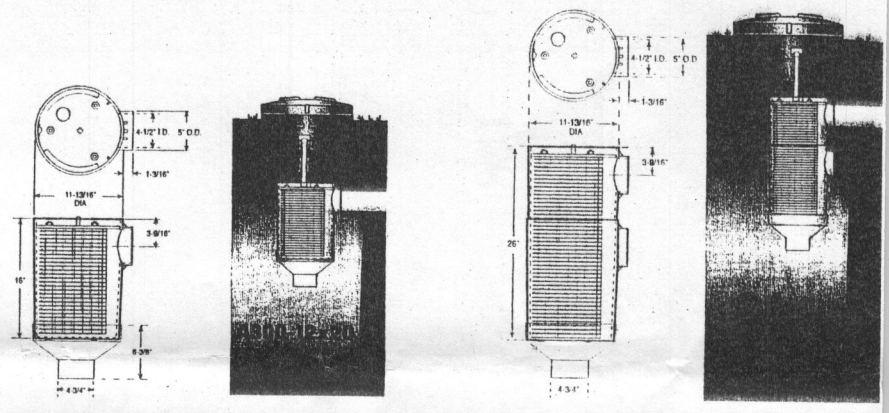
Barry Glotfelty, R.S., Regional Consultant
On-Site Systems Division
Wastewater Permits Program

Attachments

BG:je

cc: Mr. Eric Dougherty
Mr. Dale Gray





1. Applications: Grease: restaurants; Hair: dog kennels, beauty shops, zoo facilities; Lint: Laundromats; Food processing: wineries, bakeries; Animal wastes: poultry, hog & cattle farms; Apartments, trailer parks, schools, churches, shopping centers, and offices; Septic dump stations and community treatment plants; Single and Multi-family homes
2. Performance Specification
   - 2.1. Multiple Filters may be installed in manifolds to handle larger flows than those shown above. A Zabel Flow Control Plate Model FC100 is available to set the effluent flow of a single filter to pre-determined limits.
   - 2.2. TSS: Reductions in TSS within six months of installation - 50 to 90 percent. The higher the unfiltered TSS, the greater the percentage of reduction.
   - 2.3. BOD_5: Reduction in BOD_5 within six months of installation - 20 to 45 percent is dependent on the make up of the wastewater.
3. Materials: All materials are non-corrosive. Case & Lid - PVC; Filter discs - Polystyrene; Rods and Nuts-Stainless Steel.
4. Service Frequency: The A300-12's are designed to be installed in high strength waste applications. Each application will have to be monitored to determine proper service cycles. See article on "Restaurant Applications for Zabel Filters" for recommended guidelines in the Spring/Summer 97' issue.
5. Warranty: The A300-12's are warranted to be free from defects in material and workmanship for the life of the original purchaser. Zabel's liability is limited to repair or replacement of the part and in no event shall Zabel be liable for any consequential damages of any kind.
6. Dimensions:

Model	Diameter	Height	Filtration	GPD	Settling Area	Total Filter Surface	Lineal Feet of Weir
A300-12x20	12"	20"	1/32"	3,000	624.69 in²	1,857.6 in²	206
A300-12x30	12"	30"	1/32"	4,500	1,067.04 in²	2,908.8 in²	312

7. Extra support for the 28" long models may be achieved by extending a 4" support pipe from the reducer hub to the bottom of the tank.

The product(s) shown are covered by the following patents:
U.S. 4,710,295, 5,593,584 Other Patents Pending

Call Direct to **ORDER 1-800-221-5742 • Or Order Online:** www.zabel.com

Project #: YANG Prope
12775 Old Frederick R
West Friendship, MD
Sheet Title:
WASTEWATER
SYSTEM TREATMEI
PLAN
Sheet #
WWT-1
5 of 8 Sheets

Date: 12/6/05
Scale: 1" = AS NOTED
Sheet 5 of 8

INNOVA, LTD
INNOVATIVE WASTEWATER TREATMENT SYSTEMS
P.O. BOX 363, NEW WINDSOR, MD 21776
(410) 875-9370 Office
(410) 635-2883 Fax
H. Dale Gray, Principal

PUMP SELECTION

PUMP REQUIREMENT

312' Force Main/Manifold: 2" PVC sh 40 (press) Pipe (vol./100' = 17.4 gal.)
Timed dosing @ 37.5 gal./dose + 40.1 gal.run back = 77.6 gal./event
TDH (Total Dynamic Head)
Static Lift: module manifolds/ 131.5'(R) – pump off/ 91.63'(R) = 39.87'
Friction Loss (velocity - 3.9 fps, range 2-5fps)
2" Force Main /manifold run: 312'
2" Fittings (as pipe equivalent length)

12 - couplings	@ 2'	= 24
4 - 45° ell	@ 4'	= 16
2 - 90° ell	@ 7'	= 14
5 - side tee	@ 10'	= 50
1 - HP gate valve	@ 1.3'	= 1.3
Equiv./ft, 2" pipe		= 105.3'

Total pipe - friction loss: 312' + 105.3' = 417.3' equivalent feet

[checked Manufacturers' friction/pressure loss tables for modules] Verified four module arrangement at equivalent pipe length of 300 feet (see 300 column). Pump delivery rate is determined by adding the static lift head (39.87') to the friction head figure from the 400, equivalent foot column, and plotting a TDH curve at 10 gpm increments. The resulting TDH (system) curve is plotted on an appropriate pump performance curve. The pump will operate where the two curves intersect. Optimum delivery per the Manufacturer, is between 7 and 12 gpm/module. This system: 8.7 gpm/module

plot data: static lift 39.87' + table value -
@ 400' Equivalent length: 10gpm - 41.38', 20gpm - 45.92', 30gpm - 53.48', 40gpm - 64.06', 50gpm - 77.67'

see page 7

PRESSURE AND FRICTION LOSSES FOR 3 MODULE SYSTEM

Q (gpm)	$h_f + h_p$ (ft) for Various Values of Equivalent Length in Feet											
	50	100	150	200	250	300	350	400	450	500	550	600
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	1.28	1.38	1.49	1.60	1.70	1.81	1.92	2.02	2.13	2.24	2.34	2.45
20	5.10	5.53	5.96	6.39	6.81	7.24	7.67	8.09	8.52	8.95	9.38	9.80
30	11.48	12.45	13.41	14.37	15.33	16.29	17.25	18.21	19.17	20.13	21.09	22.06
40	20.42	22.13	23.83	25.54	27.25	28.96	30.67	32.38	34.08	35.79	37.50	39.21
50	31.90	34.57	37.24	39.91	42.58	45.25	47.92	50.59	53.26	55.93	58.60	61.27
60												
70												
80												

PRESSURE AND FRICTION LOSSES FOR 4 MODULE SYSTEM

Q (gpm)	$h_f + h_p$ (ft) for Various Values of Equivalent Length in Feet											
	50	100	150	200	250	300	350	400	450	500	550	600
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	0.76	0.87	0.98	1.08	1.19	1.30	1.41	1.51	1.62	1.73	1.83	1.94
20	3.06	3.49	3.91	4.34	4.77	5.19	5.62	6.05	6.47	6.90	7.33	7.76
30	6.88	7.84	8.80	9.76	10.72	11.69	12.65	13.61	14.57	15.53	16.49	17.45
40	12.23	13.94	15.65	17.36	19.07	20.77	22.48	24.19	25.90	27.61	29.32	31.02
50	19.11	21.78	24.45	27.12	29.79	32.46	35.13	37.80	40.47	43.14	45.81	48.48
60	27.52	31.37	35.21	39.05	42.90	46.74	50.59	54.43	58.27	62.12	65.96	69.81
70												
80												

BORD NA MÓNA

Project #: YANG Propert
12776 Old Frederick Rd
West Friendship, MD
Sheet Title:
WASTEWATER
SYSTEM TREATMENT
PLAN
Sheet#
WWT-1
6 of 8 Sheets

Date: 12/21/05
Scale: 1" = 4'

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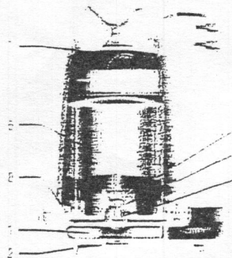
PART

Item No.	Description
	Impeller
	Casing
	Mechanical Seal
	Shaft
	Motor
	Bearings – upper and lower
	Power cable
	O-ring



GOULDS

Submersible Effluent Pump

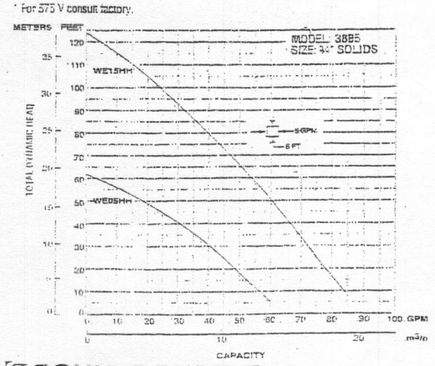
MODEL

3885

MODELS

Order No.	HP	Volts*	Phase	Max. Amps	RPM	3S Heater Size	Wt. lbs.
WE0311L	½	115	1	9.4	1750	N/A	56
WE0312L		230		4.7			
WE0316L		200		5.4			
WE0311M		115		9.4			
WE0312M		230		4.7			
WE0318M		200		5.4			
WE0511H	½	115	1	14.5	3500	N/A	60
WE0512H		230		7.0			
WE0518H		200		8.4			
WE0538H		200	3	3.6		K32	
WE0532H		230		3.3		K31	
WE0534H		460		1.65		K27	
WE0711H	¾	115	1	16.0	3500	N/A	70
WE0712H		230		8.0			
WE0718H		200		11.5			
WE0736H		200	3	5.6		K49	
WE0732H		230		5.4		K35	
WE0734H		460		2.7		K28	
WE1012H	1	230	1	12.5	3500	N/A	80
WE1018H		200		14.4			
WE1038H		200	3	8.7		K42	
WE1032H		230		7.0		K43	
WE1034H		460		3.5		K27	
WE1512H	1½	230	1	15.0	3500	N/A	80
WE1538H		200		10.6		K51	
WE1532H		230	3	8.2		K50	
WE1534H		460		4.6		K36	

* For 575 V consult factory.



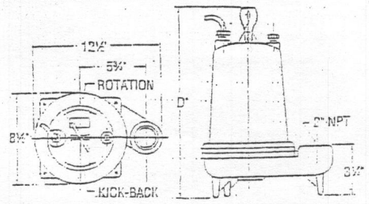
PERFORMANCE RATINGS (gallons per minute)

Order No.	WE0311L, WE0311M, WE0312L, WE0312M, WE0316L, WE0318M	WE0511H, WE0512H, WE0538H, WE0532H, WE0534H, WE0518H	WE0711H, WE0712H, WE0736H, WE0732H, WE0734H, WE0718H	WE1012H, WE1018H	WE1512H, WE1532H, WE1534H, WE1518H	WE0511HH, WE0512HH, WE0538HH, WE0532HH, WE0534HH, WE0518HH	WE1512HH, WE1538HH, WE1532HH, WE1534HH
HP	½	½	¾	1	1½	½	1½
RPM	1750	1750	3500	3500	3500	3500	3500
5	–	–	–	–	–	60	–
10	60	55	–	–	–	56	84
15	60	57	65	90	104	125	53	82
20	36	45	60	82	99	122	48	77
25		25	50	75	92	116	43	73
30			38	67	85	109	40	72
35			26	58	78	102	35	70
40			13	47	70	94	30	67
45				36	62	86	25	64
50				25	52	77	18	60
55				17	42	67	12	56
60				8	32	56	3	54
65					21	46		51
70					11	35		47
75						25		43
80						15		40
90								33
100								24
110								13
120								5

Total Head in Feet of Water

DIMENSIONS

(All dimensions are in inches. Do not use for construction purposes.)
D" ½, ¾, and 1 HP = 15"
except for model WE0712H and WE1012H = 18"; 1½ HP = 18"



EFFLUENT EJECTOR SYSTEM

Effluent ejector system offers ease of ordering and installation. A single ordering number specifies a complete system designed for most residential and commercial sump and effluent pump applications.

Package Includes:
Submersible Effluent Pump WE0311L, 12L or WE0311M, 12M, WE0511HH, 12 Mechanical Level Control Switch AS-5 (115V), AS-6 (230V) Basin-A7-18015, Basin Cover AR-1622 Check Valve AS-25
Order No.: SWE0311L, SWE0312L, SWE0311M, SWE0312M, SWE0511HH, SWE0512HH.

GOULDS PUMPS
ITT Industries

SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE. PRINTED IN U.S.A.

GOULDS

Submersible Effluent Pump

MODEL

3885

APPLICATIONS

Specifically designed for the following uses:
- Homes
- Farms
- Trailer courts
- Motels
- Schools
- Hospitals
- Industry
- Effluent systems

SPECIFICATIONS

Pump
- Solids handling capabilities: ¾" maximum.
- Discharge size: 2" NPT.
- Capacities: up to 128 GPM.
- Total heads: up to 123 feet TDH.
- Mechanical seal: silicon carbide-rotary seat/silicon carbide-stationary seat, 300 series stainless steel metal parts, BUNA-N elastomers.
- Temperature: 104°F (40°C) continuous 140°F (60°C) intermittent.
- Fasteners: 300 series stainless steel.
- Capable of running dry without damage to components.

Motor
Single phase:
- ½ HP, 115 V, 200 V, 230 V, 60 Hz, 1750 RPM; ½ HP, 115 V, 60 Hz, 3500 RPM; ½ HP – 1½ HP, 230 V, 60 Hz, 3500 RPM.
- Built-in overload with automatic reset.
- Class B insulation.

Three phase:
- ½ HP – 1½ HP 200/230/460 V, 60 Hz, 3500 RPM.
- Class B insulation.
- Overload protection must be provided in starter unit.
- Shaft: threaded, 400 series stainless steel.
- Bearings: ball bearings upper and lower.
- Power cord: 20 foot standard length (optional lengths available).

Single phase:
- ½ and ½ HP – 16/3 SJTO with 115 V or 230 V three prong plug.
- ¾-1½ HP – 14/3 STO with bare leads.

Three phase:
- ½–1½ HP – 14/4 STO with bare leads. On CSA listed models – 20 foot length SJTW and STW are standard.

FEATURES

■ **Impeller:** Cast iron, semi-open, non-clog with pump-out vanes for mechanical seal protection. Balanced for smooth operation. Silicon bronze impeller available as an option.

■ **Casing:** Cast iron volute type for maximum efficiency. 2" NPT discharge adaptable for slide rail systems.

■ **Mechanical Seal: SILICON CARBIDE VS. SILICON CARBIDE** sealing faces. Stainless steel metal parts, BUNA-N elastomers.

■ **Shaft:** Corrosion-resistant stainless steel. Threaded design. Locknut on three phase models to guard against component damage on accidental reverse rotation.

■ **Motor:** Fully submerged in high-grade turbine oil for lubrication and efficient heat transfer.

■ **Designed for Continuous Operation:** Pump ratings are within the motor manufacturer's recommended working limits, can be operated continuously without damage.

■ **Bearings:** Upper and lower heavy duty ball bearing construction.

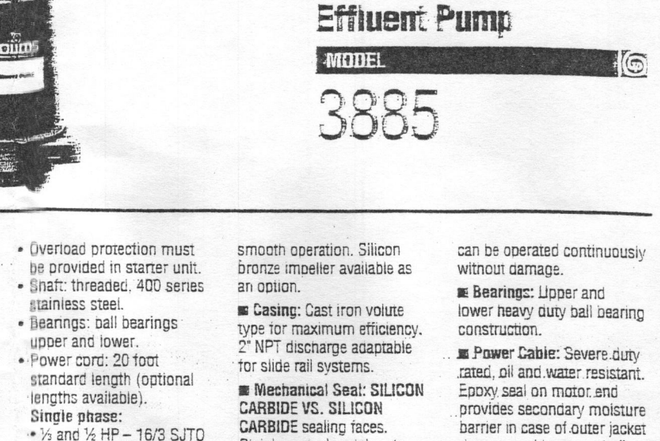
■ **Power Cable:** Severe duty rated, oil and water resistant. Epoxy seal on motor end provides secondary moisture barrier in case of outer jacket damage and to prevent oil wicking.

■ **O-ring:** Assures positive sealing against contaminants and oil leakage.

AGENCY LISTINGS

CSA Canadian Standards Association

UL Underwriters Laboratories



Effective May, 1995
3885

Project #: VARIOUS Property
12776 Old Frederick Rd.
West Friendship, MD
Sheet Title:
WASTEWATER
SYSTEM TREATMENT
PLAN
Sheet #
WWTP-1
7 of 8 Sheets

INNOVATIVE WASTEWATER TREATMENT SYSTEMS
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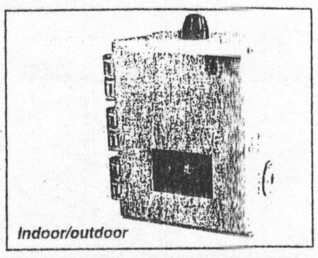
MODEL TD1 and TD2 control panels

Single-phase, simplex timed dosing pump control.

APPLICATIONS

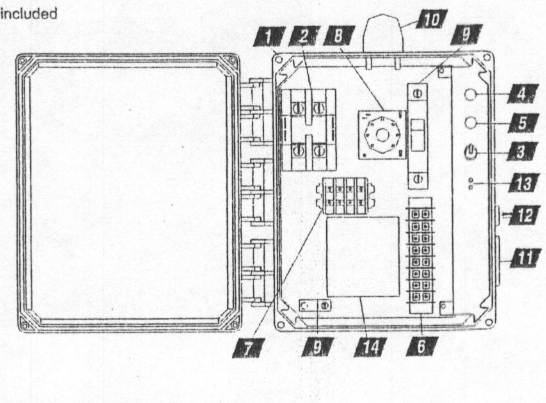
Model TD control panels provide residential and commercial customers with a reliable means of controlling a single-phase pump in onsite septic installations. A programmable timer activates a magnetic motor contactor to turn the pump on and off. A low water float overrides the timer to prevent the pump from running dry. An alarm float activates the audio/visual alarm system indicating a high liquid level. Common applications include sand filter systems, pressure distribution systems, mound systems, or any application requiring a timed dose.



