

APPLICATION - PERMIT  
ON-SITE WASTEWATER SYSTEM

RECEIVED

06/03/2025

GROUNDWATER



(Please Type or Print Legibly)

OWNER'S NAME: C&C Real Estate Holdings, LLC PHONE: 302-344-5996

ADDRESS: 38568 Reservation Trail, Ocean View, DE 19970

PROJECT LOCATION: E. side of Mitchell Street & Pot of Gold Circle Intersection, Millsboro, DE 19966

TAX/MAP #: 233-5.00-81.00

APPLICATION PREPARER: Carlton R. Savage Jr., PE DNREC LICENSE #: 5904

PREPARER'S ADDRESS: 20246 Coastal Highway, Rehoboth Beach, DE 19971

PHONE: 302-227-7808

I hereby affirm that the information provided on this document is accurate and complete.

Preparer's Signature: Carlton R. Savage Jr. Date: 06/02/25

By signing this permit application, the preparer further certifies they were physically present at the site.

PAID

\$ 325.00 06/03/2025

SEPTIC DESIGN CRITERIA-

(Please check all boxes that apply)

**System Type:** (CF = Cap & Fill / FD = Full Depth)

- |   |   |
|---|---|
| <input type="checkbox"/> Gravity (FD)           | <input type="checkbox"/> Permanent Holding Tank         |
| <input type="checkbox"/> Gravity (CF)           | <input checked="" type="checkbox"/> Elevated Sand Mound |
| <input type="checkbox"/> Pressure Dose (FD)     | <input type="checkbox"/> Wisconsin At-Grade             |
| <input type="checkbox"/> Pressure Dose (CF)     | <input type="checkbox"/> Subsurface Micro Irrigation    |
| <input type="checkbox"/> Low Pressure Pipe (FD) | <input type="checkbox"/> Peat Bio- Filter               |
| <input type="checkbox"/> Low Pressure Pipe (CF) | <input type="checkbox"/> Other _____                    |
| <input type="checkbox"/> Temporary Holding Tank |   |

- ☒ Bed or ☐ Trench
- ☐ Gravelless Chamber ☒ Stone/Gravel ☐ Tire Chips
- Sand-lined ☒ Yes ☐ No

Existing System Malfunctioning ☒ Yes ☐ No ☐ N/A

Pre-Treatment Units

- ☐ Septic Tank
- ☒ Other EcoPOD E150N Advanced Pretreatment Unit

Central Water Available ☐ Yes ☒ No  
(If yes, please state Utility Name: \_\_\_\_\_)

**Type of Construction:**

- ☒ Replacement
- ☐ New Construction
- ☐ Component Replacement
- Component: \_\_\_\_\_
- ☐ Repair to Existing System
- Reason: \_\_\_\_\_
- ☐ Authorization to Use Existing System
- Permit #: \_\_\_\_\_
- Present Condition: \_\_\_\_\_
- Structure to be connected: \_\_\_\_\_

# of Bedrooms: 10

Avg. Percolation Rate: 30 mpi

Gallons Per Day Flow: 1200 gpd

Minimum Sq. Ft. Rcq'd: 2761 sf

Sq. Ft. Proposed: 3040 sf

PARID: 233-5.00-81.00-PARK  
C&C REAL ESTATE HOLDINGS LLC

Property Information

Property Location:

Unit:

City:

State:

Zip:

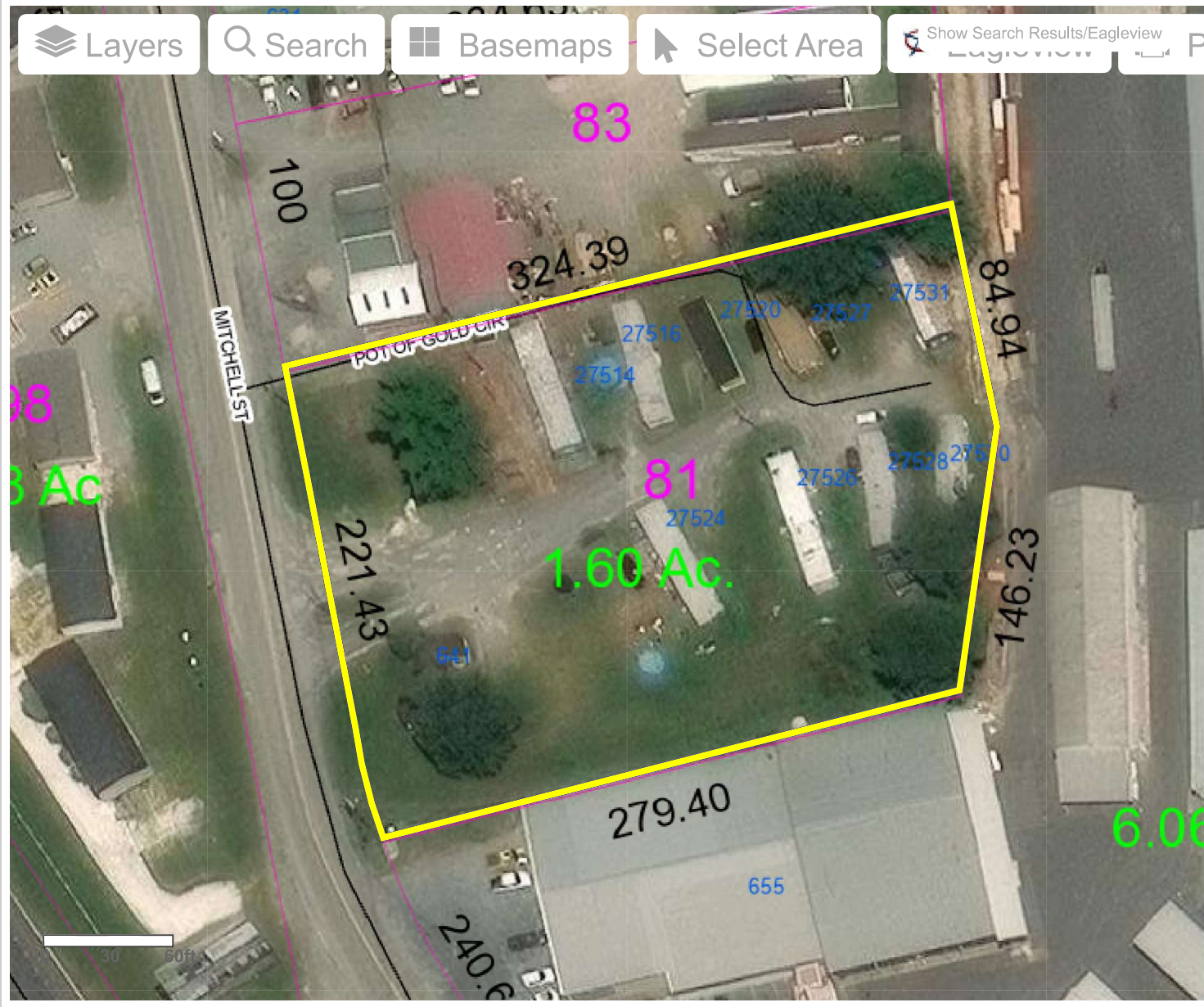
Class:	COM-Commercial
Use Code (LUC):	PK-MH PARK
Town	00-None
Tax District:	233 – DAGSBORO
School District:	1 - INDIAN RIVER
Fire District:	73-Dagsboro
Deeded Acres:	1.6000
Frontage:	0
Depth:	.000
Irr Lot:	
Plot Book Page:	/PB
100% Land Value:	\$8,600
100% Improvement Value	\$30,100
100% Total Value	\$38,700