Indoor/outdoor

FEATURES

- Entire control system (panel and switches) is UL Labeled to meet and/or exceed industry safety standards
- Dual safety certification for the United States and Canada
- Package includes float switches (optional)
- Complete, step-by-step installation instructions included
- Two-year limited warranty



1. **Enclosure** measures 10 x 8 x 4 inches (25.40 x 20.32 x 10.16 cm) with removable mounting flanges, NEMA 4X rated, ultraviolet stabilized thermoplastic for indoor and outdoor use
2. **Magnetic Motor Contactor** controls pump by switching both electrical lines
3. **HOA Switch** provides manual pump control
4. **Control Fuse**
5. **Alarm Fuse**
6. **Float Switch Terminal Block**
7. **Power and Pump Terminal Block**
8. **Programmable Timer** features separate variable controls to allow for on/off time settings from .05 seconds to 30 hours
9. **Pump Circuit Breaker** provides pump disconnect
10. **Red Alarm Beacon** provides 360° visual check of alarm condition
11. **Alarm Horn** provides audio warning of alarm condition (83 to 85 decibel rating)
12. **Exterior Horn Silence / Test Switch** allows alarm horn to be silenced and allows alarm to be tested
13. **Horn Silence Relay** automatically resets alarm after alarm condition has been resolved
14. **Backplate Label** includes diagram of float, pump, and power connections

MODEL NUMBER ORDERING INFORMATION

TD__ 23____

BASE MODEL
TD1 - 120 VAC
TD2 - 230 VAC

OPTIONS
(Category 23 - Options for Timed Dosing)
- A - redundant off float (pump chamber only)
- B - redundant off float, alarm activation
- C - redundant off float, alarm activation, red indicator light
- D - timer override float
- E - no floats, panel only
- F - event counter
- G - elapsed time meter
- H - remove programmable timer (includes Double Float™ pump switch and alarm float, option E not applicable)
- I - green pump run indicator light
- K - auxiliary alarm contacts (normally open)
- L - padlockable latch
- X - condensation heater (also recommended for temperatures below 14° F)

SPECIFICATIONS

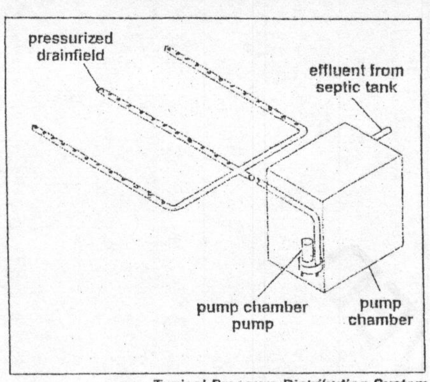
Enclosure: 10 x 8 x 4 inch (25.40 x 20.32 x 10.16 cm), NEMA 4X, weathertight, UV and corrosion-resistant engineered thermoplastic

Alarm / Control Section Voltage: 120 VAC, 60 Hz, single-phase, 3 watt maximum (alarm condition)

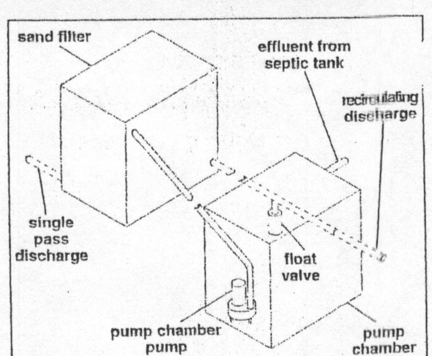
Pump Section:
Model TD1 - 120 VAC, 60 Hz, single-phase, 20 FLA
Model TD2 - 230 VAC, 60 Hz, single-phase, 20 FLA

Alarm Float:
Sensor Float® Mini control switch (model 20MPCNO)
Cable: 20 feet (6.09 meters), flexible 16 gauge, 2 conductor (UL, CSA) SJOW, water-resistant (CPE)
Float: 2.81 inch diameter x 3.42 inch long (7.14 x 8.68 cm), high impact, corrosion resistant, PVC housing for use in sewage and non-potable water up to 140°F (60°C)

Low Level Cutout Float:
SJE PumpMaster® pump switch (model 20PMDWOP)
Pumping Range: 7 to 36 inches (18 to 91 cm)
Cable: 20 feet (6.09 meter), flexible 16 gauge, 2 conductor (UL, CSA) SJOW, water-resistant (CPE)
Float: 3.05 inch diameter x 3.56 inch long (7.75 x 9.04 cm) high impact, corrosion resistant, PVC housing for use in sewage and non-potable water up to 140°F (60°C)



Typical Pressure Distribution System



Typical Single Pass or Recirculating Sand Filter Systems

SJ Electro Systems, Inc.
P.O. Box 1708 ■ County Rd 6 ■ Detroit Lakes, MN 56502 US
1-888-DIAL-SJE (342-5735) ■ Phone: 218-847-1317
■ Fax: 218-847-4617

quality motor controls

PANEL PROFILE . ©RHOMBUS TECHNOLOGY . APRIL 1997 . PROFILE 02-97

programmable timed doser

Timed dose control panels feature programmable timers, and are designed to control the amount of effluent to an onsite septic system drainfield. This control prevents overloading the drainfield during peak flow of liquids by metering the effluent out at non-peak times, avoiding potential damage to systems. Dose and rest periods can be adjusted to the soil's loading rate, providing improved wastewater treatment. Rhombus Technology offers the TD series control panels, which provide control for single phase pumps by utilizing a magnetic motor contractor to turn the pump on and off, a low water float, which overrides the timer to prevent the pump from running dry, and an alarm float, which activates an audio/visual alarm, indicating a high liquid level.

Rhombus is pleased to introduce a new and improved timer for the TD series panels!

The improved programmable cycle timer is socket-mounted & pulls out for ease of removal & setting. It features: ❶ separate ON & OFF times ranging from .05 seconds to 30 hours, ❷ a large easy-to-read, easy-to-set time scale, ❸ a larger dial with color-coded time settings, & ❹ color-coded ON & OFF cycle indicators

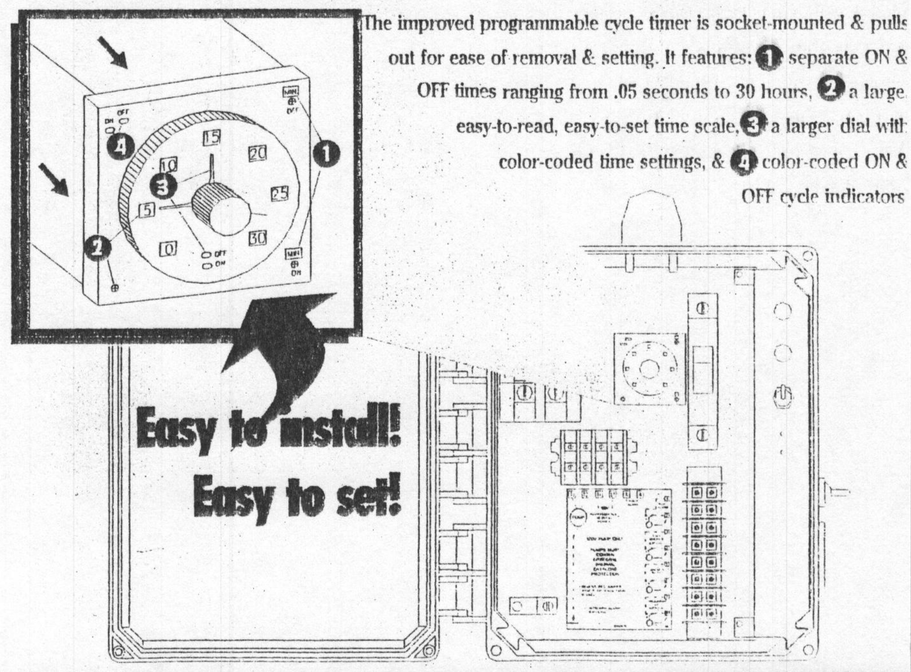


FIGURE 1 - Two float system

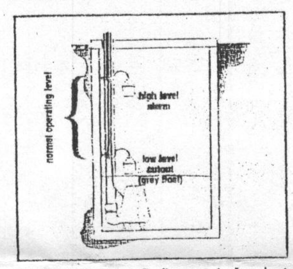


FIGURE 2 - Three float system

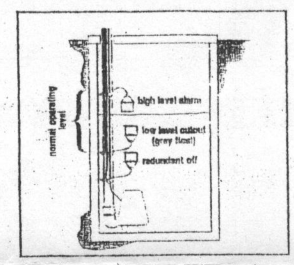
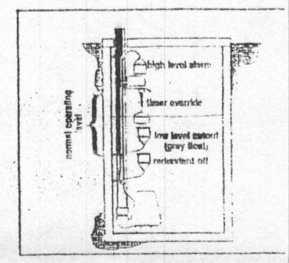


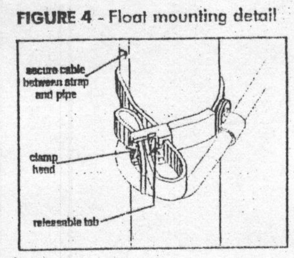
FIGURE 3 - Four float system



WARNING: Turn off all power before installing floats in pump chamber. Failure to do so could result in serious or fatal electrical shock.

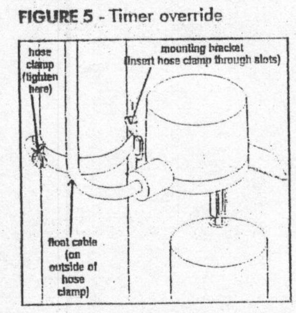
2. Determine your normal operating level, as illustrated in Figures 1 - 3.
3. Mount the float control switch on the discharge pipe (see Figure 4). Keep the switch cable between the strap and pipe to prevent slippage. To eliminate obstruction to the switch, tuck strap back through clamp head.

FIGURE 4 - Float mounting detail



4. If using an optional redundant off float, mount slightly below the low level cutout float, but above the pump (see Figures 2 & 3).
5. If using an optional timer override float, position it at a level in the basin as shown in Figure 3. Determine the pumping range, (the SJE VerticalMaster™ pump switch has an adjustable range .75" to 6.5"), and adjust for that range by moving the float stop up or down the lift rod. Mount switch as shown in Figure 5.

FIGURE 5 - Timer override



Mounting the Control Panel

1. Determine mounting location for panel. If distance exceeds the length of either the float switch cables or the pump power cables, splicing will be required. For outdoor or wet installation, we recommend the use of a junction box with liquid-tight connectors (S.J. Electro System's Model JB70) to make required connections. You must use conduit sealant to prevent moisture or gases from entering the panel.
2. Mount control panel (mounting devices are furnished with control panel).
3. Determine conduit entrance locations on control panel. Check local codes and schematic for the number of power circuits required.

   CAUTION: Be sure the power supply voltage and phase are the same as the pump motor being installed. If in doubt, see the pump identification plate for voltage/phase requirements.
4. Drill proper size holes for type of connectors being used.

   CAUTION: If using conduit, be sure that it is of adequate size to pull the pump and switch cables through.
5. Attach cable connectors and /or conduit connectors to control panel.

   FOR INSTALLATION WITHOUT A SPLICE, GO TO STEP 11; FOR INSTALLATIONS REQUIRING A SPLICE, FOLLOW STEPS 6-10.
6. Determine location for mounting junction box according to local code requirements. Do not mount the junction box inside the sump or basin.
7. Mount junction box to proper support.
8. Run conduit to junction box. Drill proper size holes for the type of conduit used.
9. Identify and label each wire before pulling through conduit into control panel and junction box. Make wire splice connections junction box.
10. Firmly tighten all fittings on junction box.
11. If a junction box is not required, pull cables through conduit in control panel.
12. Connect pump wires and float switch cables to the proper terminals as seen in Figures 6, 7 or 8.
13. Connect "power-in" conductors to proper locations: 120 volt AC alarm power to terminals labeled L1&N, 208/240 volt AC to terminals labeled L1 & L2 as seen in Figures 6 or 7.

VERIFY CORRECT OPERATION OF CONTROL PANEL AFTER INSTALLATION IS COMPLETE.

Project #: YANG Prop
12775 Old Frederick
West Friendship, MD
Sheet Title:
WASTEWATER SYSTEM TREATMENT PLAN
Sheet#
WWT-1
8 of 8 Sheet

12/6/05
1" = AS SHOWN

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P.O. BOX 363, NEW WINDSOR, MD 21776
(410) 875-9370 Office (410) 635-2883 Fax

PEAT BIDFILTERS
INTERNAL MODULE MANIFOLD 131.5'(R)
INTERNAL MODULE MANIFOLD 130.1'(R)
MODULE SUPPLY LINE
127'(R)
SYSTEM MANIFOLD
T10 126.5'(R)
T9 124.3'(R)
122'(R)
T8
117'(R)
T7
112'(R)
T6
107'(R)
T5
102'(R)
T4
2" PVC FORCE MAIN (BURIAL DEPTH SHOWN)
96.4'(R)
T3
TREE LINE
T2 95.9'
CRAWL SPACE
T1 95.2'(R)
HOUSE EXIT (GALV.) (R)
1500 GAL SEPTIC TANK & FILTER
INLET 94.3' (R)
OUTLET 94.05' (R)
INLET 93.8'(R)
93.55' (FORCE MAIN EXIT)
PUMP TANK (1500 GAL)
90.05' (R)
89.55'(R)
BASEMENT
c/o (INSTALL)
CONTROL PANEL
MINIMUM 50'
WELL
135
130
125
120
115
110
105
100
95
90'
88'
240
200
100
50
SCALE: HORIZ. 1":20'
VERT. 1":5'

NOTE: TANKS WILL BE TESTED FOR WATER TIGHTNESS [FILLED INTO RISER, AND DEMONSTRATE NO SIGNIFICANT LOSS OF VOLUME OVER 24 HOUR TEST PERIOD AS DETERMINED BY THE BUREAU OF ENVIRONMENTAL HEALTH]

Project #: YANG Property 12776 Old Frederick Rd. West Friendship, MD
Sheet Title: WASTEWATER SYSTEM TREATMENT PLAN
Sheet# WWT-1 2 of 8 Sheets

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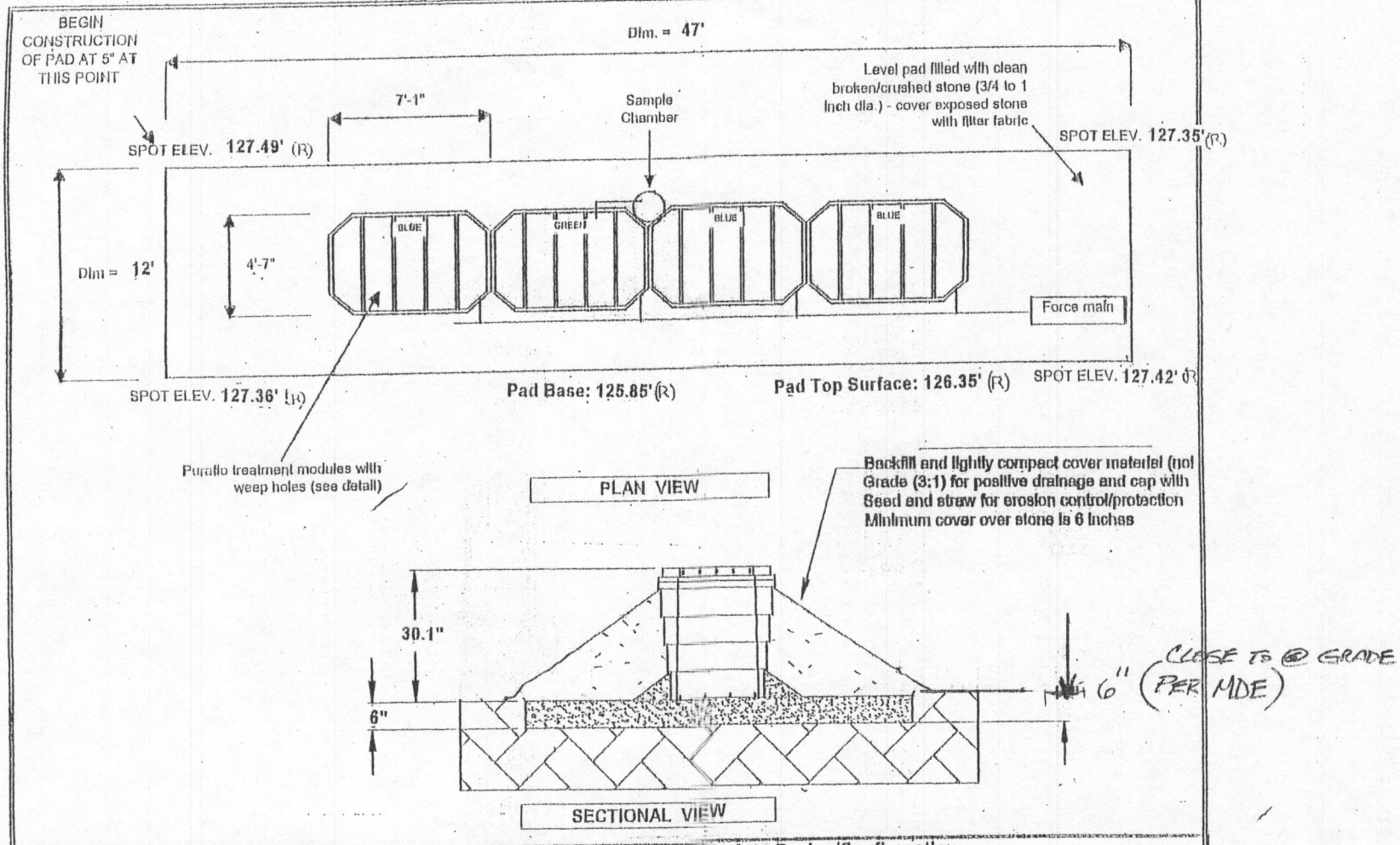
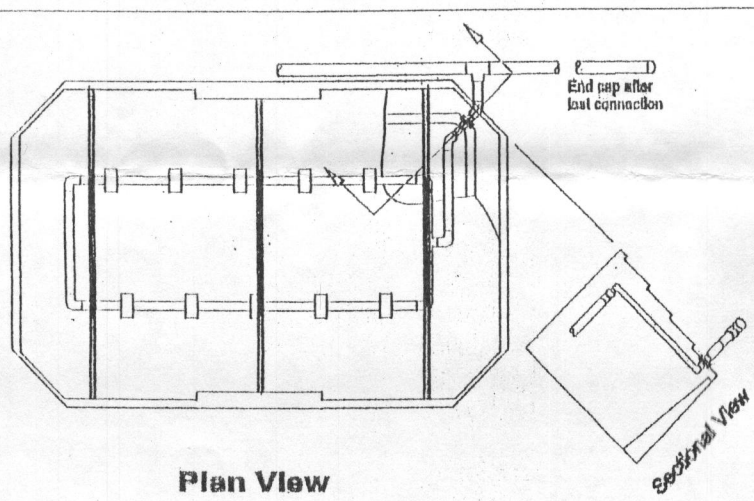
Date: 12/21/05
Scale: 1" = AS SHOWN