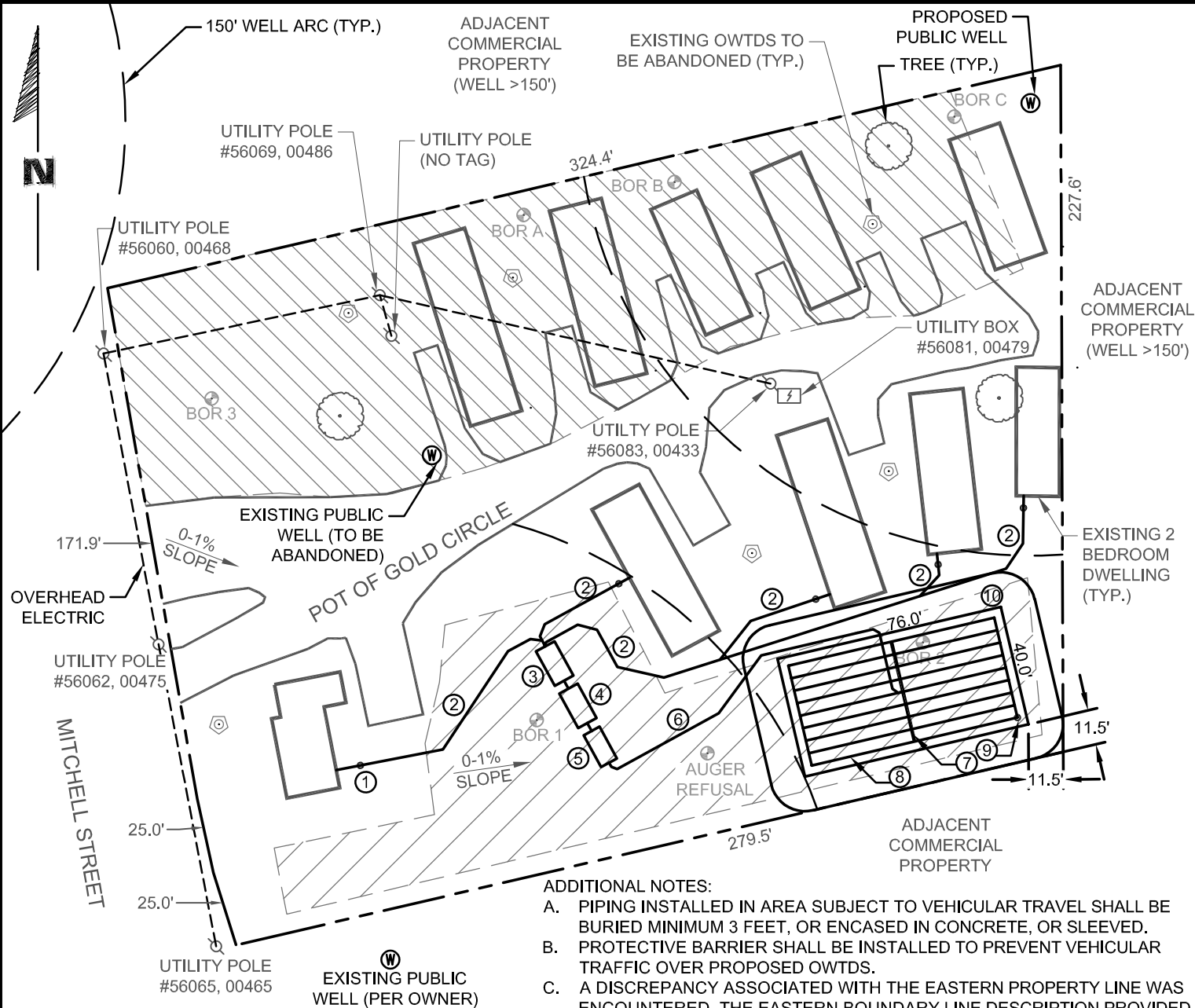
Legal

Legal Description	RAINBOW CIRCLE E/RT 83 1215'N/RT 334
-------------------	--

Owners

Owner	Co-owner	Address	City	State	Zip
C&C REAL ESTATE HOLDINGS LLC		38568 RESERVATION TRL	OCEAN VIEW	DE	19970





#### ADDITIONAL NOTES:

- PIPING INSTALLED IN AREA SUBJECT TO VEHICULAR TRAVEL SHALL BE BURIED MINIMUM 3 FEET, OR ENCASED IN CONCRETE, OR SLEEVED.
- PROTECTIVE BARRIER SHALL BE INSTALLED TO PREVENT VEHICULAR TRAFFIC OVER PROPOSED OWTDS.
- A DISCREPANCY ASSOCIATED WITH THE EASTERN PROPERTY LINE WAS ENCOUNTERED. THE EASTERN BOUNDARY LINE DESCRIPTION PROVIDED IN THE SUBJECT PROPERTY DEED (DEED BOOK 4988, PAGE 130) DOES NOT MATCH DEED DESCRIPTIONS FOR THE ADJACENT SUSSEX LUMBER COMPANY (TAX MAP 233-5.00-80.00), NOR SUSSEX COUNTY TAX PARCEL INFORMATION. DUE TO THE DISCREPANCY, SCALED ENGINEERING, INC. HIGHLY RECOMMENDS A FORMAL SURVEY BE PERFORMED PRIOR TO OWTDS INSTALLATION.
- GRINDER PUMPS MAY BE REQUIRED TO OVERCOME ELEVATION CHANGES TO SEPTIC TANK.

OWNER/AUTHORIZED AGENT SIGNATURE: Chris Washington

#### NOTES:

- TYP. SANITARY CLEANOUT
- 4" Ø SOLID SCH 40 PVC
- 2800 GAL SEPTIC TANK W/ EFFLUENT FILTER
- 2800 GAL SEPTIC TANK W/ ECOPOD E150N ADVANCED PRETREATMENT UNIT
- 2200 GAL DOSING CHAMBER W/ GOULDS WE0511H PUMP
- 2" Ø SOLID SCH 40 PVC TRANSMISSION LINE (129 LF)
- 2" Ø SOLID SCH 40 PVC MANIFOLD (34 LF)
- 1" Ø SCH 40 PVC LATERAL (35 LF) (5 - 5/32" HOLES, SPACED 6' O.C.)
- TYP CLEANOUT / TURN-UP (2.5' HEAD)
- 40'x76' DISPOSAL BED
- HATCHING INDICATES DNREC APPROVED OWTDS AREA
- SPARE TO BE SAND-LINED UPGRADE IN INITIAL AREA
- EXISTING OWTDS SHALL BE ABANDONED IN ACCORDANCE WITH DNREC REGULATIONS
- SEE GENERAL NOTES TO CONTRACTOR (COPY ATTACHED)**



#### CONSTRUCTION PLAN

C&C REAL ESTATE HOLDINGS, LLC  
RAINBOW CIRCLE  
E. SIDE OF MITCHELL STREET  
MILLSBORO, DE, 19966  
TM: # 233-5.00-81.00

DATE: 05/14/2025  
DRAWN: BMR/WSAP  
APPROVED: CRS

SCALE: 1" = 50'  
PROJECT: WSTN001  
SHEET: 1 OF 3

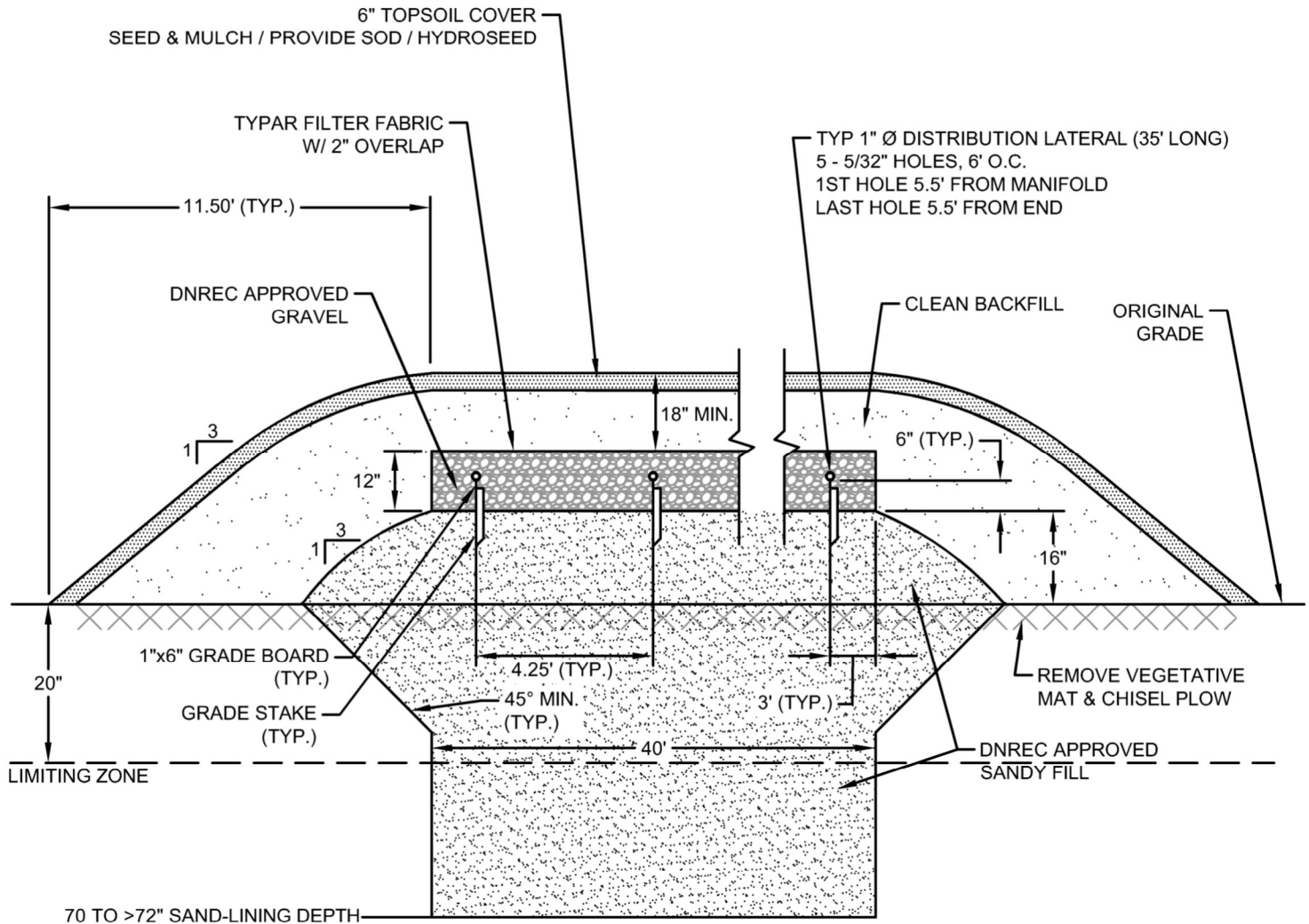
0' 25' 50'



**SCALED.**  
ENGINEERING

Scaled Engineering Inc.  
20246 Coastal Highway  
Rehoboth Beach, DE 19971  
Phone: (302) 227-7808





**SAND MOUND CROSS SECTION**  
(40'x76' DISPOSAL BED)



**NOTES:**

1. SAND-LINING SHALL EXTEND 70 TO >72 INCHES BELOW EXISTING GRADE, OR TO BENEATH SLOWLY PERMEABLE SUBSTRATUM.
2. CLASS D SOIL SCIENTIST SHALL BE ON-SITE TO VERIFY EXTENT OF SAND-LINING.
3. IF THE EXISTING OWTDS IS ENCOUNTERED DURING REPLACEMENT OWTDS INSTALLATION, SAND-LINING SHALL EXTEND MINIMUM 12 INCHES BELOW THE EXISTING OWTDS COMPONENT, OR TO PRESCRIBED SAND-LINING DEPTH, WHICHEVER IS DEEPEST.
4. **SEE GENERAL NOTES TO CONTRACTOR** (COPY ATTACHED)

**CROSS SECTION**

C&C REAL ESTATE HOLDINGS, LLC  
RAINBOW CIRCLE  
E. SIDE OF MITCHELL STREET  
MILLSBORO, DE, 19966  
TM: # 233-5.00-81.00

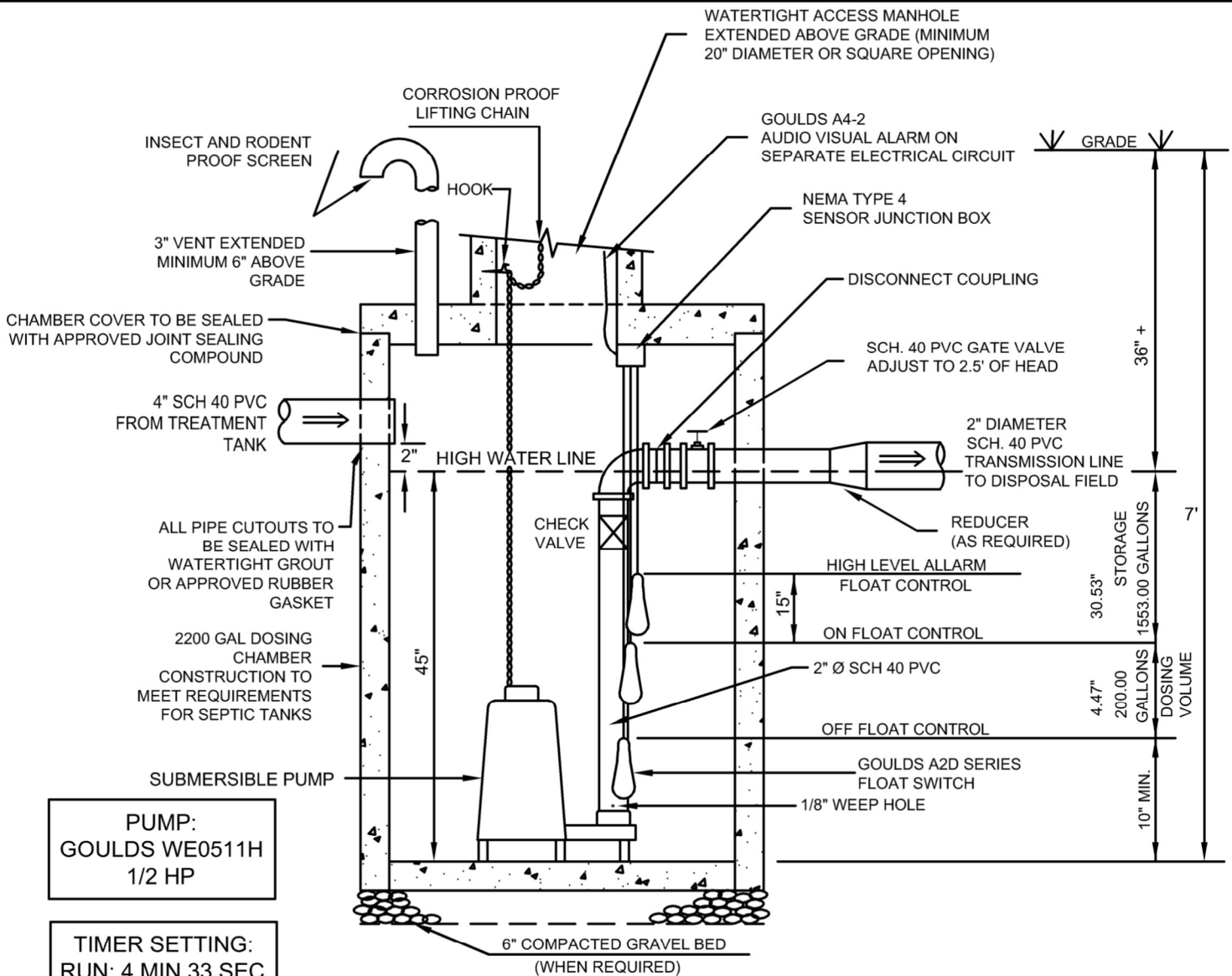
DATE: 05/14/2025  
DRAWN: BMR/WSAP  
APPROVED: CRS

SCALE: N.T.S.  
PROJECT: WSTN001  
SHEET: 2 OF 3



**SCALED.**  
ENGINEERING

Scaled Engineering Inc.  
20246 Coastal Highway  
Rehoboth Beach, DE 19971  
Phone: (302) 227-7808



#### NOTES:

- MAXIMUM DEPTH FROM GRADE TO INVERT OF DOSING CHAMBER TO BE 9'-0"
- EXCAVATION LIMITS SHALL EXTEND AT LEAST 2 FEET BEYOND TANK PERIMETER
- ALL PIPE TO BE PVC SCHEDULE 40 OR SDR 26
- CHAMBER TO BE SIZED ACCORDING TO REQUIREMENTS OF DOSING VOLUME AND STORAGE. SEE EXHIBIT
- ALL DOSING CHAMBER COMPONENTS SHALL BE FIELD TESTED TO INSURE ACCURACY, WATERTIGHTNESS AND PROPER OPERATION OF ALL PUMPS AND ALARM CONTROLS
- ALL ELECTRICAL CONNECTIONS SHALL BE WATERPROOF, CORROSION RESISTANT AND EXPLOSION PROOF

#### HEAD LOSSES

STATIC	=	8.83'
ORIFICE	=	2.5'
FRICTION	=	6.37'
TOTAL HEAD	=	17.71'
LOSS		@44 GPM

#### DOSING CHAMBER

C&C REAL ESTATE HOLDINGS, LLC  
RAINBOW CIRCLE  
E. SIDE OF MITCHELL STREET  
MILLSBORO, DE, 19966  
TM: # 233-5.00-81.00

DATE: 05/14/2025  
DRAWN: BMR/WSAP  
APPROVED: CRS

SCALE: N.T.S.  
PROJECT: WSTN001  
SHEET: 3 OF 3

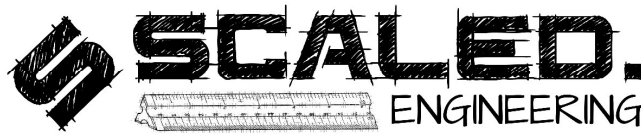


#### NOTES:

1. **SEE GENERAL NOTES TO CONTRACTOR**  
(COPY ATTACHED)



Scaled Engineering Inc.  
20246 Coastal Highway  
Rehoboth Beach, DE 19971  
Phone: (302) 227-7808



## **GENERAL NOTES TO CONTRACTOR:**

1. Contractor shall field-verify existing conditions and all site features (isolation distances, slope direction/percentage, measurements, etc.) prior to installation. If discrepancies are found in the field, Contractor shall immediately contact the designer at 302-227-7808.
2. The system shall be installed per the approved Permit and all applicable regulations set forth by the Department of Natural Resources and Environmental Control (DNREC)
3. Any changes to the Permit shall be approved by the designer prior to installation. Any changes to the approved Permit without prior approval of the designer or DNREC shall be the responsibility of the contractor.
4. System installation shall occur during proper soil moisture conditions.
5. Final grading shall prevent surface water ponding over OWTDS drainfield area.
6. Contractor shall provide adequate drainage between OWTDS drainfield and existing/proposed structures.
7. All tanks shall have watertight risers and shall extend above grade per DNREC Regulations.
8. Septic tanks shall be equipped with a DNREC approved effluent filter (where applicable).
9. Contractor shall remove all trees within 10 feet of OWTDS drainfield per DNREC Guidelines.
10. No construction traffic is to occur within the proposed OWTDS area. Scaled Engineering Inc recommends installing a barrier around proposed disposal area prior to lot development.
11. No boundary or placement survey was performed nor provided. Scaled Engineering Inc is not responsible for dwelling placement or actual location of boundary lines.
12. Low Pressure Pipe disposal systems shall be installed with a trencher per DNREC Regulations.
13. Gravity disposal systems may require a DNREC approved lift station package to overcome elevation differences from the septic tank to the drainfield.
14. Distribution boxes associated with gravity disposal systems shall maintain minimum 5-foot separation from trench/bed drainfields.
15. All piping and fittings shall be pressure rated schedule 40 PVC.
16. Changes to the OWTDS location shall require a Pre-Construction As-Built approved by DNREC prior to installation. Pre-Construction As-Built will be billed as an extra expense to the contractor or other responsible party.
17. All systems shall be inspected in accordance with DNREC Regulations. Equipment necessary for inspections (generator, hoses, water, pressure gauges, etc.) shall be provided by the contractor. Contractor or his/her representative shall be present during the inspection. Contractor shall notify designer minimum 72 hours in advance to schedule all inspections. Inspections requested less than 72 hours in advance may require additional fees, billed to the contractor. Additional fees shall be paid by the contractor prior to completion of the inspection report.
18. Any additional site visits required for designer approval will be billed as an extra to the contractor and shall be paid prior to completion of the inspection report.
19. Contractor shall review the DNREC approved Site Evaluation prior to installation.
20. Construction plans and details are for the purpose of septic design and permitting only. Actual construction methods including site safety, operations, and ensuring site suitability shall be the responsibility of the contractor. Specific designs may require additional effort to ensure safe practices and/or no damage occurs to property or structures.
21. Any proposed well shown in the septic design is for reference only, and does not confirm, nor imply conformance to the regulations regarding on-site well installation. A licensed well driller is responsible for verifying the well is installed in accordance with all applicable regulatory setbacks.