4 PURAFLO® modules
4 Module manifold connecting kits
1 Bord na Mŏna sample chamber kit (pad system)

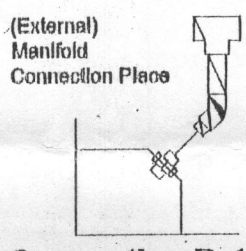


NOT TO SCALE 08-Feb-00	Schematic of Percolation Area Design/Configuration Puraflo® Peat Biofilter for Wastewater Treatment 3 BEDROOM SYSTEM - 4 MODULES END TO END

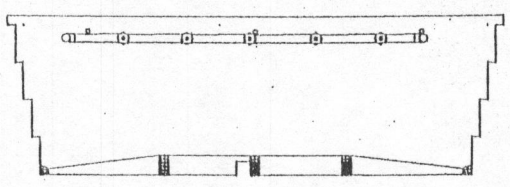
02/14/1991308R-FALL.XLS



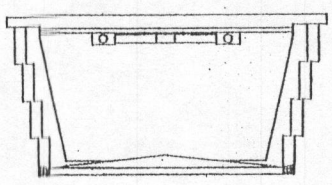
Plan View



Connection Detail



Sectional Elevation View



Sectional End View

JAN. 15, 1998 DWG. BY: GMOD	Scale 1:20	Drawing Title: MODULE GRID DETAIL	Project Reference: PURAFLO PEAT BIOFILTER

CASE 4

Project #: YANG Property
12776 Old Frederick Rd.
West Friendship, MD
Sheet Title:
WASTEWATER SYSTEM TREATMENT PLAN
Sheet #
3 WWT-1 of 8 Sheets

Date: 12/21/05
Scale: 1" = AS SHOWN

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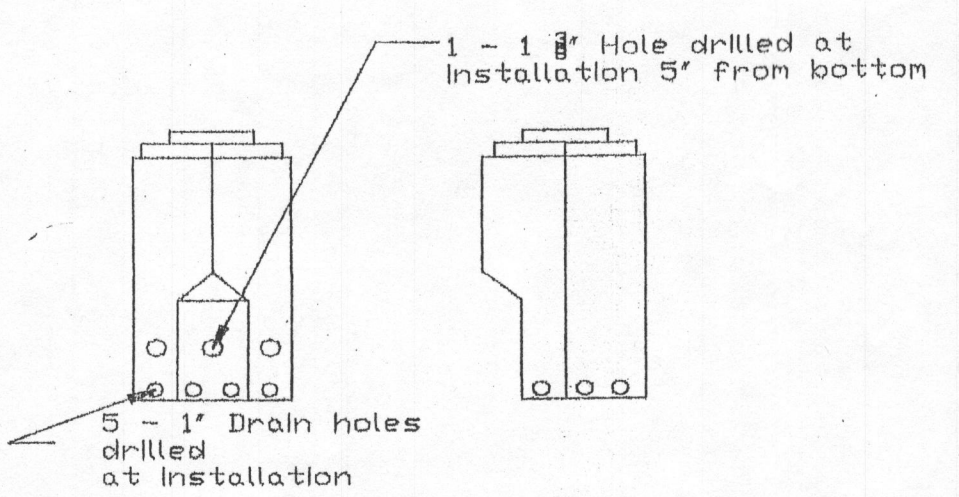
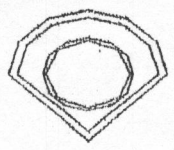
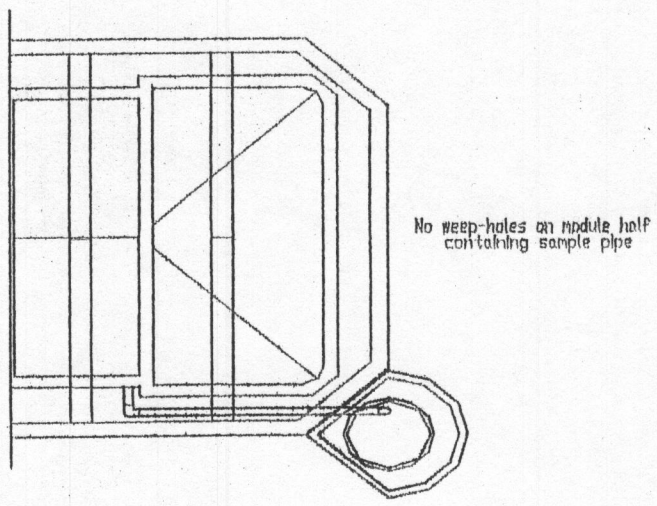


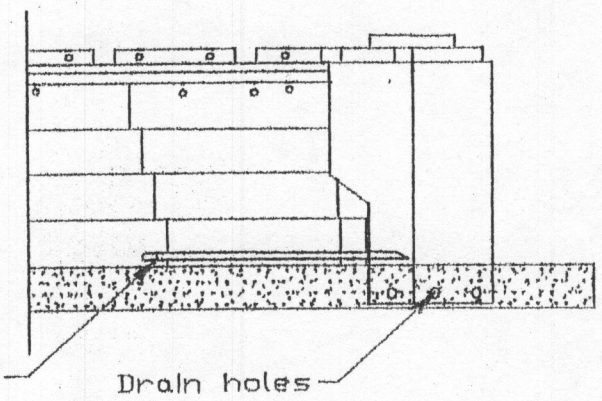
ELEVATIONAL VIEW

END VIEW



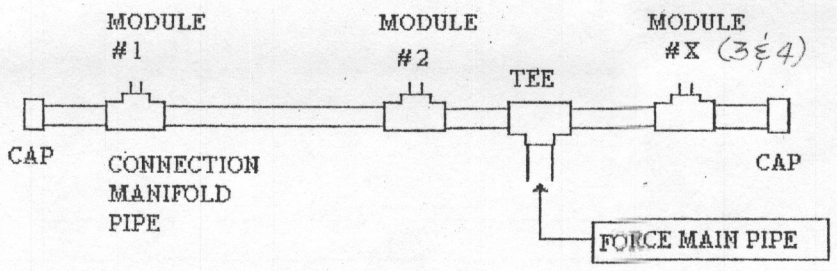
PLAN VIEW





JAN. 15, 1998 DWG. BY: GMO'D	Scale 1:20	Drawing Title: SAMPLE CHAMBER DETAIL	Project Reference: PURAFLO PEAT BIOFILTER

MODULE MANIFOLD TRUNK LINE (2 INCH ~~OR 4 INCH~~)



NOTE : FORCE MAIN MAY CONNECT TO MANIFOLD TRUNK LINE AT ONE END RATHER THHAN TEEING INTO THE MANIFOLD TRUNK LINE

BORD NA MÓNA

(800) 787-2356 www.bnm.us.com

Project #: YANG Prop
12775 Old Frederick F
West Friendship, MD
Sheet Title:
WASTEWATER
SYSTEM TREATMEI
PLAN
Sheet #
4 WWT-1
of 8 Sheet

Date: 12/6/05
Scale: 1" = AS SHOWN

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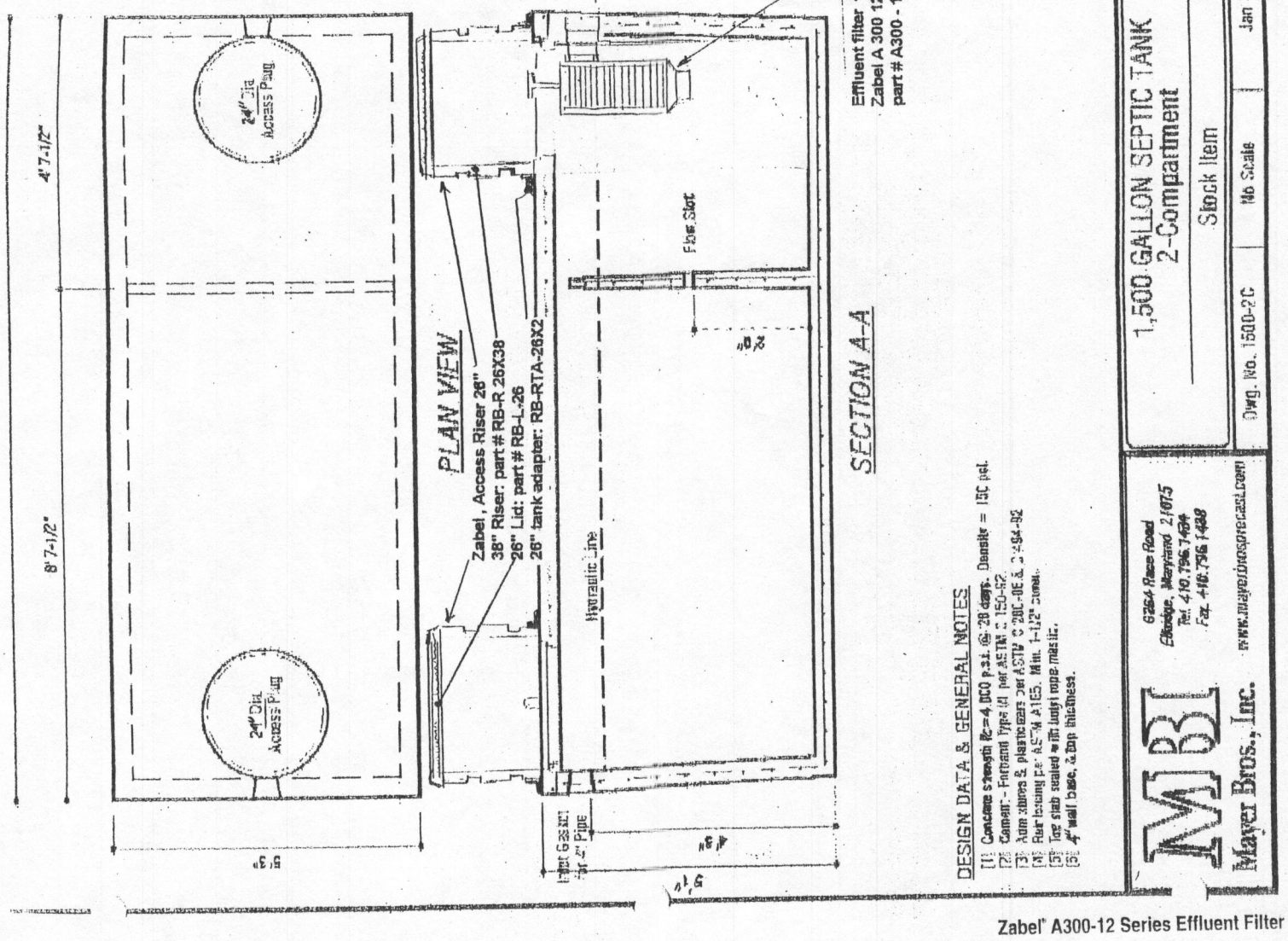
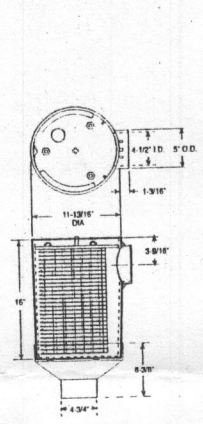


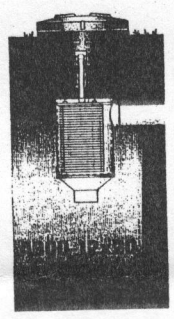
DESIGN DATA & GENERAL NOTES

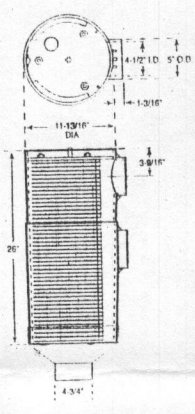
[1] Concrete strength f'c=4,000 p.s.i. @ 28 days. Density = 150 pcf.
[2] Cement - Portland Type I/II per ASTM C 150-92.
[3] Admixtures & plasticizers per ASTM C 260-86 & C 494-92.
[4] Reinforcing per ASTM A185. Min. 1-1/2" cover.
[5] Top slab sealed with butyl rope mastic.
[6] 4" wall, base, & top thickness.

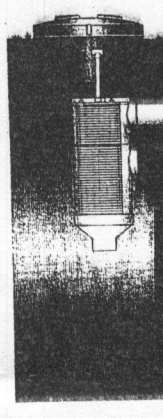
MBI Mayer Bros., Inc.	6264 Race Road, Elkridge, Maryland 21075, Tel 410.796.1434, Fax 410.796.1438, www.mayerbrosprecast.com	1,500 GALLON SEPTIC TANK 2-Compartment — Stock Item		
		Dwg. No. 1500-2C	No Scale	Jan 1, 2000

Zabel® A300-12 Series Effluent Filter Product Specification









1. Applications: Grease: restaurants; Hair: dog kennels, beauty shops, zoo facilities; Lint: Laundromats; Food processing: wineries, bakeries; Animal wastes: poultry, hog & cattle farms; Apartments, trailer parks, schools, churches, shopping centers, and offices; Septic dump stations and community treatment plants; Single and Multi-family homes

2. Performance Specification
   - 2.1. Multiple Filters may be installed in manifolds to handle larger flows than those shown above. A Zabel Control Plate Model FC100 is available to set the effluent flow of a single filter to pre-determined limit
   - 2.2. TSS: Reductions in TSS within six months of installation - 50 to 90 percent. The higher the unfiltered the greater the percentage of reduction.
   - 2.3. BOD_5: Reduction in BOD_5 within six months of installation - 20 to 45 percent is dependent on the ma up of the wastewater.

3. Materials: All materials are non-corrosive. Case & Lid - PVC; Filter discs - Polystyrene; Rods and Nuts-Stain Steel.

4. Service Frequency: The A300-12's are designed to be installed in high strength waste applications. Each application will have to be monitored to determine proper service cycles. See article on "Restaurant Applica for Zabel Filters" for recommended guidelines in the Spring/Summer 97' issue.

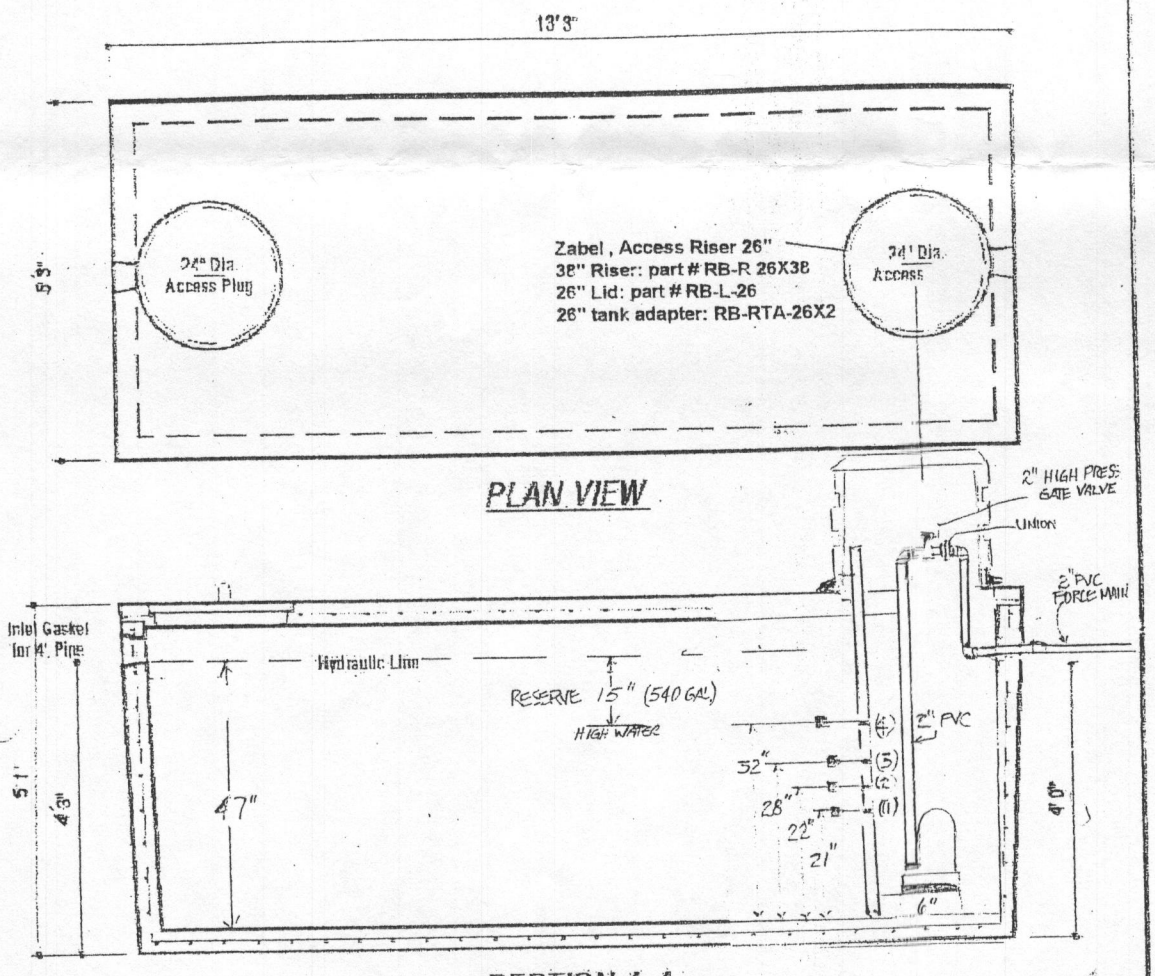
5. Warranty: The A300-12's are warranted to be free from defects in material and workmanship for the life o original purchaser. Zabel's liability is limited to repair or replacement of the part and in no event shall Zab be liable for any consequential damages of any kind.

6. Dimensions:

Model	Diameter	Height	Filtration	GPD	Settling Area	Total Filter Surface	Lineal Feet of
A300-12x20	12"	20"	1/32"	3,000	624.69 in²	1,857.6 in²	206
A300-12x30	12"	30"	1/32"	4,500	1,067.04 in²	2,908.8 in²	312

7. Extra support for the 28" long models may be achieved by extending a 4" support pipe from the reducer h the bottom of the tank.