Project #: WSTN001  
 Calc'd by: BMR  
 Date: 05-13-2025

System Type: Elevated Sand Mound  
 No. Bedrooms: 10  
 Percolation Rate (mpi): 30

### CALCULATIONS

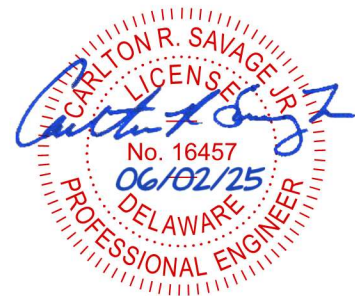
Design Flow: 1200 gpd  
 $A = 0.42Q(t \cdot 0.5)$   
 $t = 30$        $Q = 1200$   
 Required Area: 2761 sf  
 Drainfield Width: 40 ft  
 Drainfield Length: 76 ft  
 Lateral Spacing: 4.25 ft  
 Proposed Area: 3040 sf

Transmission Length 134 (includes 5ft in Tank)

Orifice Head: 2.5 ft

### Laterals:

No. of Laterals: 18  
 Length of Laterals: 35 ft  
 Hole diameter: 0.16 in (5/32")  
 Length O.C./hole: 6 ft  
 No. of holes/lateral: 5.83  
 No. holes/lat. used: 5  
 Flow/hole: 0.48 gpm/hole  
 Lateral flow: 2.39 gpm/lateral  
 Total flow in field: 43.06 gpm  
 Total flow used: 44 gpm  
 Depth to Limiting Zone: 20 in  
 Lat. height above grnd: 22 in  
 Static Head: 8.83 ft  
 Berm Width: 11.50 ft



System Calculations

Pages 1 - 3





### Check Head:

Pump:	Goulds 3885 1/2 HP-WE0511H
Allowable TDH:	26 ft
Total Flow Used:	44 gpm
Allowable friction head:	14.67 ft

### Friction Head:

Lateral Diameter:	1 in
Lateral Flow:	2.39 gpm/lateral
Head loss/100 ft:	0.532957924 ft/100 ft
Length of Lateral:	35 ft
Multiplier for fittings:	12
Lateral head loss:	0.22 ft

Manifold Diameter:	2 in
Head loss/100 ft:	1.032 ft/100 ft
Length of manifold:	17 ft
Multiplier for fittings:	12
Manifold head loss:	0.21 ft

Trans. line diameter:	2 in
Head loss/100 ft:	3.694 ft/100 ft
Length of trans. line:	134 ft
Multiplier for fittings:	12
Trans. line head loss:	5.94 ft

Total friction head:	6.37 ft
% allow. frict. head:	43.46

TDH:	17.71 ft
------	----------



### Check Dosing Volume:

Lateral diameter:	1 in
Volume/ft. of lateral:	0.041 gal/ft
Multiplier for fittings:	1
Linear feet of lateral:	664 ft
Total Linear Feet	664
Lateral volume:	27.224 gal

Manifold diameter:	2 in
Volume/ft. of lateral:	0.162 gal/ft
Multiplier for fittings:	1
Linear feet of manifold:	17 ft
Total Linear Feet	17
Manifold volume:	2.754 gal

Trans. line diameter:	2 in
Volume/ft. of trans. line:	0.162 gal/ft
Multiplier for fittings:	1
Linear feet of trans. line:	134 ft
Total Linear Feet	134
Trans. line volume:	21.71 gal

Min. dosing volume:	136 gal
Doses per day:	6
Dosing Volume:	200 gal
Size of dosing chamber:	2200 gal
Volume/in. of chamber:	44.7 gal/in
Set float at:	4.47 in



### Storage Volume:

Tank Size:	2200 gal	(6.0x12) Inside Dim. (ft)
Tank Volume:	2200.00 gal	45 in
Dead Water Volume:	447 gal	10 in
Dosing Volume:	200 gal	4.47 in
Remaining Volume:	1553.00 gal	30.53 in





# ITT

B3885

Wastewater

## Goulds Pumps

WE Series Model 3885

Submersible Effluent Pump

EXTENDED WARRANTY AVAILABLE FOR  
RESIDENTIAL APPLICATIONS.



### 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.
- **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 all models to guard against component damage on accidental reverse rotation.
- **Fasteners:** 300 series stainless steel.
- Capable of running dry without damage to components.
- Designed for continuous operation when fully submerged.



Goulds Pumps is a brand of ITT Corporation.

[www.goulds.com](http://www.goulds.com)

*Engineered for life*



# ITT

## GOULDS PUMPS Wastewater

### APPLICATIONS

Specifically designed for the following uses:

- Homes, Farms, Trailer Courts, Motels, Schools, Hospitals, Industry, Effluent Systems

### SPECIFICATIONS

#### Pump

- Solids handling capabilities:  $\frac{3}{4}$ " maximum.
- Discharge size: 2" NPT.
- Capacities: up to 140 GPM.
- Total heads: up to 128 feet TDH.
- Temperature: 104°F (40°C) continuous, 140°F (60°C) intermittent.
- See order numbers on reverse side for specific HP, voltage, phase and RPM's available.

### MOTORS

- Fully submerged in high-grade turbine oil for lubrication and efficient heat transfer.
- Class B insulation on  $\frac{1}{3}$  –  $1\frac{1}{2}$  HP models.
- Class F insulation on 2 HP models.

#### Single phase (60 Hz):

- Capacitor start motors for maximum starting torque.
- Built-in overload with automatic reset.
- SJTOW or STOW severe duty oil and water resistant power cords.

- $\frac{1}{3}$  – 1 HP models have NEMA three prong grounding plugs.
- $1\frac{1}{2}$  HP and larger units have bare lead cord ends.

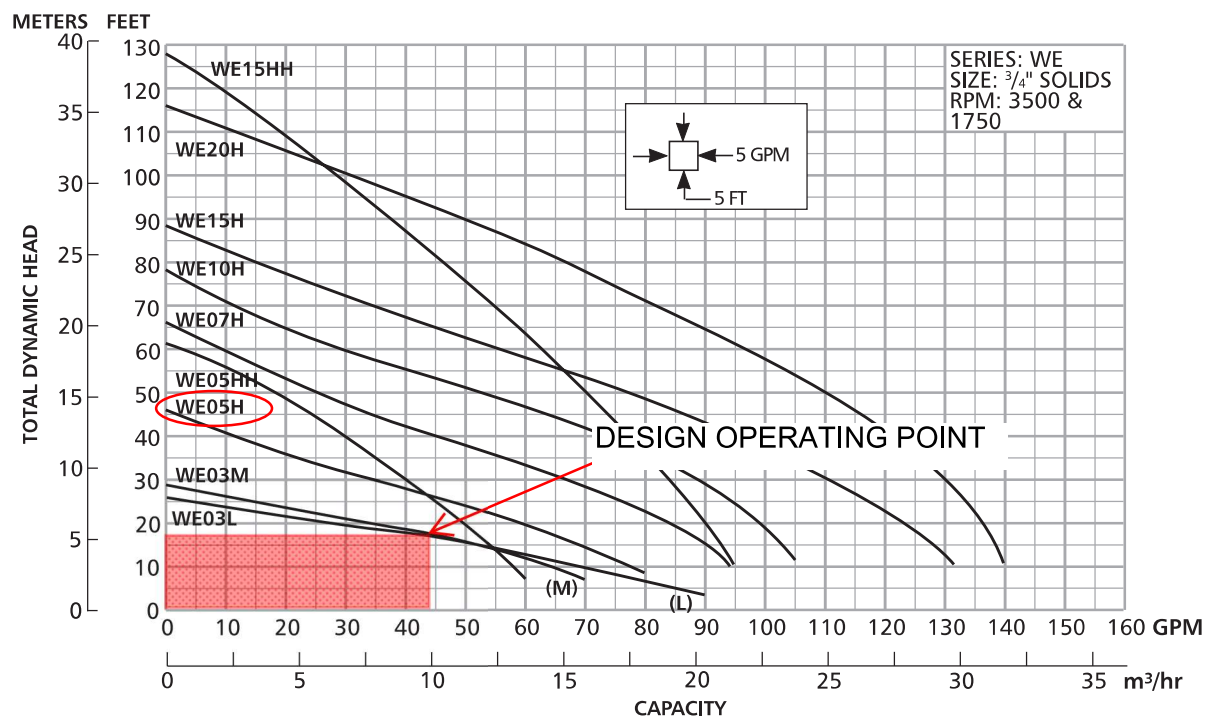
#### Three phase (60 Hz):

- Class 10 overload protection must be provided in separately ordered starter unit.
- STOW power cords all have bare lead cord ends.
- **Designed for Continuous Operation:** Pump ratings are within the motor manufacturer's recommended working limits, can be operated continuously without damage when fully submerged.
- **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. Standard cord is 20'. Optional lengths are available.
- **O-ring:** Assures positive sealing against contaminants and oil leakage.