The product(s) shown are covered by the following patents:
U.S. 4,710,295, 5,593,584 Other Patents Pending
Call Direct to **ORDER 1-800-221-5742** • **Or Order Online:** www.zabel.com



Float settings
(1) safety off
(2) low level cutout /timer on & off
(3) timer override
(4) high water alarm

DESIGN DATA & GENERAL NOTES

[1] Concrete strength f'c—4,000 p.s.i. @ 28 days. Density — 150 pcf.
[2] Cement - Portland Type I/II per ASTM C 150-92.
[3] Admixtures & plasticizers per ASTM C 260-86 & C 494-92.
[4] Reinforcing per ASTM A185. Min. 1-1/2" cover.
[5] Top slab sealed with butyl rope mastic.
[6] 4" wall, base, & top thickness.

MBI Mayer Bros., Inc.	6264 Race Road, Elkridge, Maryland 21075, Tel 410.796.1434, Fax 410.796.1438, www.mayerbrosprecast.com	1,500 GALLON SEPTIC/PUMP TANK 1-Compartment — NON-TRAFFIC MAX 3 ft. OF COVER		
		Dwg. No. 1500-1C	No Scale	Jan 1, 2000

Project #: YANG
12775 Old Freder
West Friendship,
Sheet Title:
WASTEWATER
SYSTEM TREAT
PLAN
Sheet #
5 of 8 WWT Sh

Date: 12/6/05 | Scale: 1" = 40'-0"

INNOVA, LTD
INNOVATIVE WASTEWATER TREATMENT SYSTEM
P.O. BOX 363, NEW WINDSOR, MD 21776
(410) 875-9370 Office
(410) 635-2883 Fa
H. Dale Gray, Princi

PUMP SELECTION

PUMP REQUIREMENT

312' Force Main/Manifold: 2" PVC sh 40 (press) Pipe (vol./100' = 17.4 gal.)
Timed dosing @ 37.5 gal./dose + 40.1 gal.run back = 77.6 gal./event
TDH (Total Dynamic Head)
Static Lift: module manifolds/ 131.5'(R) - pump off/ 91.63'(R) = 39.87'
Friction Loss (velocity - 3.9 fps, range 2-5fps)
2" Force Main /manifold run: 312'
2" Fittings (as pipe equivalent length)

12 - couplings	@ 2'	= 24
4 - 45° ell	@ 4'	= 16
2 - 90° ell	@ 7'	= 14
5 - side tee	@ 10'	= 50
1 - HP gate valve	@ 1.3'	= 1.3
Equiv./ft, 2" pipe		= 105.3'

Total pipe - friction loss: 312' + 105.3' = 417.3' equivalent feet

[checked Manufacturers' friction/pressure loss tables for modules] Verified four module arrangement at equivalent pipe length of 300 feet (see 300 column). Pump delivery rate is determined by adding the static lift head (39.87') to the friction head figure from the 400, equivalent foot column, and plotting a TDH curve at 10 gpm increments. The resulting TDH (system) curve is plotted on an appropriate pump performance curve. The pump will operate where the two curves intersect. Optimum delivery per the Manufacturer, is between 7 and 12 gpm/module. This system: 8.7 gpm/module

plot data: static lift 39.87' + table value -
@ 400' Equivalent length: 10gpm - 41.38', 20gpm - 45.92', 30gpm - 53.48', 40gpm - 64.06', 50gpm - 77.67'

see page 7

PRESSURE AND FRICTION LOSSES FOR 3 MODULE SYSTEM

Q (gpm)	$h_f + h_p$ (ft) for Various Values of Equivalent Length in Feet											
	50	100	150	200	250	300	350	400	450	500	550	600
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	1.28	1.38	1.49	1.60	1.70	1.81	1.92	2.02	2.13	2.24	2.34	2.45
20	5.10	5.53	5.96	6.39	6.81	7.24	7.67	8.09	8.52	8.95	9.38	9.80
30	11.48	12.45	13.41	14.37	15.33	16.29	17.25	18.21	19.17	20.13	21.09	22.06
40	20.42	22.13	23.83	25.54	27.25	28.96	30.67	32.38	34.08	35.79	37.50	39.21
50	31.90	34.57	37.24	39.91	42.58	45.25	47.92	50.59	53.26	55.93	58.60	61.27
60												
70												
80												

PRESSURE AND FRICTION LOSSES FOR 4 MODULE SYSTEM

Q (gpm)	$h_f + h_p$ (ft) for Various Values of Equivalent Length in Feet											
	50	100	150	200	250	300	350	400	450	500	550	600
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	0.76	0.87	0.98	1.08	1.19	1.30	1.41	1.51	1.62	1.73	1.83	1.94
20	3.06	3.49	3.91	4.34	4.77	5.19	5.62	6.05	6.47	6.90	7.33	7.76
30	6.88	7.84	8.80	9.76	10.72	11.69	12.65	13.61	14.57	15.53	16.49	17.45
40	12.23	13.94	15.65	17.36	19.07	20.77	22.48	24.19	25.90	27.61	29.32	31.02
50	19.11	21.78	24.45	27.12	29.79	32.46	35.13	37.80	40.47	43.14	45.81	48.48
60	27.52	31.37	35.21	39.05	42.90	46.74	50.59	54.43	58.27	62.12	65.96	69.81
70												
80												

Project #: YANG Propert
12776 Old Frederick Rd
West Friendship, MD
Sheet Title:
WASTEWATER
SYSTEM TREATMENT
PLAN
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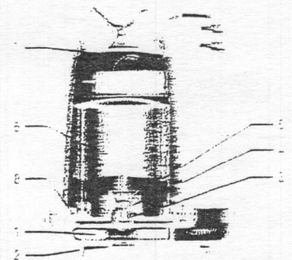
H. Dale Gray, Principal

12/2/05
Date: 1" = 40'-0"

PART

Item no.	Description
	Impeller
	Casing
	Mechanical seal
	Shaft
	Motor
	Bearings – upper and lower
	Power cable
	O-ring



GOULDS

Submersible Effluent Pump

MODEL

3885

MODELS

Order No.	HP	Volts	Phase	Nom. Amps	RPM	Std Heater Size	Wt. (lbs.)
WE0311L	½	115	1	9.4	1750	N/A	56
WE0311M		230		4.7			
WE0316L		115		9.4			
WE0311N		115		9.4			
WE0312M		230		4.7			
WE0316N		200		5.4			
WE0511P	¾	115		14.5	3500		60
WE0512P		230		7.6			
WE0516P		200		8.4			
WE0538H		200	3	3.6		K32	
WE0532H		230		3.4		K32	
WE0534H		460		1.7		K32	
WE0511HK	1½	115	1	14.5		N/A	
WE0512HK		230		7.6			
WE0516HK		200		8.4			
WE0538HK		200	3	3.6		K32	
WE0532HK		230		3.4		K32	
WE0534HK		460		1.7		K32	
WE0712H	¾	230	1	10.0	3500	N/A	70
WE0718H		200		11.5			
WE0738H		200	3	6.2		K45	
WE0732H		230		5.4		K35	
WE0734H		460		2.7		K35	
WE1012H	1	230	1	12.8		N/A	
WE1018H		200		14.4			
WE1038H		200	3	8.1		K43	
WE1032H		230		7.0		K43	
WE1034H		460		3.5		K35	
WE1512H	1½	230	1	16.7		N/A	
WE1538H		200	3	10.6		K50	
WE1532H		230		9.2		K50	
WE1534H		460		4.6		K35	
WE1512HK		230	1	15.0		N/A	
WE1538HK		200	3	10.6		K50	
WE1532HK		230		9.2		K50	
WE1534HK		460		4.6		K35	

80

* For 575 V consult factory.

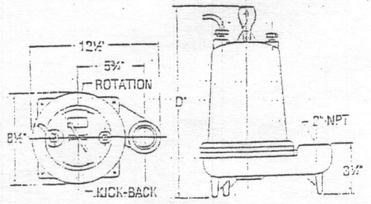
PERFORMANCE RATINGS (gallons per minute)

Order No.	WE0311L, WE0311M, WE0312L, WE0316L, WE0316N	WE0511H, WE0512H, WE0538H, WE0532H, WE0534H, WE0518H	WE0712H, WE0738H, WE0732H, WE0734H, WE0718H	WE1012H	WE1038H, WE1032H, WE1034H, WE1018H	WE1512H, WE1538H, WE1532H, WE1534H, WE1518H	WE0511HK, WE0512HK, WE0538HK, WE0532HK, WE0534HK	WE1512HK, WE1538HK, WE1532HK, WE1534HK
HP	½	½	¾	1	1	1½	½	1½
RPM	1750	1750	3500	3500	3500	3500	3500	3500
5	–	–	–	–	–	–	60	–
10	80	82	–	–	–	–	56	84
15	60	57	65	90	104	125	53	80
20	36	42	60	83	98	122	48	77
25		25	50	76	92	115	43	73
30			38	67	85	109	40	72
35			26	58	78	102	35	70
40			13	47	70	94	30	67
45				36	62	86	25	64
50				25	52	77	18	60
55				17	43	67	12	56
60				8	32	56	3	52
65					20	46		47
70					11	35		41
75						25		35
80						13		28
90								13
100								2
110								1
120								0

Total Head in Feet of Water

DIMENSIONS

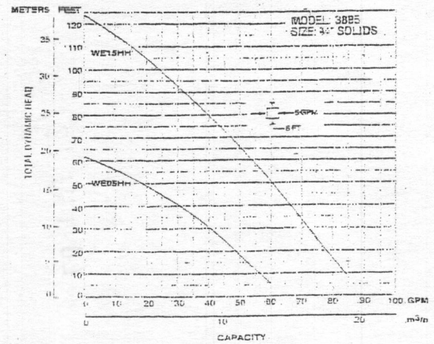
(All dimensions are in inches. Do not use for construction purposes.)
D" ¼, ½, ¾ and 1 HP = 15"
except for model WE0712H and WE1012H = 18"; 1½ HP = 18"



EFFLUENT EJECTOR SYSTEM

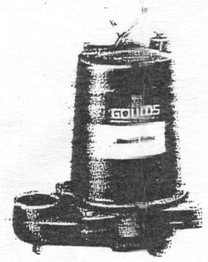
Effluent ejector system offers ease of ordering and installation. A single ordering number specifies a complete system designed for most residential and commercial sump and effluent pump applications.

Package Includes:
Submersible Effluent Pump WE0311L, 12L or WE0311M, 12M, WE0511HK, 12 Mechanical Level Control Switch A8-5 (115V), A2-6 (230V) Basin A7-18U5, Basin Cover A8-1622 Check Valve A6-2F
Order No.: SWE0311L, SWE0312L, SWE0311M, SWE0312M, SWE0511HK, SWE0512HK



GOULDS PUMPS
ITT Industries

SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE. PRINTED IN U.S.A.



GOULDS

Submersible Effluent Pump

MODEL

3885

APPLICATIONS

Specifically designed for the following uses:
- Homes
- Farms
- Trailer courts
- Motels
- Schools
- Hospitals
- Industry
- Effluent systems

SPECIFICATIONS

Pump
- Solids handling capabilities: ¾" maximum.
- Discharge size: 2" NPT.
- Capacities: up to 128 GPM.
- Total heads: up to 123 feet TDH.
- Mechanical seal: silicon carbide-rotary seat/silicon carbide-stationary seat, 300 series stainless steel metal parts, BUNA-N elastomers.
- Temperature: 104°F (40°C) continuous 140°F (60°C) intermittent.
- Fasteners: 300 series stainless steel.
- Capable of running dry without damage to components.

Motor

Single phase:
- ½ HP, 115 V, 200 V, 230 V, 60 Hz, 1750 RPM; ½ HP, 115 V, 60 Hz, 3500 RPM; ½ HP – 1½ HP, 230 V, 60 Hz, 3500 RPM.
- Built-in overload with automatic reset.
- Class B insulation.

Three phase:
- ½ HP – 1½ HP 200/230/460 V, 60 Hz, 3500 RPM.
- Class B insulation.
- Overload protection must be provided in starter unit.
- Shaft: threaded, 400 series stainless steel.
- Bearings: ball bearings upper and lower.
- Power cord: 20 foot standard length (optional lengths available).

Single phase:
- ½ and ½ HP – 16/3 SJTO with 115 V or 230 V three prong plug.
- ¾-1½ HP – 14/3 STO with bare leads.

Three phase:
- ½-1½ HP – 14/4 STO with bare leads. On CSA listed models – 20 foot length SJTW and STW are standard.

FEATURES

■ **Impeller:** Cast iron, semi-open, non-clog with pump-out vanes for mechanical seal protection. Balanced for smooth operation. Silicon bronze impeller available as an option.

■ **Casing:** Cast iron volute type for maximum efficiency. 2" NPT discharge adaptable for slide rail systems.

■ **Mechanical Seal: SILICON CARBIDE VS. SILICON CARBIDE** sealing faces. Stainless steel metal parts, BUNA-N elastomers.

■ **Shaft:** Corrosion-resistant stainless steel. Threaded design. Locknut on three phase models to guard against component damage on accidental reverse rotation.

■ **Motor:** Fully submerged in high-grade turbine oil for lubrication and efficient heat transfer.

■ **Designed for Continuous Operation:** Pump ratings are within the motor manufacturer's recommended working limits, can be operated continuously without damage.

■ **Bearings:** Upper and lower heavy duty ball bearing construction.

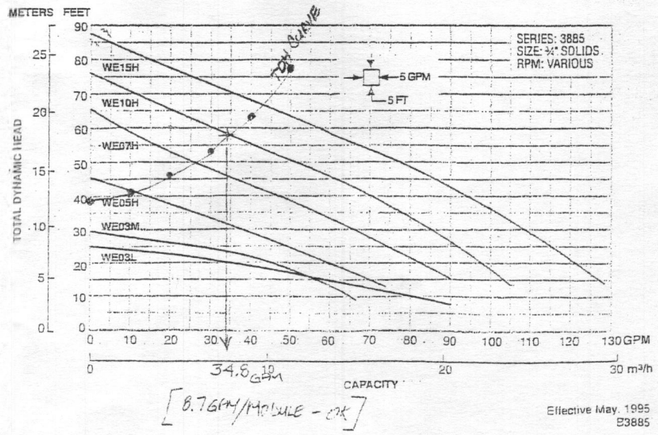
■ **Power Cable:** Severe duty rated, oil and water resistant. Epoxy seal on motor end provides secondary moisture barrier in case of outer jacket damage and to prevent oil wicking.

■ **O-ring:** Assures positive sealing against contaminants and oil leakage.

AGENCY LISTINGS

CSA Canadian Standards Association

UL Underwriters Laboratories



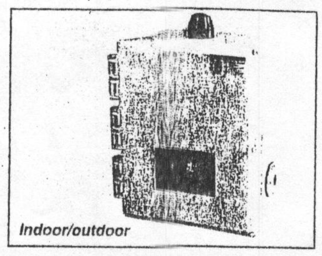
Effective May, 1995
B3885

MODEL TD1 and TD2 control panels

Single-phase, simplex timed dosing pump control.

APPLICATIONS

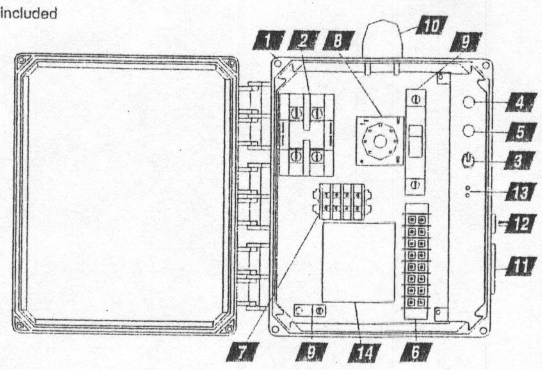
Model TD control panels provide residential and commercial customers with a reliable means of controlling a single-phase pump in onsite septic installations. A programmable timer activates a magnetic motor contactor to turn the pump on and off. A low water float overrides the timer to prevent the pump from running dry. An alarm float activates the audio/visual alarm system indicating a high liquid level. Common applications include sand filter systems, pressure distribution systems, mound systems, or any application requiring a timed dose.



Indoor/outdoor

FEATURES

- Entire control system (panel and switches) is UL Labeled to meet and/or exceed industry safety standards
- Dual safety certification for the United States and Canada
- Package includes float switches (optional)
- Complete, step-by-step installation instructions included
- Two-year limited warranty



1. **Enclosure** measures 10 x 8 x 4 inches (25.40 x 20.32 x 10.16 cm) with removable mounting flanges, NEMA 4X rated, ultraviolet stabilized thermoplastic for indoor and outdoor use
2. **Magnetic Motor Contactor** controls pump by switching both electrical lines
3. **HOA Switch** provides manual pump control
4. **Control Fuse**
5. **Alarm Fuse**
6. **Float Switch Terminal Block**
7. **Power and Pump Terminal Block**
8. **Programmable Timer** features separate variable controls to allow for on/off time settings from .05 seconds to 30 hours
9. **Pump Circuit Breaker** provides pump disconnect
10. **Red Alarm Beacon** provides 360° visual check of alarm condition
11. **Alarm Horn** provides audio warning of alarm condition (83 to 85 decibel rating)
12. **Exterior Horn Silence / Test Switch** allows alarm horn to be silenced and allows alarm to be tested
13. **Horn Silence Relay** automatically resets alarm after alarm condition has been resolved
14. **Backplate Label** includes diagram of float, pump, and power connections

SJE-Rhombus® CONTROLS
SJ Electro Systems, Inc.