### AGENCY LISTINGS



Tested to UL 778 and CSA 22.2 108 Standards  
By Canadian Standards Association File #LR38549  
Goulds Pumps is ISO 9001 Registered.





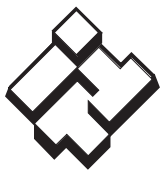


# ITT

## GOULDS PUMPS Wastewater

### MODELS

Order Number	HP	Phase	Volts	RPM	Impeller Diameter (in.)	Maximum Amps	Locked Rotor Amps	KVA Code	Full Load Efficiency %	Resistance		Power Cable Size	Weight (lbs.)
										Start	Line-Line		
WE0311L	0.33	1	115	1750	5.38	10.7	30.0	M	54	11.9	1.7	16/3	56
WE0318L			208			6.8	19.5	K	51	9.1	4.2		
WE0312L			230			4.9	14.1	L	53	14.5	8.0		
WE0311M			115			10.7	30.0	M	54	11.9	1.7		
WE0318M			208			6.8	19.5	K	51	9.1	4.2		
WE0312M			230			4.9	14.1	L	53	14.5	8.0		
WE0511H	0.5	1	115	3450	3.56	14.5	46.0	M	54	7.5	1.0	14/3	60
WE0518H			208			8.1	31.0	K	68	9.7	2.4	16/3	60
WE0512H			230			7.3	34.5	M	53	9.6	4.0	14/4	60
WE0538H		3	200			4.9	22.6	R	68	NA	3.8		
WE0532H			230			3.3	18.8	R	70	NA	5.8		
WE0534H			460			1.7	9.4	R	70	NA	23.2		
WE0537H			575			1.4	7.5	R	62	NA	35.3		
WE0511HH		1	115		3.88	14.5	46.0	M	54	7.5	1.0	14/3	60
WE0518HH			208			8.1	31.0	K	68	9.7	2.4	16/3	60
WE0512HH			230			7.3	34.5	M	53	9.6	4.0	14/4	60
WE0538HH		3	200			4.9	22.6	R	68	NA	3.8		
WE0532HH			230			3.6	18.8	R	70	NA	5.8		
WE0534HH			460			1.8	9.4	R	70	NA	23.2		
WE0537HH			575			1.5	7.5	R	62	NA	35.3		
WE0718H	0.75	1	208		4.06	11.0	31.0	K	68	9.7	2.4	14/3	70
WE0712H			230			10.0	27.5	J	65	12.2	2.7	14/4	70
WE0738H		3	200			6.2	20.6	L	64	NA	5.7		
WE0732H			230			5.4	15.7	K	68	NA	8.6		
WE0734H			460			2.7	7.9	K	68	NA	34.2		
WE0737H			575			2.2	9.9	L	78	NA	26.5		
WE1018H		1	208		4.44	14.0	59.0	K	68	9.3	1.1	14/3	70
WE1012H			230			12.5	36.2	J	69	10.3	2.1	14/4	70
WE1038H		3	200			8.1	37.6	M	77	NA	2.7		
WE1032H			230			7.0	24.1	L	79	NA	4.1		
WE1034H			460			3.5	12.1	L	79	NA	16.2		
WE1037H			575			2.8	9.9	L	78	NA	26.5		
WE1518H	1.5	1	208		4.56	17.5	59.0	K	68	9.3	1.1	14/3	80
WE1512H			230			15.7	50.0	H	68	11.3	1.6	14/4	80
WE1538H		3	200			10.6	40.6	K	79	NA	1.9		
WE1532H			230			9.2	31.7	K	78	NA	2.9		
WE1534H			460			4.6	15.9	K	78	NA	11.4		
WE1537H			575			3.7	13.1	K	75	NA	16.9		
WE1518HH		1	208		5.50	17.5	59.0	K	68	9.3	1.1	14/3	80
WE1512HH			230			15.7	50.0	H	68	11.3	1.6	14/4	80
WE1538HH		3	200			10.6	40.6	K	79	NA	1.9		
WE1532HH			230			9.2	31.7	K	78	NA	2.9		
WE1534HH			460			4.6	15.9	K	78	NA	11.4		
WE1537HH			575			3.7	13.1	K	75	NA	16.9		
WE2012H	2	3	230		5.38	18.0	49.6	F	78	3.2	1.2	14/3	83
WE2038H			200			12.0	42.4	K	78	NA	1.7	14/4	83
WE2032H			230			11.6	42.4	K	78	NA	1.7		
WE2034H			460			5.8	21.2	K	78	NA	6.6		
WE2037H			575			4.7	16.3	L	78	NA	10.5		



# ITT

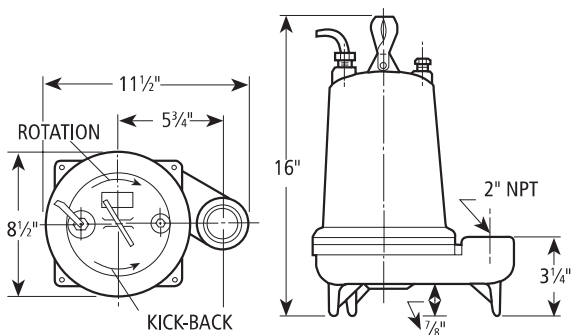
## Wastewater

### PERFORMANCE RATINGS (gallons per minute)

Order No.	WE03L	WE03M	WE05H	WE07H	WE10H	WE15H	WE05HH	WE15HH	WE20H
HP	1/3	1/3	1/2	3/4	1	1 1/2	1/2	1 1/2	2
RPM	1750	1750	3500	3500	3500	3500	3500	3500	3500
5	86	—	—	—	—	—	—	—	—
10	70	63	78	94	—	—	58	95	—
15	52	52	70	90	103	128	53	93	138
20	27	35	60	83	98	123	49	90	136
25	5	15	48	76	94	117	45	87	133
30	—	—	35	67	88	110	40	83	130
35	—	—	22	57	82	103	35	80	126
40	—	—	—	45	74	95	30	77	121
45	—	—	—	35	64	86	25	74	116
50	—	—	—	25	53	77	—	70	110
55	—	—	—	—	40	67	—	66	103
60	—	—	—	—	30	56	—	63	96
65	—	—	—	—	20	45	—	58	89
70	—	—	—	—	—	35	—	55	81
75	—	—	—	—	—	25	—	51	74
80	—	—	—	—	—	—	—	47	66
90	—	—	—	—	—	—	—	37	49
100	—	—	—	—	—	—	—	28	30

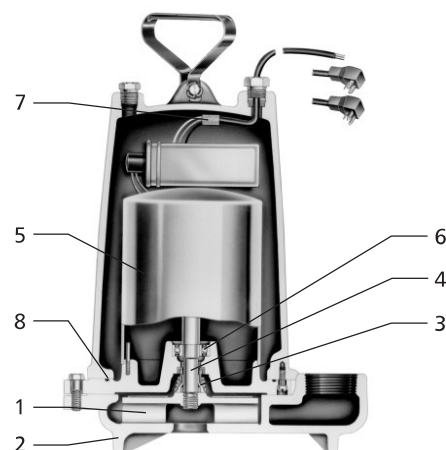
### DIMENSIONS

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



### COMPONENTS

Item No.	Description
1	Impeller
2	Casing
3	Mechanical Seal
4	Motor Shaft
5	Motor
6	Ball Bearings
7	Power Cable
8	Casing O-Ring



Goulds Pumps and the ITT Engineered Blocks Symbol are registered trademarks and tradenames of ITT Corporation.

SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE.

B3885 June, 2009

© 2008 ITT Corporation

*Engineered for life*

**A2D SERIES****SJE PumpMaster® Pump Switch****Features**

- Mechanically activated, heavy duty contacts, wide angle operation.
- Passed NSF standard 61 protocol by an approved Water Quality Association laboratory.
- Controls pumps up to 1/2 HP at 120 VAC and 1 HP at 230 VAC.
- Non-corrosive PVC housing for use in liquids up to 140° F (60° C).
- Not sensitive to rotation or turbulence.
- Pumping range: 7" to 36".
- 16 AWG, SJOW cord is available with or without piggyback plug.
- Available as pump up, pump down and SPDT models, see Nomenclature Chart.
- For potable water, water or sewage applications.
- UL Recognized for use in water and sewage.
- CSA Certified.
- See chart for amperage range and other data.

**A2HT SERIES****High Temperature Float Switch****Features**

- Temperature Rating: 221° F (105° C)
- Wide Angle Switch: contacts open @ 45° below horizontal and close at 45° above horizontal
- Float Material: PC/ABS (Polycarbonate ABS)
- Cord Material: Teflon coating
- Ratings: 13 Maximum Amps, 1/2 HP, 115/230 V
- Float Dimensions: 4.63" Long x 2.63" Diameter
- Nomenclature: see page 9
- Available lengths: 20', 30' and 50' \*



**NOTE:** A2HTL High Temperature Rating: 185° F

\* No other lengths available in this Series.

**A2E SERIES****SJE PumpMaster Plus® Pump Switch****Features**

- Controls pumps up to 3/4 HP at 120 VAC and 2 HP at 230 VAC.
- 14 AWG, SJOW cord is available with or without piggyback plug.
- **All other features are the same as A2D PumpMaster Series above.**

# Timed Dosing Control

## SJE-Rhombus® Type TD

### Installation Instructions and Operation/Troubleshooting Manual



This control panel must be installed and serviced by a licensed electrician in accordance with the National Electric Code NFPA-70, state and local electrical codes.

All conduit running from the sump or tank to the control panel must be sealed with conduit sealant to prevent moisture or gases from entering the panel. **NEMA 4X enclosures are for indoor or outdoor use**, primarily to provide a degree of protection against corrosion, windblown dust and rain, splashing water and hose-directed water. **Cable connectors must be liquid-tight in NEMA 4X enclosures.**

## Installation

Type TD control panels are designed to operate with two, three or four float systems. The two float system utilizes one float as the "low level cutout", the second as "high level alarm". A three float system adds either a "redundant off" float or a "timer override" float to the "low level cutout" and "high level alarm" functions. A four float system includes a "redundant off float", a "low level cutout" float, a "timer override" float, and a "high level alarm" float.

**NOTE: Options ordered may affect the number of floats and their functions. Please reference the schematic provided with the control panel.**

### Installation of Floats

**CAUTION:** If control switch cables are not wired and mounted in the correct order, the pump system will not function properly.

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

1. Use float label kit to identify and label cables on both the float and stripped ends (low level cutout, alarm, etc.). See schematic for float options.
2. Determine your normal operating level and desired float configuration, as illustrated in **Figures 1-4**.
3. Mount float switches at appropriate levels as illustrated in **Figures 1-4**. Be sure that floats have free range of motion without touching each other or other equipment in the basin.
4. For mounting clamp installation: place the cord into the clamp as shown in **Figure 5**. Locate the clamp at the desired activation level and secure the clamp to the discharge pipe as shown in **Figure 5**.

**NOTE:** Do not install cord under hose clamp.

5. Tighten the hose clamp using a screwdriver. Over tightening may result in damage to the plastic clamp. Make sure the float cable is not allowed to touch the excess hose clamp band during operation.

**NOTE:** All hose clamp components are made of 18-8 stainless steel material. See your SJE-Rhombus® supplier for replacements.

6. If using an optional redundant off float, mount slightly below the low level cutout float, but above the pump as illustrated in **Figures 2 & 4**.
7. If using an optional timer override float, position it at a level in the basin as shown in **Figure 3 & 4**.

Warranty void if panel is modified.

Call factory with servicing questions:

**1-800-RHOMBUS**  
(1-800-746-6287)

Manufactured by:

**SJE**  
**Rhombus**®

22650 County Highway 6 ■ P.O. Box 1708  
Detroit Lakes, Minnesota 56502 USA  
1-888-DIAL-SJE (1-888-342-5753)  
Phone: 218-847-1317 ■ Fax: 218-847-4617  
E-mail: customer.service@sjerhombus.com  
Website: www.sjerhombus.com



# Installation Instructions

## 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 an SJE-Rhombus® liquid-tight junction box with liquid-tight connectors to make required connections. **You must use conduit sealant to prevent moisture or gases from entering the panel.**
2. Mount control panel with mounting devices furnished.
3. Determine conduit entrance locations on control panel. Check local codes and schematic for the number of power circuits required.

**NOTE:** Be sure the proper power supply voltage, amperage, and phase meet the requirements of 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.

**NOTE:** 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 REQUIRING  
A SPLICE, FOLLOW STEPS 6-10;  
FOR INSTALLATION WITHOUT A  
SPLICE, GO TO STEP 11.**

**6 DOSES PER DAY = 1  
DOSE EVERY 4 HOURS**

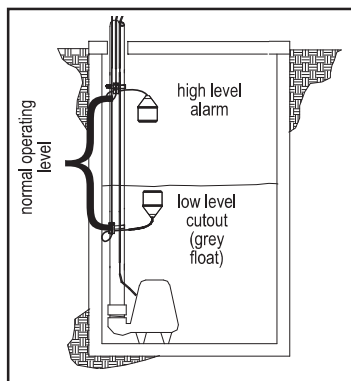
6. Determine location for mounting junction box according to local code requirements. **Do not** mount the junction box inside the sump or basin.
7. Mount junction box to proper support.
8. Run conduit to junction box. Drill proper size holes for the type of conduit used.
9. Identify and label each wire before pulling through conduit into control panel and junction box. Make wire splice connections at 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**. If the redundant off float is not required, place a jumper wire across TB1-7 and TB1-8.
13. Connect pump/control and alarm incoming power conductors to proper position on terminals. See schematic and wiring diagram for terminal connections.

**VERIFY CORRECT OPERATION OF CONTROL PANEL  
AFTER INSTALLATION IS COMPLETE.**

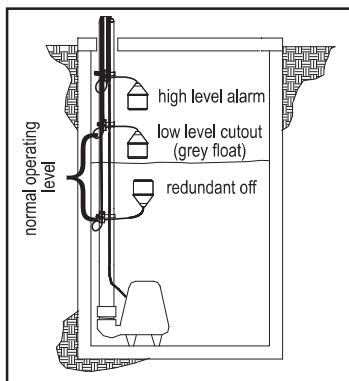
**RUN TIME TO BE SET AT**

**4 MIN. 33 SEC.**

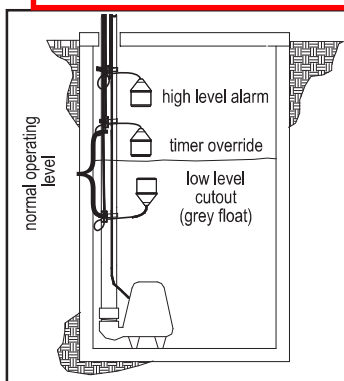
**EACH DOSE FOR 6  
DOSES PER DAY**



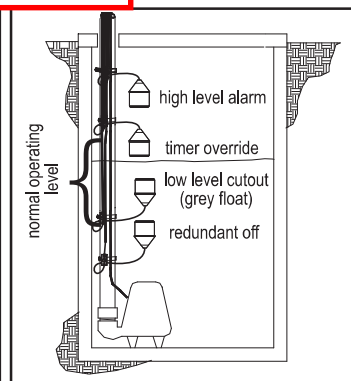
**FIGURE 1 -  
Two float system**



**FIGURE 2 -  
Three float system  
with redundant off**



**FIGURE 3 -  
Three float system  
with timer override**



**FIGURE 4 -  
Four float system**

# Installation Instructions

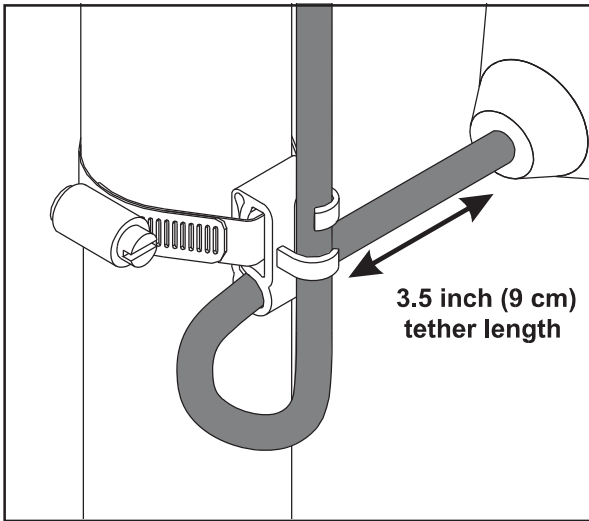


FIGURE 5 - Mounting clamp detail.