MODEL NUMBER ORDERING INFORMATION

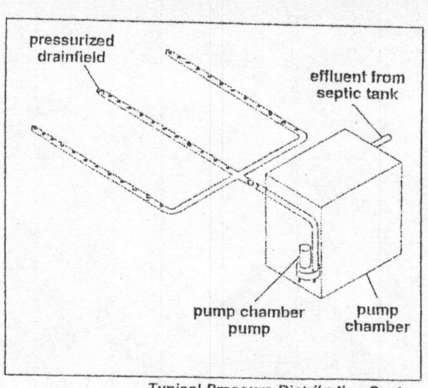
TD__ 23____

BASE MODEL
- TD1 - 120 VAC
- TD2 - 230 VAC

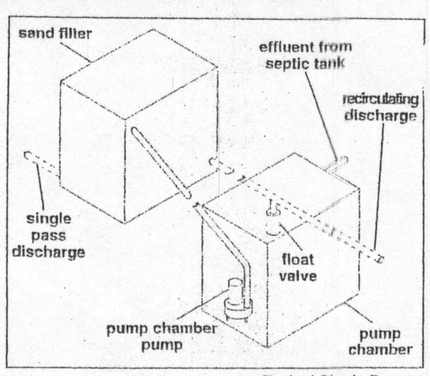
OPTIONS
(Category 23 - Options for Timed Dosing)
- A - redundant off float (pump chamber only)
- B - redundant off float, alarm activation
- C - redundant off float, alarm activation, red indicator light
- D - timer override float
- E - no floats, panel only
- F - event counter
- G - elapsed time meter
- H - remove programmable timer (includes Double Float™ pump switch and alarm float, option E not applicable)
- I - green pump run indicator light
- K - auxiliary alarm contacts (normally open)
- L - padlockable latch
- X - condensation heater (also recommended for temperatures below 14° F)

SPECIFICATIONS

Enclosure: 10 x 8 x 4 inch (25.40 x 20.32 x 10.16 cm), NEMA 4X, weathertight, UV and corrosion-resistant engineered thermoplastic
Alarm / Control Section Voltage: 120 VAC, 60 Hz, single-phase, 3 watt maximum (alarm condition)
Pump Section:
Model TD1 - 120 VAC, 60 Hz, single-phase, 20 FLA
Model TD2 - 230 VAC, 60 Hz, single-phase, 20 FLA
Alarm Float:
Sensor Float® Mini control switch (model 20MPCNO)
Cable: 20 feet (6.09 meters), flexible 16 gauge, 2 conductor (UL, CSA) SJOW, water-resistant (CPE)
Float: 2.81 inch diameter x 3.42 inch long (7.14 x 8.68 cm), high impact, corrosion resistant, PVC housing for use in sewage and non-potable water up to 140°F (60°C)
Low Level Cutout Float:
SJE PumpMaster® pump switch (model 20PMDWOP)
Pumping Range: 7 to 36 inches (18 to 91 cm)
Cable: 20 feet (6.09 meter), flexible 16 gauge, 2 conductor (UL, CSA) SJOW, water-resistant (CPE)
Float: 3.05 inch diameter x 3.56 inch long (7.75 x 9.04 cm) high impact, corrosion resistant, PVC housing for use in sewage and non-potable water up to 140°F (60°C)



Typical Pressure Distribution System



Typical Single Pass or Recirculating Sand Filter Systems

SJE Rhombus CONTROLS
SJ Electro Systems, Inc.
P.O. Box 1708 ■ County Rd 6 ■ Detroit Lakes, MN 56502 US
1-888-DIAL-SJE (342-5735) ■ Phone: 218-847-1317
■ Fax: 218-847-4617

panel profile — quality motor controls

PANEL PROFILE . ©RHOMBUS TECHNOLOGY . APRIL 1997 . PROFILE 02-97

programmable timed doser

Timed dose control panels feature programmable timers, and are designed to control the amount of effluent to an onsite septic system drainfield. This control prevents overloading the drainfield during peak flow of liquids by metering the effluent out at non-peak times, avoiding potential damage to systems. Dose and rest periods can be adjusted to the soil's loading rate, providing improved wastewater treatment. Rhombus Technology offers the TD series control panels, which provide control for single phase pumps by utilizing a magnetic motor contractor to turn the pump on and off, a low water float, which overrides the timer to prevent the pump from running dry, and an alarm float, which activates an audio/visual alarm, indicating a high liquid level.

Rhombus is pleased to introduce a new and improved timer for the TD series panels!

The improved programmable cycle timer is socket-mounted & pulls out for ease of removal & setting. It features: **1** separate ON & OFF times ranging from .05 seconds to 30 hours, **2** a large, easy-to-read, easy-to-set time scale, **3** a larger dial with color-coded time settings, & **4** color-coded ON & OFF cycle indicators

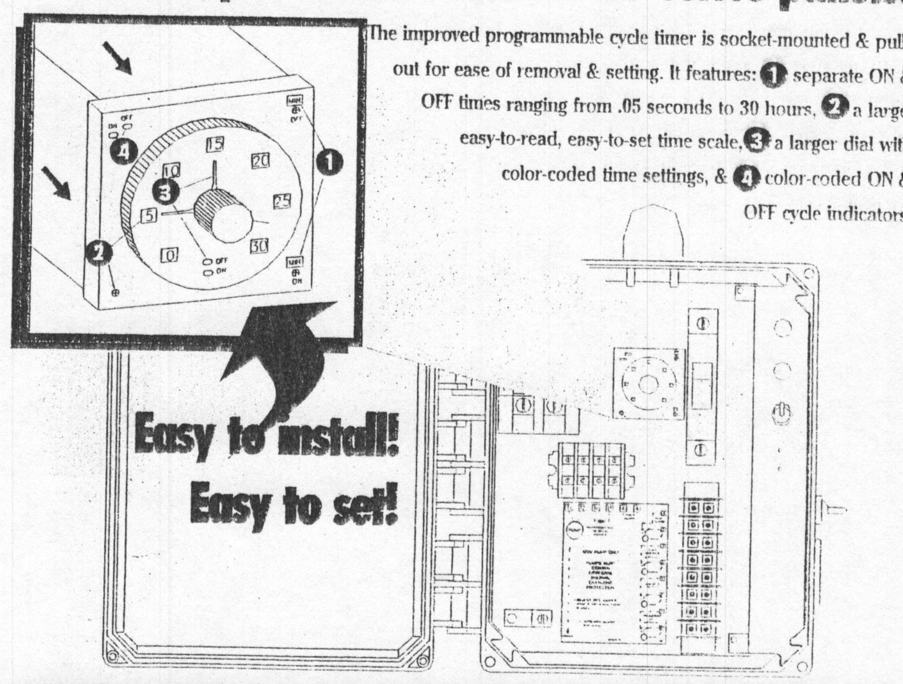


FIGURE 1 - Two float system

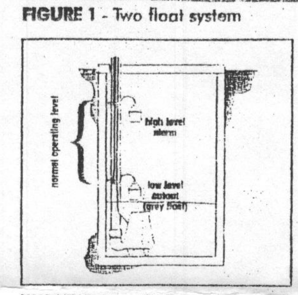


FIGURE 2 - Three float system

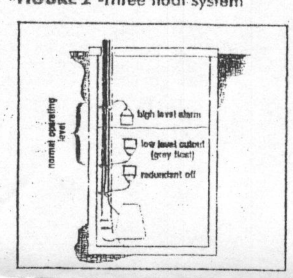
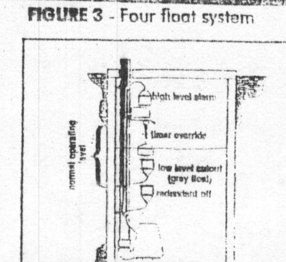


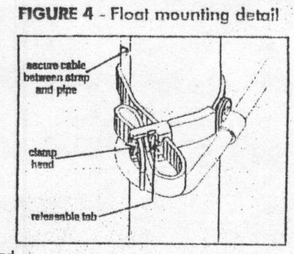
FIGURE 3 - Four float system



WARNING: Turn off all power before installing floats in pump chamber. Failure to do so could result in serious or fatal electrical shock.

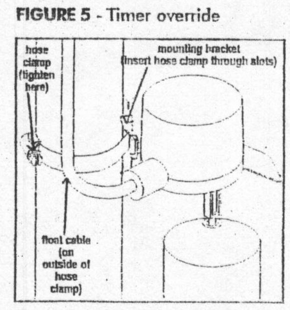
2. Determine your normal operating level, as illustrated in Figures 1 - 3.
3. Mount the float control switch on the discharge pipe (see Figure 4). Keep the switch cable between the strap and pipe to prevent slippage. To eliminate obstruction to the switch, tuck strap back through clamp head.

FIGURE 4 - Float mounting detail



4. If using an optional redundant off float, mount slightly below the low level cutout float, but above the pump (see Figures 2 & 3).
5. If using an optional timer override float, position it at a level in the basin as shown in Figure 3. Determine the pumping range, (the SJE VerticalMaster™ pump switch has an adjustable range .75" to 6.5"), and adjust for that range by moving the float stop up or down the lift rod. Mount switch as shown in Figure 5.

FIGURE 5 - Timer override



Mounting the Control Panel

1. Determine mounting location for panel. If distance exceeds the length of either the float switch cables or the pump power cables, splicing will be required. For outdoor or wet installation, we recommend the use of a junction box with liquid-tight connectors (S.J. Electro System's Model JB70) to make required connections. You must use conduit sealant to prevent moisture or gases from entering the panel.
2. Mount control panel (mounting devices are furnished with control panel).
3. Determine conduit entrance locations on control panel. Check local codes and schematic for the number of power circuits required.

   CAUTION: Be sure the power supply voltage and phase are the same as the pump motor being installed. If in doubt, see th pump identification plate for voltage/phase requirements.
4. Drill proper size holes for type of connectors being used.

   CAUTION: If using conduit, be sure that it is of adequate size to pull the pump and switch cables through.
5. Attach cable connectors and /or conduit connectors to control panel.

   FOR INSTALLATION WITHOUT A SPLICE, GO TO STEP 11; FOR INSTALLATIONS REQUIRING A SPLICE, FOLLOW STEPS 6-10.
6. Determine location for mounting junction box according to loc code requirements. Do **not** mount the junction box inside the sump or basin.
7. Mount junction box to proper support.
8. Run conduit to junction box. Drill proper size holes for the typ of conduit used.
9. Identify and label each wire before pulling through conduit int control panel and junction box. Make wire splice connections junction box.
10. Firmly tighten all fittings on junction box.
11. If a junction box is not required, pull cables through conduit in control panel.
12. Connect pump wires and float switch cables to the proper terminals as seen in Figures 6, 7 or 8.
13. Connect "power-in" conductors to proper locations: 120 volt A alarm power to terminals lableled L1&N, 208/240 volt AC to terminals labeled L1 & L2 as seen in Figures 6 or 7.

VERIFY CORRECT OPERATION OF CONTROL PANEL AFTER INSTALLATION IS COMPLETE.

Project #: YANG Prop
12776 Old Frederick
West Friendship, MD
Sheet Title:
WASTEWATER SYSTEM TREATME PLAN
Sheet#
WWT-1
8 of 8 Sheet

e: 12/6/05
le: 1" = AS SHOWN

INNOVA, LTD
INNOVATIVE WASTEWATER TREATMENT SYSTEMS
P.O. BOX 363, NEW WINDSOR, MD 21776
(410) 875--9370 Office
(410) 635-2883 Fax

INNOVA, LTD
INNOVATIVE WASTEWATER TREATMENT SYSTEMS
P.O. BOX 363, NEW WINDSOR, MD 21776
(410) 875-9370 Office
(410) 635-2883 Fax
H. Dale Gray, Principal

PURAFLO® PEAT BIOFILTER

PRETREATMENT

WASTEWATER

DISPOSAL SYSTEM

MARYLAND DEPARTMENT OF THE ENVIRONMENT
ON-SITE SYSTEMS DIVISION
Reviewed by: BWG Date: 1-11-06
Yang Property
Approved by: [signature] Date: 1-11-06

Project Title: M. Yang Property
Address: 12775 Old Frederick Road, West Friendship MD 21794

NOTE
Approval of final field layout is required by the Division of Residential Sanitation at least 48 hours prior to system installation

Approved By_____

Date_____

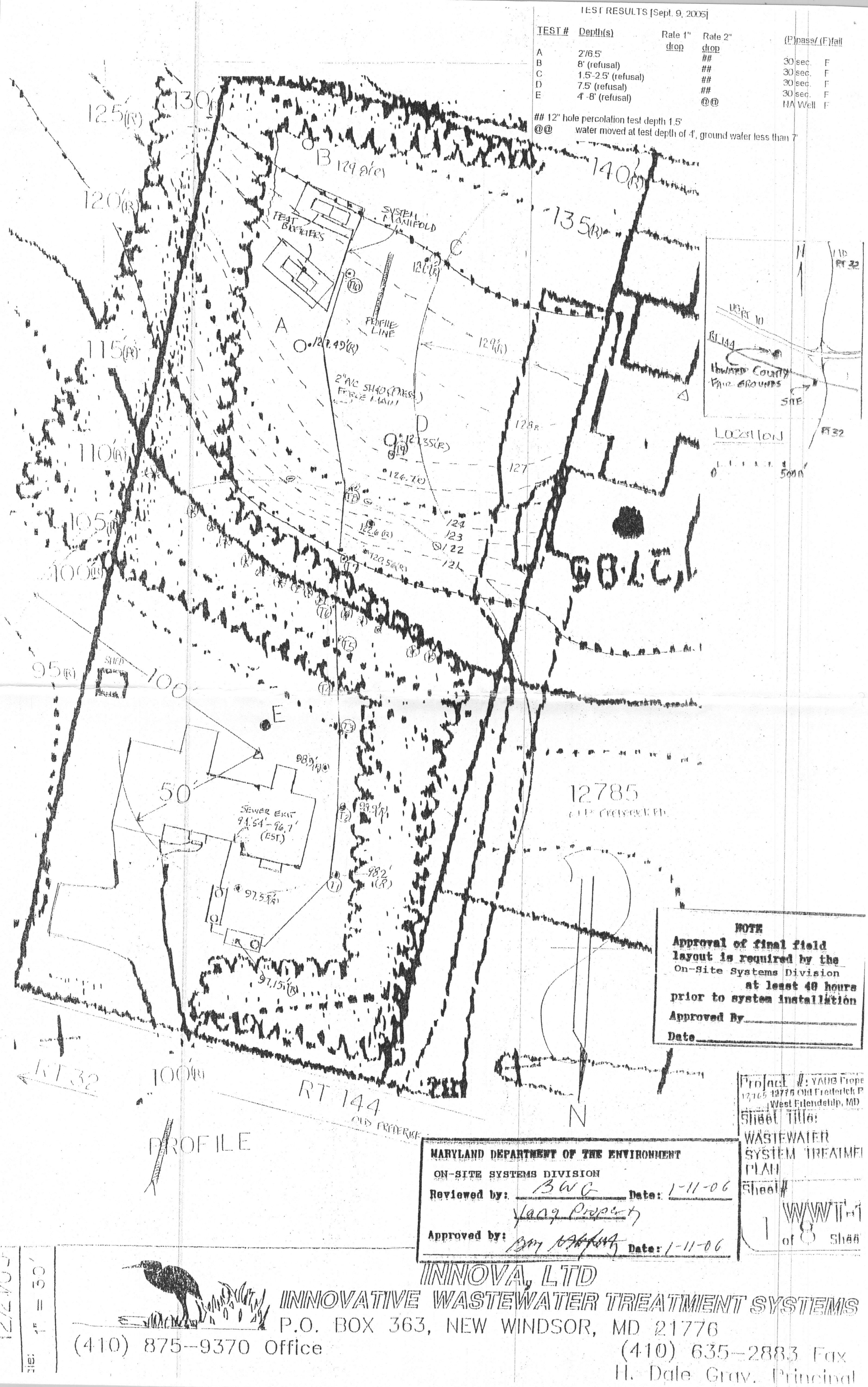
This approval is not valid for more than 2 years from the date of issuance, but may be renewed at the discretion of the Approving Authority.

TEST RESULTS [Sept. 9, 2005]

TEST #	Depth(s)	Rate 1" drop	Rate 2" drop	(P)pass/ (F)fail	
A	2'/6.5'		##	30 sec.	F
B	8' (refusal)		##	30 sec.	F
C	1.5'-2.5' (refusal)		##	30 sec.	F
D	7.5' (refusal)		##	30 sec.	F
E	4' -8' (refusal)		@@	NA Well	F

12" hole percolation test depth 1.5'

@@ water moved at test depth of 4', ground water less than 7'



NOTE

Approval of final field layout is required by the On-Site Systems Division **at least 40 hours prior to system installation**

Approved By _____

Date _____

MARYLAND DEPARTMENT OF THE ENVIRONMENT

ON-SITE SYSTEMS DIVISION

Reviewed by: BWG **Date:** 1-11-06

Yang Property

Approved by: [signature] **Date:** 1-11-06

Project #: YANG Prope
12765 12776 Old Frederick R
West Friendship, MD

Sheet Title:
WASTEWATER
SYSTEM TREATMEI
PLAN

Sheet #
1 of 8 Shee
WWT-1

Scale: 1" = 30'

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(410) 875-9370 Office
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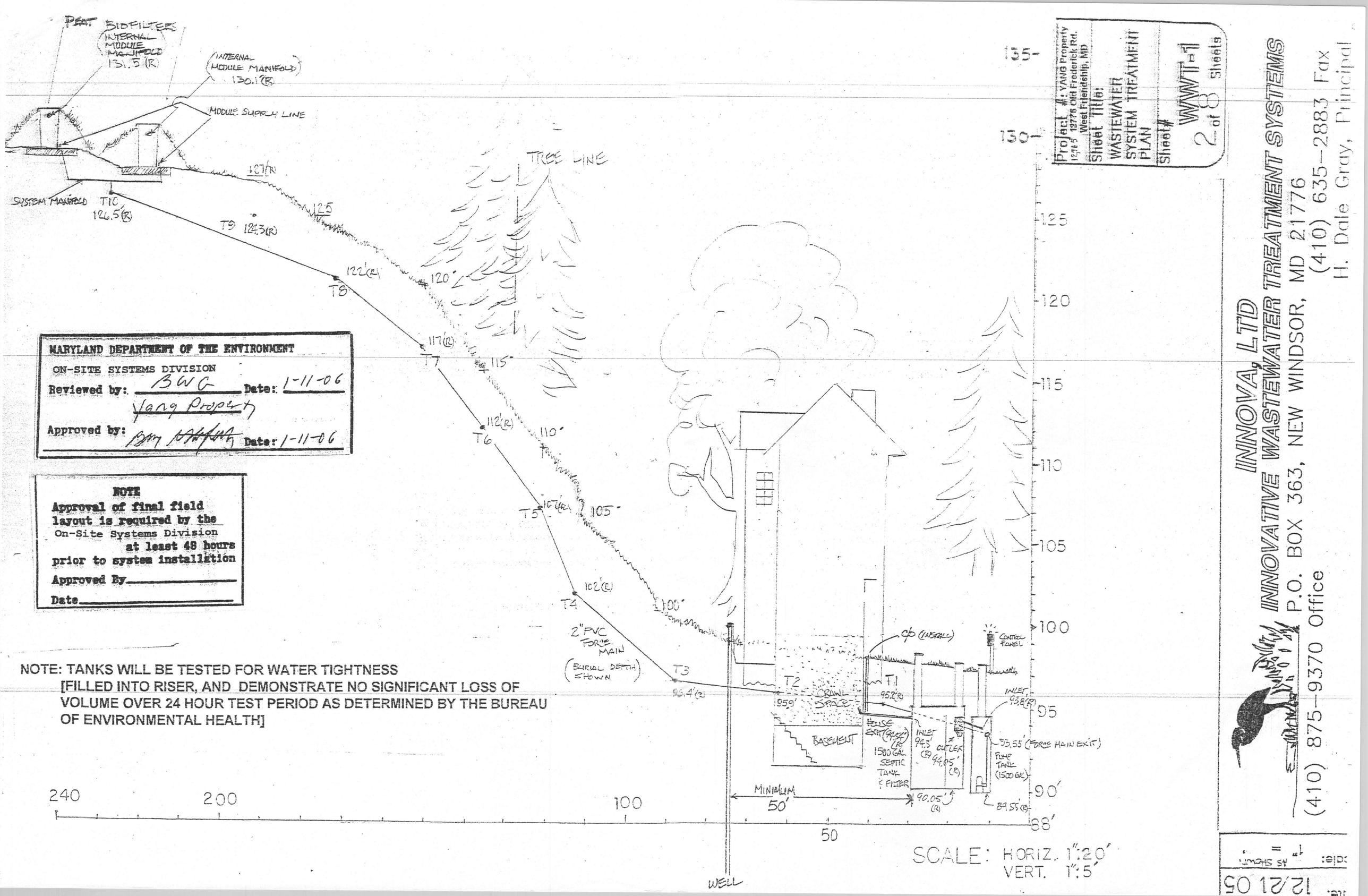
H. Dale Gray, Principal



MARYLAND DEPARTMENT OF THE ENVIRONMENT

ON-SITE SYSTEMS DIVISION

Reviewed by: BWG Date: 1-11-06

Yang Property

Approved by: [signature] Date: 1-11-06

NOTE
Approval of final field layout is required by the On-Site Systems Division **at least 48 hours prior to system installation**

Approved By_____

Date_____

NOTE: TANKS WILL BE TESTED FOR WATER TIGHTNESS
[FILLED INTO RISER, AND DEMONSTRATE NO SIGNIFICANT LOSS OF VOLUME OVER 24 HOUR TEST PERIOD AS DETERMINED BY THE BUREAU OF ENVIRONMENTAL HEALTH]

Project #: YANG Property
12345 19776 Old Frederick Rd.
West Friendship, MD

Sheet Title:
WASTEWATER SYSTEM TREATMENT PLAN

Sheet# WWT-1
2 of 8 Sheets

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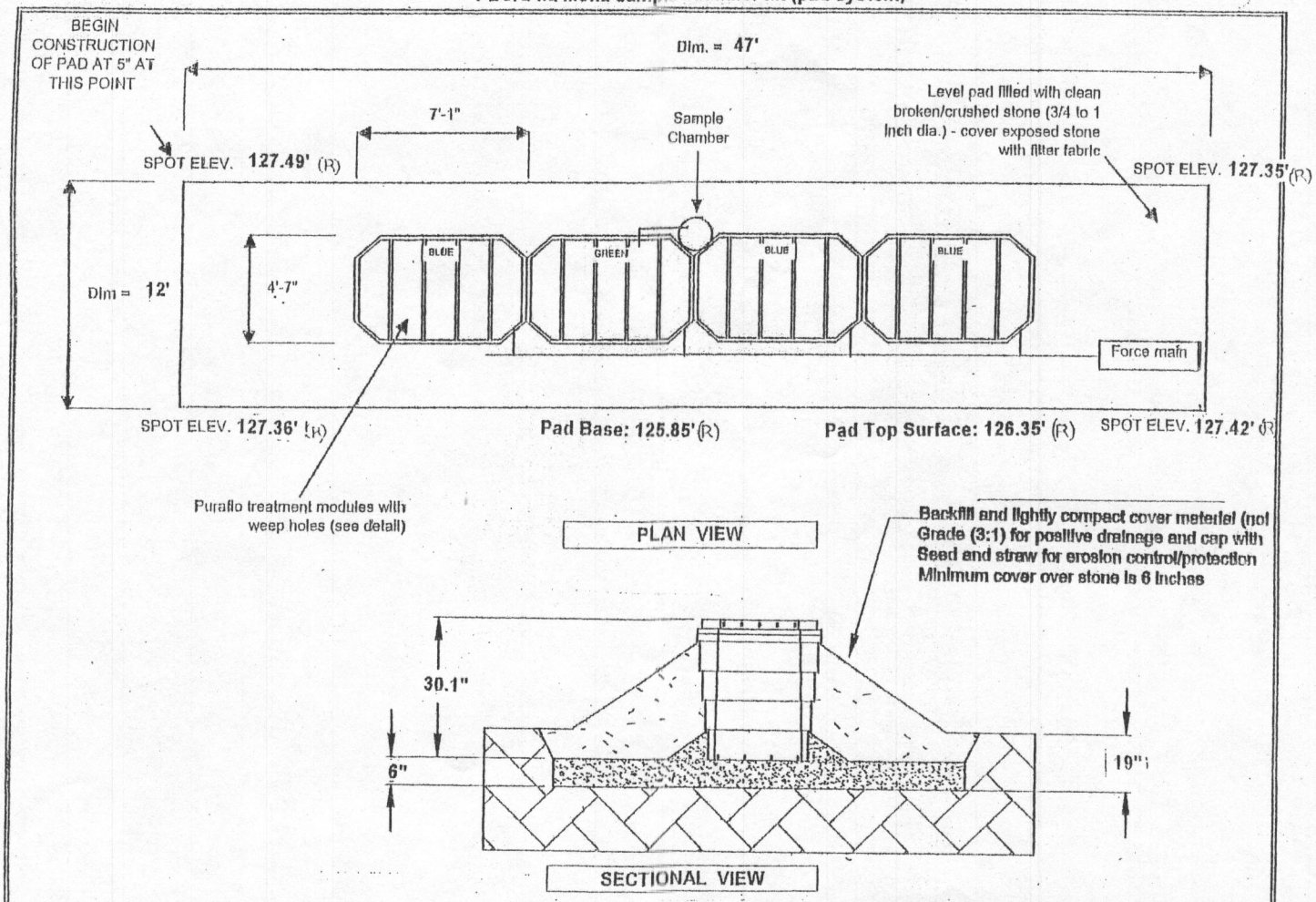
H. Dale Gray, Principal

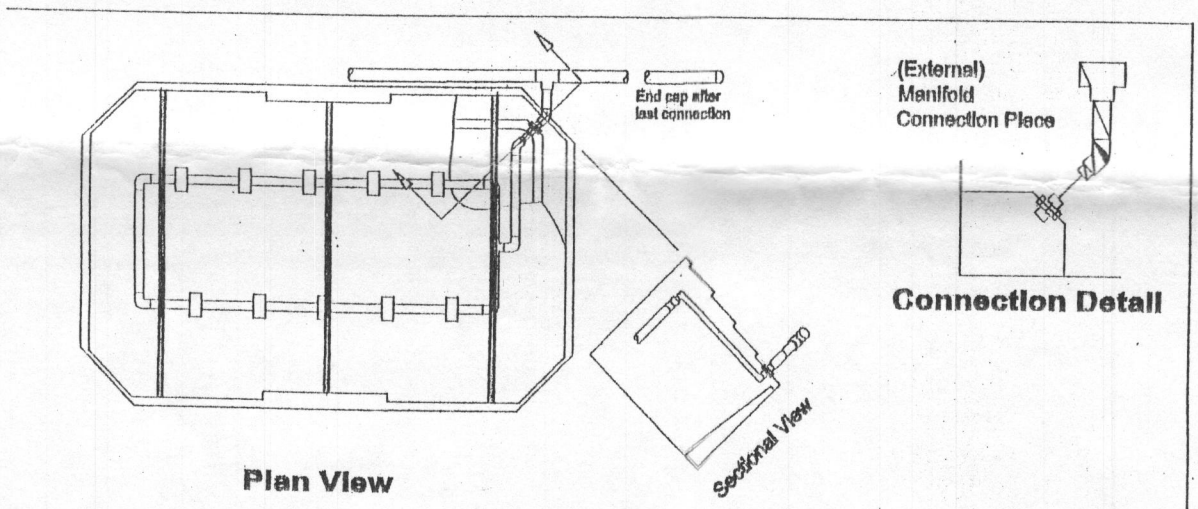
Date: 12/21/05
Scale: 1" = AS SHOWN

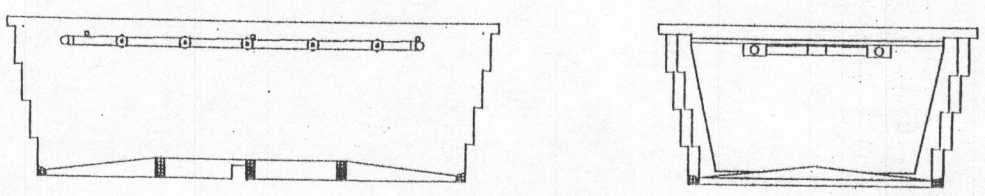
4 PURAFLO® modules
4 Module manifold connecting kits
1 Bord na Móna sample chamber kit (pad system)



NOT TO SCALE 08-Feb-00	Schematic of Percolation Area Design/Configuration Puraflo® Peat Biofilter *for Wastewater Treatment* 3 BEDROOM SYSTEM - 4 MODULES END TO END

02/14/19913BR-FALL.XLS





JAN. 15, 1998 DWG. BY: GMO'D	Scale 1:20	Drawing Title: MODULE GRID DETAIL	Project Reference: PURAFLO PEAT BIOFILTER

CASE 1

Project #: YANG Prope
12776 Old Frederick R
West Friendship, MD
Sheet Title:
WASTEWATER
SYSTEM TREATMEI
PLAN
Sheet #
3 WWT-1
of 8 Sheets

Date: 12/6/05
Scale: 1" = As SHOWN

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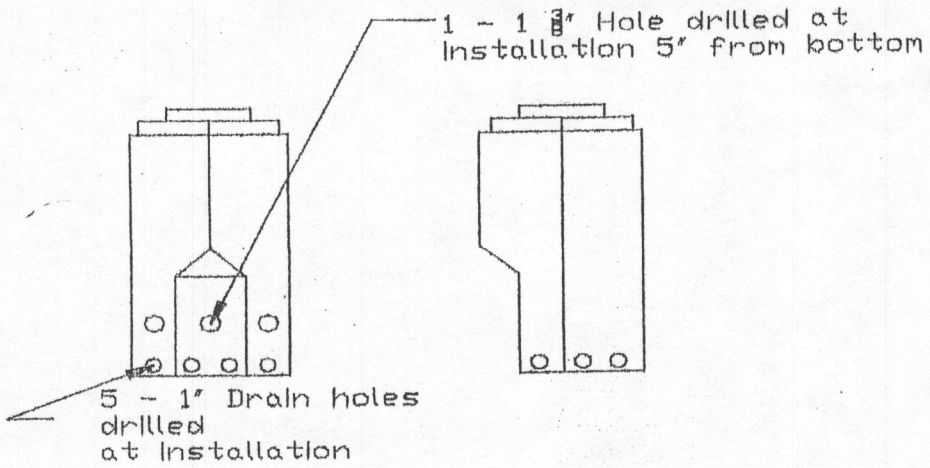
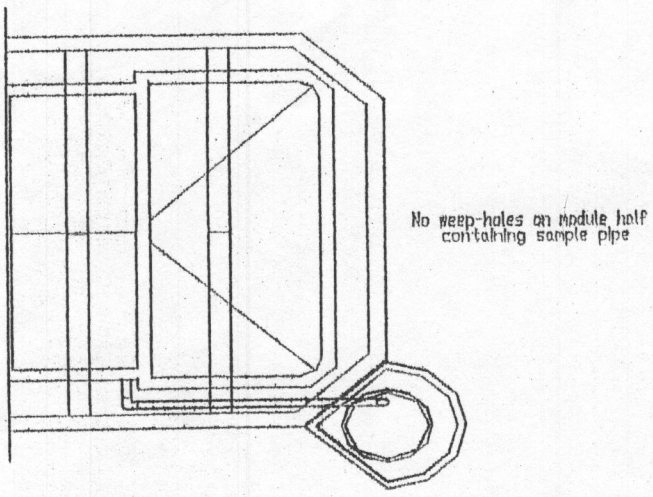
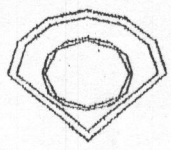
(410) 875-9370 Office
(410) 635-2883 Fax
H. Dale Gray, Principal



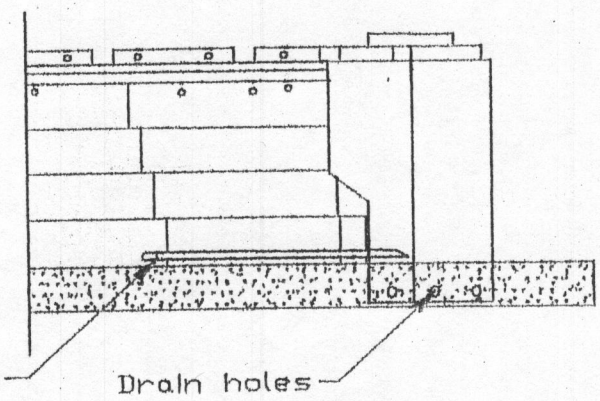
ELEVATIONAL VIEW

END VIEW



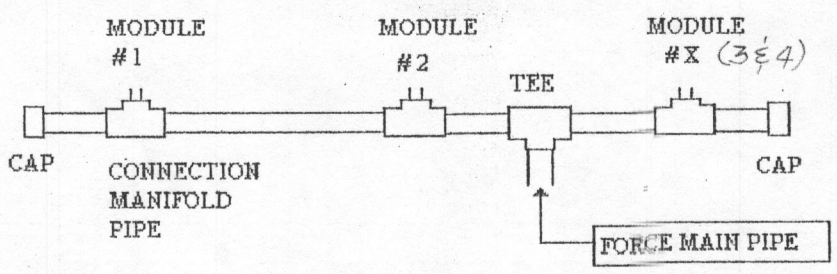


PLAN VIEW



JAN. 15, 1998 DWG. BY: GMD'D	Scale 1:20	Drawing Title: SAMPLE CHAMBER DETAIL	Project Reference: PURAFLO PEAT BIOFILTER

MODULE MANIFOLD TRUNK LINE (2 INCH ~~OR 4 INCH~~)



NOTE : FORCE MAIN MAY CONNECT TO MANIFOLD TRUNK LINE AT ONE END RATHER THHAN TEEING INTO THE MANIFOLD TRUNK LINE

BORD NA MÓNA

(800) 787-9355 www.bnm.us.com

Project #: YANG Prop
12775 Old Frederick F
West Friendship, MD
Sheet Title:
WASTEWATER
SYSTEM TREATMEI
PLAN
Sheet #
4 WWT-1
of 8 Sheet

Date: 12/6/05
Scale: 1" = AS SHOWN

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P.O. BOX 363, NEW WINDSOR, MD 21776
(410) 875-9370 Office
(410) 635-2883 Fax
H. Dale Gray, Principal

PUMP SELECTION

PUMP REQUIREMENT

231' Force Main: 2" PVC sh 40 (press) Pipe (vol./100' = 17.4 gal.)
Timed dosing @ 37.5 gal./dose + 40.1 gal.run back = 77.6 gal./event
TDH (Total Dynamic Head)
Static Lift: module manifolds/127.85'(R) – pump off/ 91.63'(R) = 36.12'
Friction Loss (with velocity @ 2-5fps)
2" Force Main run: 231'
2" Fittings (as pipe equivalent length)

12 - couplings	@ 2'	= 24
4 - 45° ell	@ 4'	= 16
1 - 90° ell	@ 7'	= 7
4 - side tee	@ 10'	= 40
1 - HP gate valve	@ 1.3'	= 1.3
Equiv./ft, 2" pipe		= 88.3'

Total pipe - friction loss: 231' + 88.3' = 319.3'

[checked Manufacturers' friction/pressure loss tables for modules] Verified four module arrangement at equivalent pipe length of 300 feet (see 300 column). Pump delivery rate is determined by adding the static lift head (36.12') to the friction head figure from the 300 foot column, and plotting TDH at 10 gpm increments. The resulting TDH (system) curve is plotted on an appropriate pump performance curve. The pump will operate where the two curves intersect. Optimum delivery per the Manufacturer, is between 7 and 12 gpm/module

PRESSURE AND FRICTION LOSSES FOR 3 MODULE SYSTEM

Q (gpm)	$h_f + h_p$ (ft) for Various Values of Equivalent Length in Feet											
	50	100	150	200	250	300	350	400	450	500	550	600
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	1.28	1.38	1.49	1.60	1.70	1.81	1.92	2.02	2.13	2.24	2.34	2.45
20	5.10	5.53	5.96	6.39	6.81	7.24	7.67	8.09	8.52	8.95	9.38	9.80
30	11.48	12.45	13.41	14.37	15.33	16.29	17.25	18.21	19.17	20.13	21.09	22.06
40	20.42	22.13	23.83	25.54	27.25	28.96	30.67	32.38	34.08	35.79	37.50	39.21
50	31.90	34.57	37.24	39.91	42.58	45.25	47.92	50.59	53.26	55.93	58.60	61.27
60												
70												
80												

PRESSURE AND FRICTION LOSSES FOR 4 MODULE SYSTEM ✓

Q (gpm)	$h_f + h_p$ (ft) for Various Values of Equivalent Length in Feet											
	50	100	150	200	250	300	350	400	450	500	550	600
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	0.76	0.87	0.98	1.08	1.19	1.30	1.41	1.51	1.62	1.73	1.83	1.94
20	3.06	3.49	3.91	4.34	4.77	5.19	5.62	6.05	6.47	6.90	7.33	7.76
30	6.88	7.84	8.80	9.76	10.72	11.69	12.65	13.61	14.57	15.53	16.49	17.45
40	12.23	13.94	15.65	17.36	19.07	20.77	22.48	24.19	25.90	27.61	29.32	31.02
50	19.11	21.78	24.45	27.12	29.79	32.46	35.13	37.80	40.47	43.14	45.81	48.48
60	27.52	31.37	35.21	39.05	42.90	46.74	50.59	54.43	58.27	62.12	65.96	69.81
70												
80												

BORD NA MÓNA

(see pump curves @ 38 gpm/ 56.89' TDH , or 9.5 gpm per module - OK

Project #: YANG Pro
12776 Old Frederick
West Friendship, MD
Sheet Title:
WASTEWATER
SYSTEM TREATME
PLAN
Sheet #
WWTP-1
6 of 8 Shee

Date: 12/6/05
Scale: 1" = AS SHOWN

INNOVA, LTD
INNOVATIVE WASTEWATER TREATMENT SYSTEMS
P.O. BOX 363, NEW WINDSOR, MD 21776
(410) 875--9370 Office
(410) 635--2883 Fax
H. Dale Gray, Principa

$(122 \times 67 \times 1) \div 1728 \times 7.5 = 35.5$

$(121 \times 66 \times 1) \div 1728 \times 7.5 = 34.66$

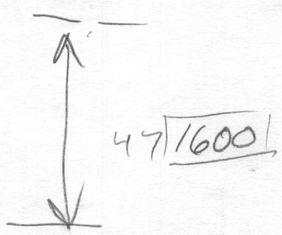
→ 34.57

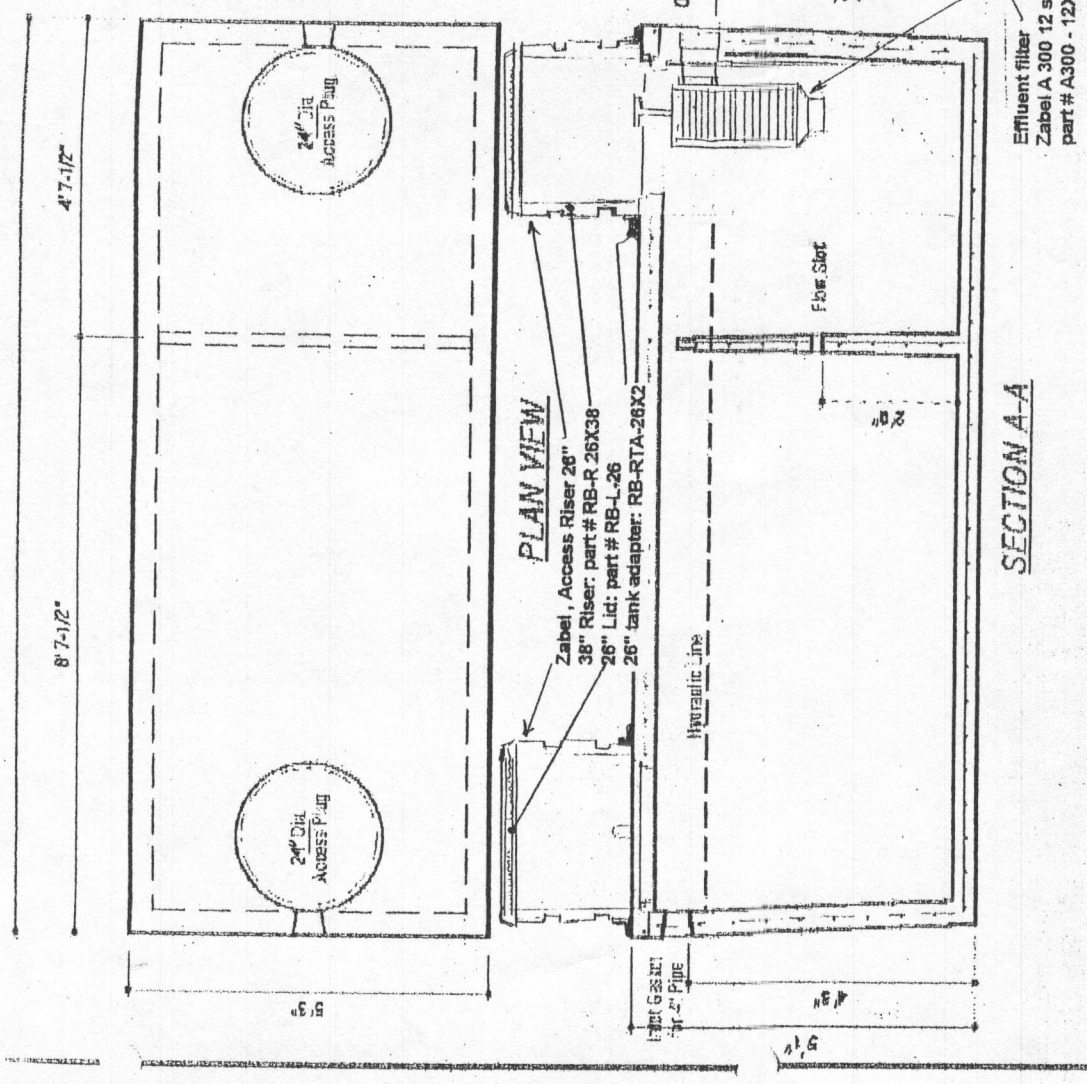
$\times 47 = 1625$

53.7

34

47"





DESIGN DATA & GENERAL NOTES

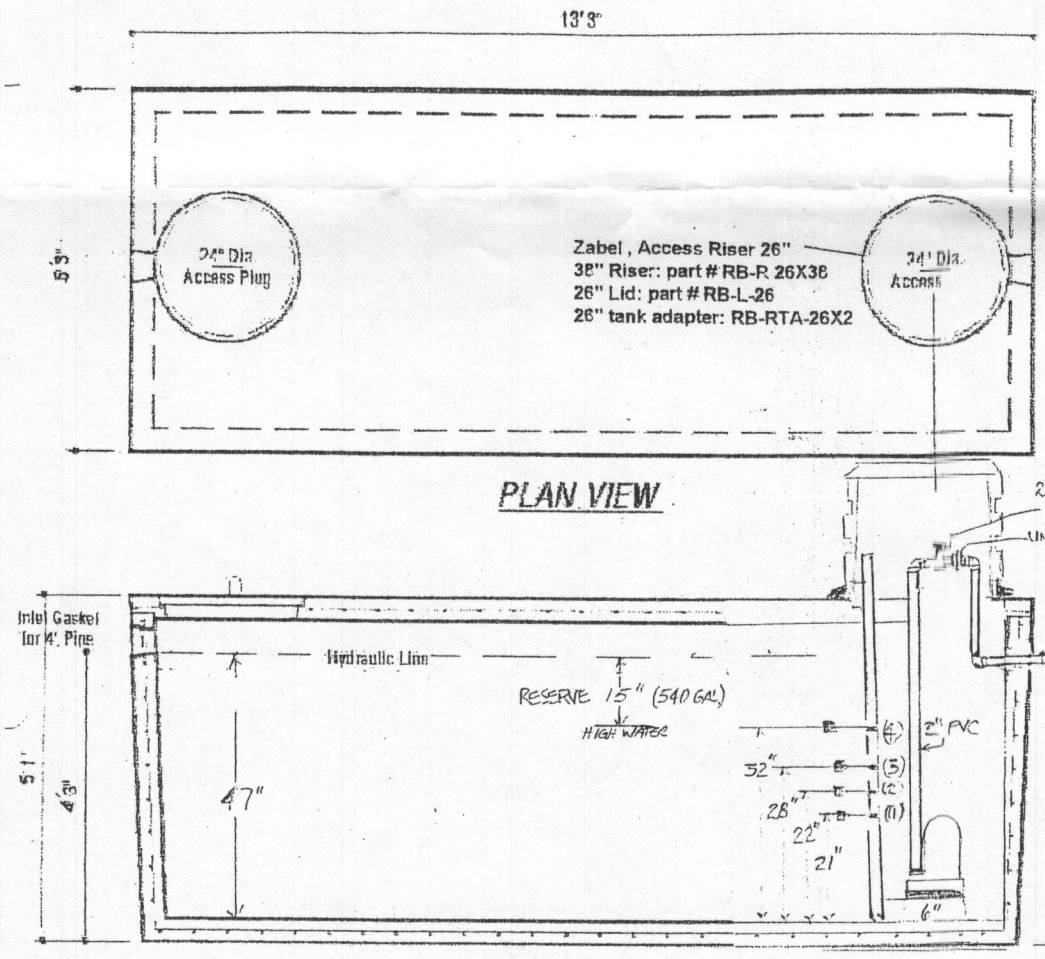
[1] Concrete strength f'c=4,000 p.s.i. @ 28 days. Density = 150 pcf.
[2] Cement - Portland Type I/II per ASTM C 150-92.
[3] Admixtures & plasticizers per ASTM C 260-86 & C 494-92.
[4] Reinforcing per ASTM A185. Min. 1-1/2" cover.
[5] Top slab sealed with butyl rope mastic.
[6] 4" wall base, & top thickness.

MBI
Mayer Bros., Inc.

6264 Race Road
Elkridge, Maryland 21075
Tel. 410.796.1434
Fax. 410.796.1438
www.mayerbrosprecast.com

1,500 GALLON SEPTIC TANK
2-Compartment
Stock Item

Dwg. No. 1500-2C	No Scale	Jan 1, 2000



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[4] Reinforcing per ASTM A185. Min. 1-1/2" cover.
[5] Top slab sealed with butyl rope mastic.
[6] 4" wall, base, & top thickness.

Float settings
(1) safety off
(2) low level cutout /timer on & off
(3) timer override
(4) high water alarm

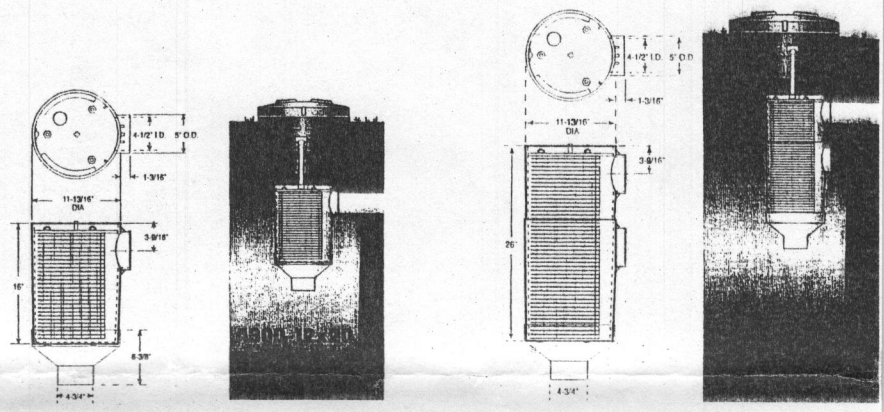
MBI
Mayer Bros., Inc.

6264 Race Road
Elkridge, Maryland 21075
Tel. 410.796.1434
Fax. 410.796.1438
www.mayerbrosprecast.com

1,500 GALLON SEPTIC/PUMP TANK
1-Compartment
NON-TRAFFIC MAX 3 ft. OF COVER

Dwg. No. 1500-1C	No Scale	Jan 1, 2000

Zabel® A300-12 Series Effluent Filter Product Specification



1. Applications: Grease: restaurants; Hair: dog kennels, beauty shops, zoo facilities; Lint: Laundromats; Food processing: wineries, bakeries; Animal wastes: poultry, hog & cattle farms; Apartments, trailer parks, schools, churches, shopping centers, and offices; Septic dump stations and community treatment plants; Single and Multi-family homes

2. Performance Specification
   2.1. Multiple Filters may be installed in manifolds to handle larger flows than those shown above. A Zabel Flow Control Plate Model FC100 is available to set the effluent flow of a single filter to pre-determined limits.
   2.2. TSS: Reductions in TSS within six months of installation - 50 to 90 percent. The higher the unfiltered TSS, the greater the percentage of reduction.
   2.3. BOD_5: Reduction in BOD_5 within six months of installation - 20 to 45 percent is dependent on the make up of the wastewater.

3. Materials: All materials are non-corrosive. Case & Lid - PVC; Filter discs - Polystyrene; Rods and Nuts-Stainless Steel.

4. Service Frequency: The A300-12's are designed to be installed in high strength waste applications. Each application will have to be monitored to determine proper service cycles. See article on "Restaurant Applications for Zabel Filters" for recommended guidelines in the Spring/Summer 97' issue.

5. Warranty: The A300-12's are warranted to be free from defects in material and workmanship for the life of the original purchaser. Zabel's liability is limited to repair or replacement of the part and in no event shall Zabel be liable for any consequential damages of any kind.

6. Dimensions:

Model	Diameter	Height	Filtration	GPD	Settling Area	Total Filter Surface	Lineal Feet of Weir
A300-12x20	12"	20"	1/32"	3,000	624.69 in²	1,857.6 in²	206
A300-12x30	12"	30"	1/32"	4,500	1,067.04 in²	2,908.8 in²	312

7. Extra support for the 28" long models may be achieved by extending a 4" support pipe from the reducer hub to the bottom of the tank.

The product(s) shown are covered by the following patents:
U.S. 4,710,295, 5,593,584 Other Patents Pending

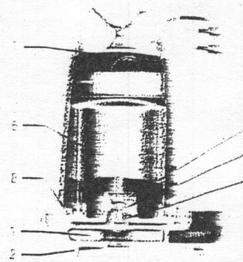
Call Direct to **ORDER 1-800-221-5742 • Or Order Online:** www.zabel.com

Project #: YANG Prope
12775 Old Frederick R
West Friendship, MD
Sheet Title:
WASTEWATER
SYSTEM TREATMEI
PLAN
Sheet #
WWT-1
5 of 8 Sheets

Date: 12/6/05
Scale: 1" = 4'-0" (11 x 17 SHEET)

INNOVA, LTD
INNOVATIVE WASTEWATER TREATMENT SYSTEMS
P.O. BOX 363, NEW WINDSOR, MD 21776
(410) 875-9370 Office
(410) 635-2883 Fax
H. Dale Gray, Principal

PART	
Item No.	Description
1	Impeller
2	Casing
3	Mechanical seal
4	Shaft
5	Motor
6	Bearings – upper and lower
7	Power cable
8	O-ring



GOULDS

Submersible Effluent Pump

MODEL

3885

MODELS

Order No.	HP	Volts*	Phase	Max. Amps	RPM	30 Heater Size	Wt. (lbs.)
WE0311L	⅓	115	1	9.2	1750	N/A	55
WE0312L		230		4.7			
WE0316L		200		5.4			
WE0311M	½	115		9.2			
WE0312M		230		4.7			
WE0318N		200		5.4			
WE0511H	¾	115		14.5	3500	N/A	60
WE0512H		230		7.2			
WE0518H		200		8.4			
WE0538BH		200	3	3.6		K32	
WE0532H		230		3.4		K32	
WE0534H		460		1.7		K21	
WE0511HH	1	115	1	14.2		N/A	60
WE0512HH		230		7.2			
WE0518HH		200		8.4			
WE0538HH		200	3	3.6		K32	
WE0532HH		230		3.4		K32	
WE0534HH		460		1.65		K21	
WE0712H	1½	230	1	10.0		N/A	70
WE0718H		200		11.5			
WE0738H		200	3	6.6		K49	
WE0732H		230		5.4		K35	
WE0734H		460		2.7		K22	
WE1012H	2	230	1	12.5		N/A	70
WE1018H		200		14.2			
WE1038H		200	3	8.1		K43	
WE1032H		230		7.0		K43	
WE1034H		460		3.5		K32	
WE1512H	3	230	1	15.7		N/A	80
WE1538H		200	3	10.6		K55	
WE1532H		230		9.2		K50	
WE1534H		460		4.6		K36	
WE1512HH	1½	230	1	15.0		N/A	80
WE1538HH		200	3	10.6		K55	
WE1532HH		230		9.2		K50	
WE1534HH		460		4.6		K36	

* For 575 V consult factory.

PERFORMANCE RATINGS (gallons per minute)

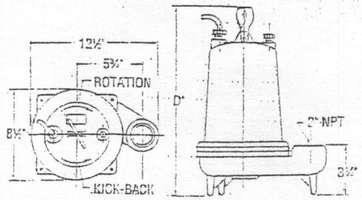
Order No.	WE0311L, WE0311M, WE0312L, WE0312M, WE0316L, WE0318N	WE0511H, WE0512H, WE0538H, WE0518H	WE0712H, WE0738H, WE0718H	WE1012H	WE1512H, WE1538H, WE1518H	WE0511HH, WE0512HH, WE0538HH, WE0518HH	WE1512HH, WE1538HH
HP	⅓	½	¾	1	1½	½	1½
RPM	1750	1750	3500	3500	3500	3500	3500
5	–	–	–	–	–	60	–
10	80	65	–	–	–	56	84
15	60	57	69	90	104	53	82
20	36	45	60	83	98	48	77
25		25	50	76	92	45	75
30			38	67	85	40	72
35			20	58	78	35	70
40			15	47	70	30	67
45				36	62	25	64
50				25	52	18	60
55				17	42	12	56
60				8	32	3	54
65					20		51
70					11		47
75							43
80							40
90							33
100							24
110							15
120							5

Total Head Feet of Water

DIMENSIONS

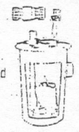
(All dimensions are in inches. Do not use for construction purposes.)

D= ¾, ½, ¾ and 1 HP = 15"
except for model WE0712H and WE1012H = 18"; 1½ HP = 18"

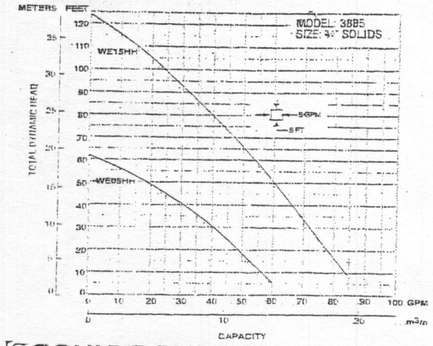


EFFLUENT EJECTOR SYSTEM

Effluent ejector system offers ease of ordering and installation. A single ordering number specifies a complete system designed for most residential and commercial sump and effluent pump applications.

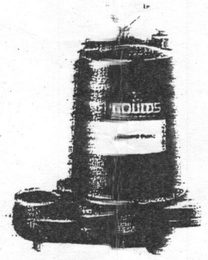


Package Includes:
Submersible Effluent Pump WE0311L, 12L or WE0311M, 12M, WE0511HH, 12 Mechanical Level Control Switch AE-5 (115V), AE-6 (230V) Basin-A7-18015, Basin Cover AE-1822 Check Valve AE-2F
Order No.: SWE0311L, SWE0312L, SWE0311M, SWE0312M, SWE0511HH, SWE0512HH.



GOULDS PUMPS
ITT Industries

SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE. PRINTED IN U.S.A.



GOULDS

Submersible Effluent Pump

MODEL

3885

APPLICATIONS

Specifically designed for the following uses:
- Homes
- Farms
- Trailer courts
- Motels
- Schools
- Hospitals
- Industry
- Effluent systems

SPECIFICATIONS

Pump
- Solids handling capabilities: ¾" maximum.
- Discharge size: 2" NPT.
- Capacities: up to 128 GPM.
- Total heads: up to 123 feet TDH.
- Mechanical seal: silicon carbide-rotary seat/silicon carbide-stationary seat, 300 series stainless steel metal parts, BUNA-N elastomers.
- Temperature: 104°F (40°C) continuous 140°F (60°C) intermittent.
- Fasteners: 300 series stainless steel.
- Capable of running dry without damage to components.

Motor

Single phase:
- ⅓ HP, 115 V, 200 V, 230 V, 60 Hz, 1750 RPM; ½ HP, 115 V, 60 Hz, 3500 RPM; ½ HP – 1½ HP, 230 V, 60 Hz, 3500 RPM.
- Built-in overload with automatic reset.
- Class B insulation.

Three phase:
- ½ HP – 1½ HP 200/230/460 V, 60 Hz, 3500 RPM.
- Class B insulation.
- Overload protection must be provided in starter unit.
- Shaft: threaded, 400 series stainless steel.
- Bearings: ball bearings upper and lower.
- Power cord: 20 foot standard length (optional lengths available).

Single phase:
- ⅓ and ½ HP – 16/3 SJTO with 115 V or 230 V three prong plug.
- ¾-1½ HP – 14/3 STO with bare leads.

Three phase:
- ½-1½ HP – 14/4 STO with bare leads. On CSA listed models – 20 foot length SJTW and STW are standard.

FEATURES

■ **Impeller:** Cast iron, semi-open, non-clog with pump-out vanes for mechanical seal protection. Balanced for smooth operation. Silicon bronze impeller available as an option.

■ **Casing:** Cast iron volute type for maximum efficiency. 2" NPT discharge adaptable for slide rail systems.

■ **Mechanical Seal: SILICON CARBIDE VS. SILICON CARBIDE** sealing faces. Stainless steel metal parts, BUNA-N elastomers.

■ **Shaft:** Corrosion-resistant stainless steel. Threaded design. Locknut on three phase models to guard against component damage on accidental reverse rotation.

■ **Motor:** Fully submerged in high-grade turbine oil for lubrication and efficient heat transfer.

■ **Designed for Continuous Operation:** Pump ratings are within the motor manufacturer's recommended working limits, can be operated continuously without damage.

■ **Bearings:** Upper and lower heavy duty ball bearing construction.

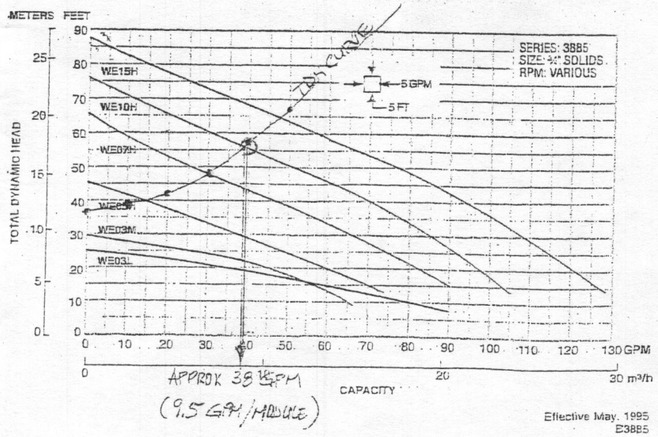
■ **Power Cable:** Severe-duty rated, oil and water-resistant. Epoxy seal on motor end provides secondary moisture barrier in case of outer jacket damage and to prevent oil wicking.

■ **O-ring:** Assures positive sealing against contaminants and oil leakage.

AGENCY LISTINGS

Canadian Standards Association

Underwriters Laboratories



Effective May, 1995
E3885

Project #: YANG Prope
12776 Old Frederick R
West Friendship, MD
Sheet Title:
WASTEWATER
SYSTEM TREATMEI
PLAN
Sheet #
WWTP-1
7 of 8 Sheets

INNOVATIVE WASTEWATER TREATMENT SYSTEMS, LTD
P.O. BOX 363, NEW WINDSOR, MD 21776
(410) 875-9370 Office (410) 635-2883 Fax
H. Dale Gray, Principal

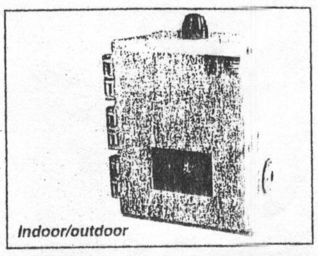
Date: 12/6/05
Date: 1" = AS SHOWN

MODEL TD1 and TD2 control panels

Single-phase, simplex timed dosing pump control.

APPLICATIONS

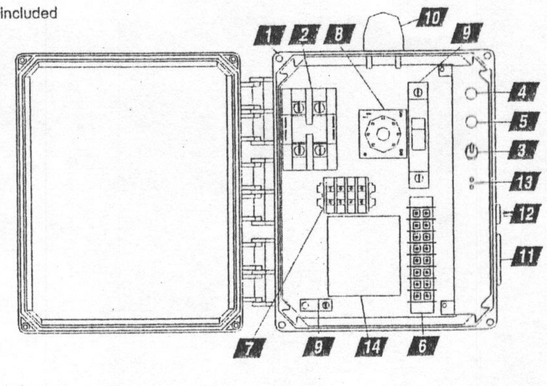
Model TD control panels provide residential and commercial customers with a reliable means of controlling a single-phase pump in onsite septic installations. A programmable timer activates a magnetic motor contactor to turn the pump on and off. A low water float overrides the timer to prevent the pump from running dry. An alarm float activates the audio/visual alarm system indicating a high liquid level. Common applications include sand filter systems, pressure distribution systems, mound systems, or any application requiring a timed dose.



Indoor/outdoor

FEATURES

- Entire control system (panel and switches) is UL Labeled to meet and/or exceed industry safety standards
- Dual safety certification for the United States and Canada
- Package includes float switches (optional)
- Complete, step-by-step installation instructions included
- Two-year limited warranty



1. **Enclosure** measures 10 x 8 x 4 inches (25.40 x 20.32 x 10.16 cm) with removable mounting flanges, NEMA 4X rated, ultraviolet stabilized thermoplastic for indoor and outdoor use
2. **Magnetic Motor Contactor** controls pump by switching both electrical lines
3. **HOA Switch** provides manual pump control
4. **Control Fuse**
5. **Alarm Fuse**
6. **Float Switch Terminal Block**
7. **Power and Pump Terminal Block**
8. **Programmable Timer** features separate variable controls to allow for on/off time settings from .05 seconds to 30 hours
9. **Pump Circuit Breaker** provides pump disconnect
10. **Red Alarm Beacon** provides 360° visual check of alarm condition
11. **Alarm Horn** provides audio warning of alarm condition (83 to 85 decibel rating)
12. **Exterior Horn Silence / Test Switch** allows alarm horn to be silenced and allows alarm to be tested
13. **Horn Silence Relay** automatically resets alarm after alarm condition has been resolved
14. **Backplate Label** includes diagram of float, pump, and power connections

SJE Rhombus CONTROLS
SJ Electro Systems, Inc.

MODEL NUMBER ORDERING INFORMATION

TD__ 23____

BASE MODEL
TD1 - 120 VAC
TD2 - 230 VAC

OPTIONS
(Category 23 - Options for Timed Dosing)
- A - redundant off float (pump chamber only)
- B - redundant off float, alarm activation
- C - redundant off float, alarm activation, red indicator light
- D - timer override float
- E - no floats, panel only
- F - event counter
- G - elapsed time meter
- H - remove programmable timer (includes Double Float™ pump switch and alarm float, option E not applicable)
- I - green pump run indicator light
- K - auxiliary alarm contacts (normally open)
- L - padlockable latch
- X - condensation heater (also recommended for temperatures below 14° F)

SPECIFICATIONS

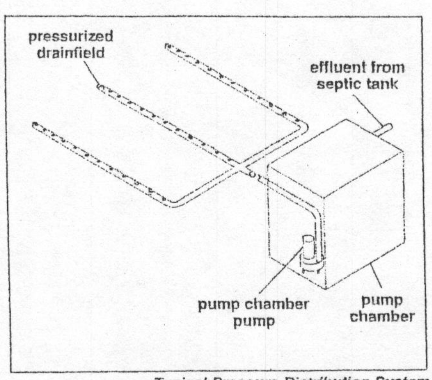
Enclosure: 10 x 8 x 4 inch (25.40 x 20.32 x 10.16 cm), NEMA 4X, weathertight, UV and corrosion-resistant engineered thermoplastic

Alarm / Control Section Voltage: 120 VAC, 60 Hz, single-phase, 3 watt maximum (alarm condition)

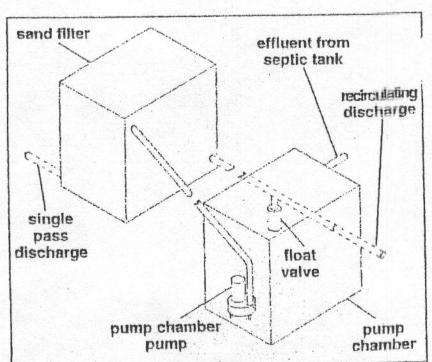
Pump Section:
Model TD1 - 120 VAC, 60 Hz, single-phase, 20 FLA
Model TD2 - 230 VAC, 60 Hz, single-phase, 20 FLA

Alarm Float:
Sensor Float® Mini control switch (model 20MPCNO)
Cable: 20 feet (6.09 meters), flexible 16 gauge, 2 conductor (UL, CSA) SJOW, water-resistant (CPE)
Float: 2.81 inch diameter x 3.42 inch long (7.14 x 8.68 cm), high impact, corrosion resistant, PVC housing for use in sewage and non-potable water up to 140°F (60°C)

Low Level Cutout Float:
SJE PumpMaster® pump switch (model 20PMDWOP)
Pumping Range: 7 to 36 inches (18 to 91 cm)
Cable: 20 feet (6.09 meter), flexible 16 gauge, 2 conductor (UL, CSA) SJOW, water-resistant (CPE)
Float: 3.05 inch diameter x 3.56 inch long (7.75 x 9.04 cm) high impact, corrosion resistant, PVC housing for use in sewage and non-potable water up to 140°F (60°C)



Typical Pressure Distribution System



Typical Single Pass or Recirculating Sand Filter Systems

SJE Rhombu CONTROLS
SJ Electro Systems, Inc.
P.O. Box 1708 ■ County Rd 6 ■ Detroit Lakes, MN 56502 US
1-888-DIAL-SJE (342-5735) ■ Phone: 218-847-1317
■ Fax: 218-847-4617

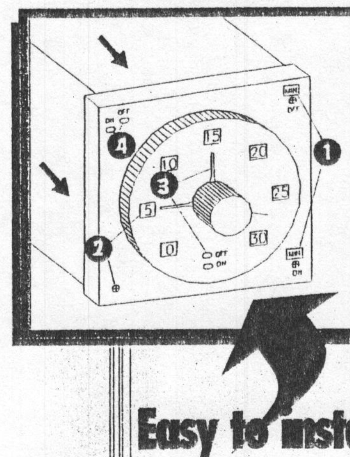
quality motor controls

PANEL PROFILE . ©RHOMBUS TECHNOLOGY . APRIL 1997 . PROFILE 02-97

programmable timed doser

Timed dose control panels feature programmable timers, and are designed to control the amount of effluent to an onsite septic system drainfield. This control prevents overloading the drainfield during peak flow of liquids by metering the effluent out at non-peak times, avoiding potential damage to systems. Dose and rest periods can be adjusted to the soil's loading rate, providing improved wastewater treatment. Rhombus Technology offers the TD series control panels, which provide control for single phase pumps by utilizing a magnetic motor contractor to turn the pump on and off, a low water float, which overrides the timer to prevent the pump from running dry, and an alarm float, which activates an audio/visual alarm, indicating a high liquid level.

Rhombus is pleased to introduce a new and improved timer for the TD series panels!



The improved programmable cycle timer is socket-mounted & pulls out for ease of removal & setting. It features: ❶ separate ON & OFF times ranging from .05 seconds to 30 hours, ❷ a large easy-to-read, easy-to-set time scale, ❸ a larger dial with color-coded time settings, & ❹ color-coded ON & OFF cycle indicators

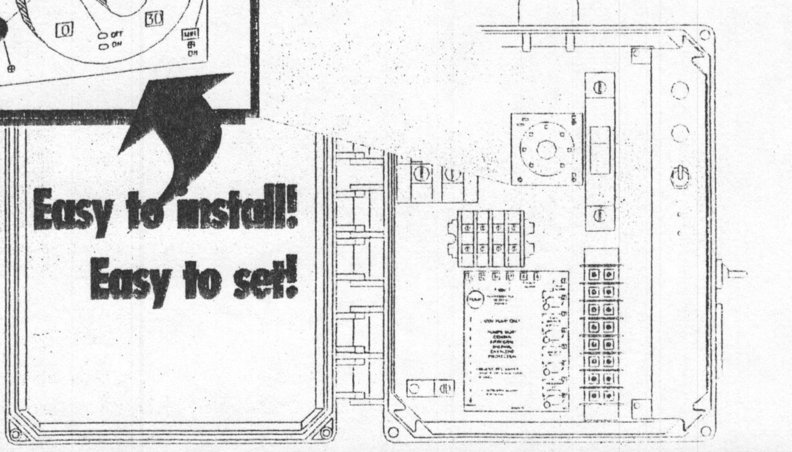


FIGURE 1 - Two float system

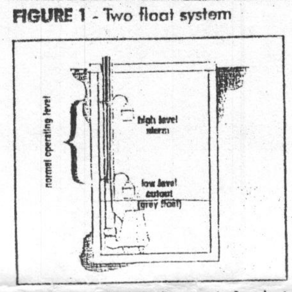


FIGURE 2 - Three float system

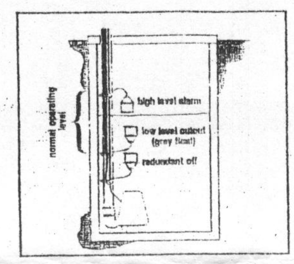
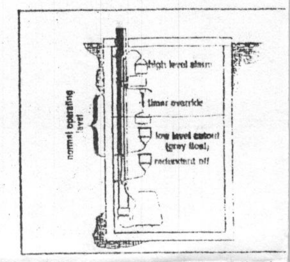


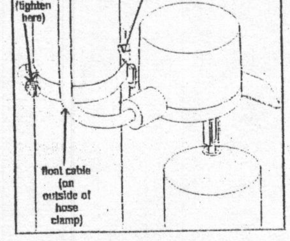
FIGURE 3 - Four float system



WARNING: Turn off all power before installing floats in pump chamber. Failure to do so could result in serious or fatal electrical shock.

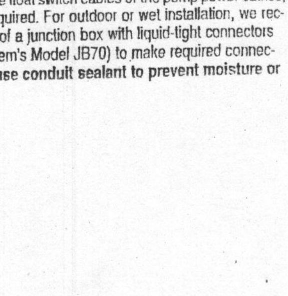
2. Determine your normal operating level, as illustrated in Figures 1 - 3.

FIGURE 4 - Float mounting detail



3. Mount the float control switch on the discharge pipe (see Figure 4). Keep the switch cable between the strap and pipe to prevent slippage. To eliminate obstruction to the switch, tuck strap back through clamp head.
4. If using an optional redundant off float, mount slightly below the low level cutout float, but above the pump (see Figures 2 & 3).

FIGURE 5 - Timer override



5. If using an optional timer override float, position it at a level in the basin as shown in Figure 3. Determine the pumping range, (the SJE VerticalMaster™ pump switch has an adjustable range .75" to 6.5"), and adjust for that range by moving the float stop up or down the lift rod. Mount switch as shown in Figure 5.

Mounting the Control Panel

1. Determine mounting location for panel. If distance exceeds the length of either the float switch cables or the pump power cables, splicing will be required. For outdoor or wet installation, we recommend the use of a junction box with liquid-tight connectors (S.J. Electro System's Model JB70) to make required connections. You must use **conduit sealant** to prevent moisture or gases from entering the panel.
2. Mount control panel (mounting devices are furnished with control panel).
3. Determine conduit entrance locations on control panel. Check local codes and schematic for the number of power circuits required.

   CAUTION: Be sure the power supply voltage and phase are the same as the pump motor being installed. If in doubt, see the pump identification plate for voltage/phase requirements.
4. Drill proper size holes for type of connectors being used.

   CAUTION: If using conduit, be sure that it is of adequate size to pull the pump and switch cables through.
5. Attach cable connectors and /or conduit connectors to control panel.

   FOR INSTALLATION WITHOUT A SPLICE, GO TO STEP 11; FOR INSTALLATIONS REQUIRING A SPLICE, FOLLOW STEPS 6-10.
6. Determine location for mounting junction box according to local code requirements. Do **not** mount the junction box inside the sump or basin.
7. Mount junction box to proper support.
8. Run conduit to junction box. Drill proper size holes for the type of conduit used.
9. Identify and label each wire before pulling through conduit into control panel and junction box. Make wire splice connections in junction box.
10. Firmly tighten all fittings on junction box.
11. If a junction box is not required, pull cables through conduit into control panel.
12. Connect pump wires and float switch cables to the proper terminals as seen in Figures 6, 7 or 8.
13. Connect "power-in" conductors to proper locations: 120 volt AC alarm power to terminals lableled L1&N, 208/240 volt AC to terminals labeled L1 & L2 as seen in Figures 6 or 7.

VERIFY CORRECT OPERATION OF CONTROL PANEL AFTER INSTALLATION IS COMPLETE.

Project #: YANG Prop
12776 Old Frederick R
West Friendship, MD
Sheet Title:
WASTEWATER SYSTEM TREATMENT PLAN
Sheet#
WWT-1
8 of 8 Sheets

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le: 1" = AS SHOWN

INNOVA, LTD
INNOVATIVE WASTEWATER TREATMENT SYSTEMS
P.O. BOX 363, NEW WINDSOR, MD 21776
(410) 875--9370 Office (410) 635--2883 Fax
H. Dale Gray, Principal