**Option 4E**  
**Redundant Off / Alarm Activation**  
**Wiring Diagram**

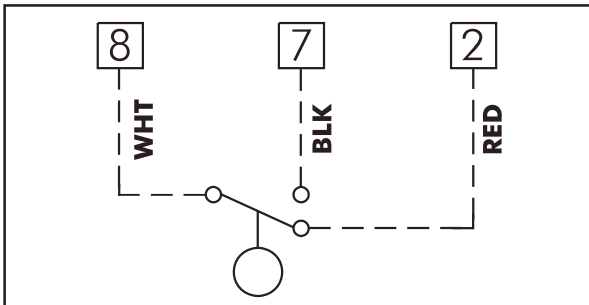


FIGURE 7 -  
Redundant off pump  
wiring diagram

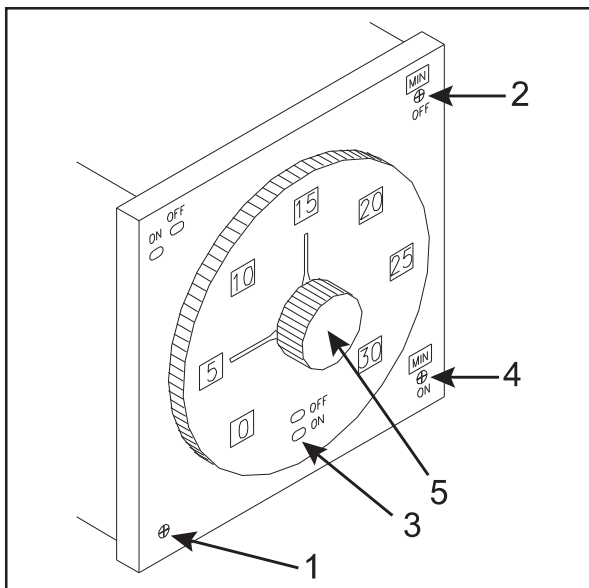


FIGURE 8 - Timer detail

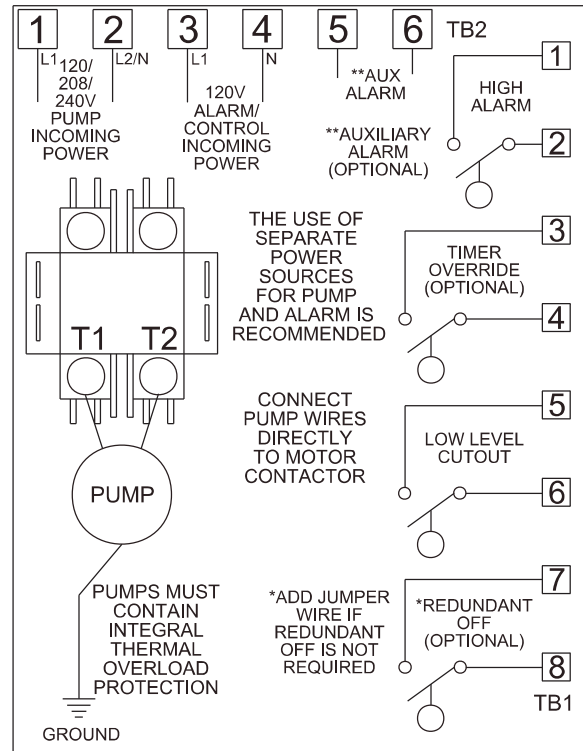


FIGURE 6 -  
TD wiring diagram

## Setting the timer

Remove the timer by clipping the tie strap and pulling it straight out of the socket.

1. Determine the pump "on & off" time and turn the adjustment screw (1) so that the most appropriate range of numbers (usable for both the on and off cycles) is visible in the windows on the dial face.
2. Adjust the off time range selector (2) to the appropriate period. (e.g.: minutes).
3. Adjust the outer dial (3) so the green pointer indicates the off time period required. (e.g.: 15)
4. Adjust the on timer range selector (4) to the appropriate period (e.g.: minutes).
5. Adjust the inner dial (5) so the red pointer indicates the on time period required. (e.g.: 5)
6. When setting is complete, place the timer back in the socket.
7. In the example shown, the pump would be off for 15 minutes and then on for 5 minutes. This cycle would continue as long as there was enough liquid in the tank to float the low level cutoff switch.

**NOTE: "OFF" time is cycled first.**

# Operations & Troubleshooting

TD series control panels are available for use with two, three or four float combinations. In a two float system, one float in the tank is the "low level cutout" float while the other is a "high level alarm" float. The normal operating level should be between the "low level cutout" position and the "high level alarm" position. The TD panel can be installed with a choice of three float systems. One choice adds a "redundant off" float which is positioned slightly below the "low level cutout" grey float, but above the pump. The normal operating level shall be between the "low level cutout" position and the "high level alarm" position. The other choice adds a "timer override" float which is positioned between the "low level cutout" (grey float) and the "high level alarm" float. Normal operating level should be between the "low level cutout" float and the "timer override" float.

A four float system includes a "redundant off" float, a "low level cutout" float, a "timer override" float and a "high level alarm" float. The "timer override" float gives you the option of pumping from the basin while the timer is in the "off" cycle. It is only intended for times of abnormally high liquid level inrushes. The normal operating level should be between the "low level cutout" float and the "timer override" float.

The control panel begins timing the "off" sequence when the "low level cutout" float is activated. Once the timer completes the "off" sequence, the timer will start the pump and continue to run until the programmed "on" sequence is complete. At this point the "off" sequence begins timing again and the cycle repeats.

## Float Controls

1. Check the floats during their entire range of operation. Clean, adjust, replace and repair damaged floats.
2. Measure the float resistance to determine if the float is operating properly.



To measure float resistance:

- a. Isolate the float by disconnecting one or both of the float leads from the float terminals.
- b. Place one ohmmeter lead on one of the float wires, and the other ohmmeter lead on the other float wire.
- c. Set the ohmmeter dial to read ohms and place on the R X 1 scale. With the float in the "off" position, the scale should read infinity (high resistance), if not replace the float.

With the float in the "on" position, the scale should read close to zero, if not replace the float. **Readings may vary depending on the accuracy of the measuring device.**

## Magnetic Contactor Coil

To measure the coil, disconnect one of the coil leads. Measure the coil resistance by setting the ohmmeter on the R X 1 scale. A defective coil will read zero indicating a short, or infinity (high resistance) indicating an opened coil. Replace defective contactor.

## Fuses

To check the continuity of the fuse, pull the fuse out of the fuse holder. With the ohmmeter on the R X 1 scale, measure resistance. A reading of infinity (high resistance) indicates a blown fuse that must be replaced with a fuse of the same type, voltage, and amp rating.

## Alarm Light

Activate the alarm float. The alarm light should turn on. If not, replace the light with that of the same type.

## Alarm Horn

Activate the alarm float. The alarm horn should turn on. If not, replace the horn with that of the same type.

# SJE-Rhombus® Five-Year Limited Warranty

**SJE-RHOMBUS®** warrants to the original consumer that this product shall be free of manufacturing defects for five years after the date of consumer purchase. During that time period and subject to the conditions set forth below, **SJE-RHOMBUS®** will repair or replace, for the original consumer, any component which proves to be defective due to defective materials or workmanship of **SJE-RHOMBUS®**.

## ELECTRICAL WIRING AND SERVICING OF THIS PRODUCT MUST BE PERFORMED BY A LICENSED ELECTRICIAN.

**THIS WARRANTY DOES NOT APPLY:** (A) to damage due to lightning or conditions beyond the control of **SJE-RHOMBUS®**; (B) to defects or malfunctions resulting from failure to properly install, operate or maintain the unit in accordance with printed instructions provided; (C) to failures resulting from abuse, misuse, accident, or negligence; (D) to units which are not installed in accordance with applicable local codes, ordinances, or accepted trade practices, and (E) to units repaired and/or modified without prior authorization from **SJE-RHOMBUS®**.

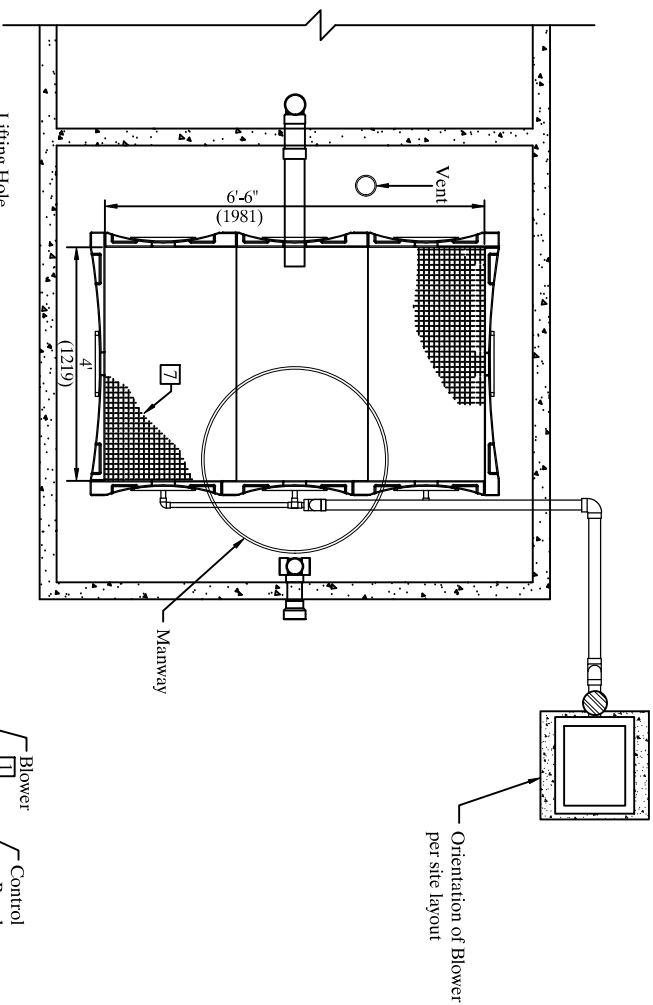
*Some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.*

**TO OBTAIN WARRANTY SERVICE:** The consumer shall assume all responsibility and expense for removal, reinstallation, and freight. Any item to be repaired or replaced under this warranty must be returned to **SJE-RHOMBUS®**, or such place as designated by **SJE-RHOMBUS®**.

**ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS ARE LIMITED TO THE DURATION OF THIS WRITTEN WARRANTY. SJE-RHOMBUS® SHALL NOT, IN ANY MANNER, BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES AS A RESULT OF A BREACH OF THIS WRITTEN WARRANTY OR ANY IMPLIED WARRANTY.**

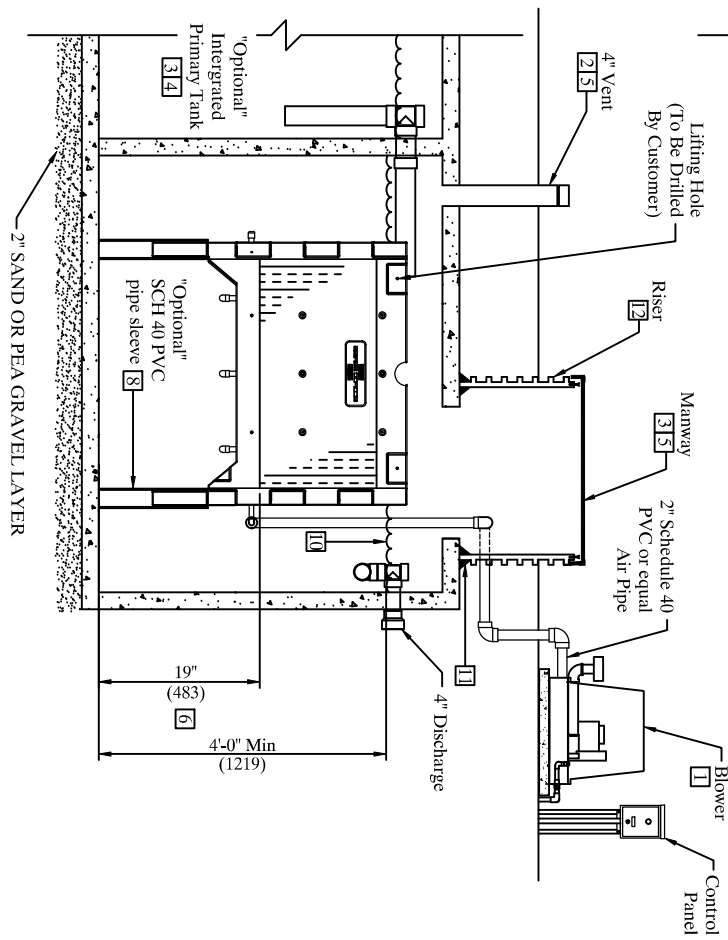
## NOTICE!

Products returned must be cleaned, sanitized, or decontaminated as necessary prior to shipment to ensure that employees will not be exposed to health hazards in handling said material. All applicable laws and regulations shall apply.



**NOTES:**

1. Blower piping to ECOPOD not to exceed 100 FT total length in the piping system. For distances greater than 100 FT, consult factory. Blower must be located above flood levels on a solid base.
2. Vent to be located above finish grade or higher to avoid infiltration. Cap on vent must be secured with a stainless steel screw.
3. All other tanks to/ from ECOPOD must conform to applicable country, state, province, and local plumbing and electrical codes.
4. The primary tank/ compartment volume must be 1 to 2 times the rated ECOPOD GPD. Primary and Reactor tank volumes are listed in the ECOPOD Design Manual. The primary tank may be integrated with the reactor tank or stand alone in a separate tank.
5. All manways, pump out ports, and vents must be secured to prevent accidental or unauthorized access.
6. ECOPOD media is recommended to be at least 19" from bottom of tank. Distances not 19" need factory approval.
7. ECOPOD media VF3800.
8. Tanks with higher inlets, install SCH 40 PVC pipe over legs to elevate reactor to correct height.
9. Air supply line should be secured with non-corrosive clamps where required to prevent vibration damage.
10. Effluent discharge level must be at a height no more, or no less than 2" above vertical tube PVC media.
11. Use epoxy, or use another approved method or substance, to create strong connection & watertight seal (TYP.)
12. Risers must conform to country, state, province, and local acceptable codes.



1500 GPD TREATMENT UNIT		
Discharge From Tank	4'-0"	
Reactor Volume	2100 Gallons	
Recommended Distance Under Reactor Box	19"	

THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF DELTA TREATMENT SYSTEMS, LLC. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF DELTA TREATMENT SYSTEMS, LLC IS PROHIBITED. DESIGN AND INVENTION RIGHTS ARE RESERVED IN THE INTEREST OF TECHNOLOGICAL ADVANCEMENT. ALL PRODUCTS ARE SUBJECT OF DESIGN AND OR MATERIAL CHANGE WITHOUT NOTICE.

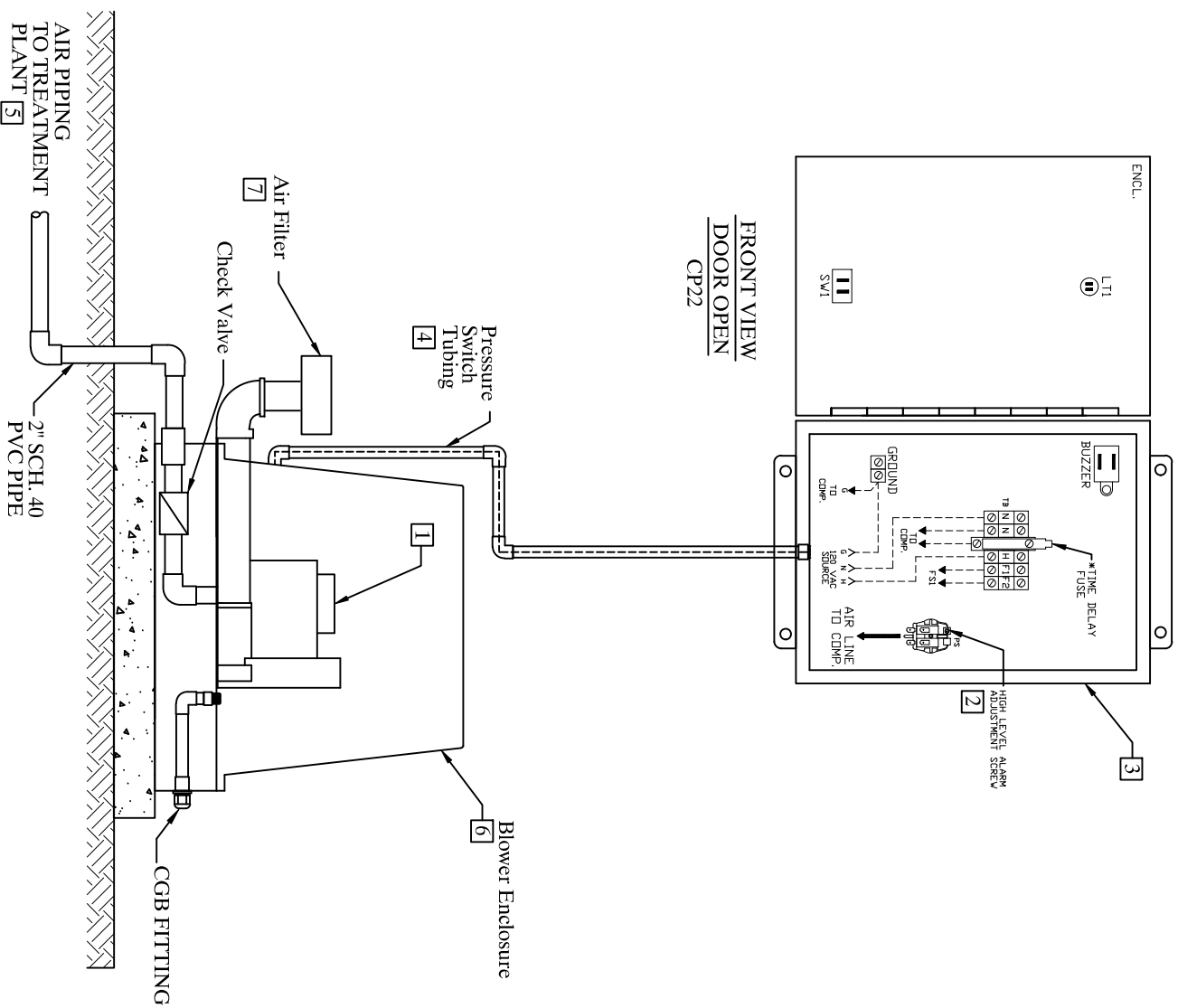


**E150NCA REACTOR IN CONCRETE TANK**

DWN BY:	DATE:	SCALE:	DWG. NO.:	REV:	PAGE:
L.CUTRER	06/14/13	N.T.S.	E150N_CA	2	1 OF 3



# FRONT VIEW DOOR OPEN CP22



## NOTES:

1. Blower Model K03
2. Setting High Level Pressure Switch  
Bring plant to operating water level with compressor turned on. Using properly sized screw driver, turn high level alarm adjustment screw clockwise until alarm occurs. Once alarm occurs, turn the screw counter-clockwise until alarm stops.  
Setting Low Level Pressure Switch  
Factory set
3. All of Delta's control panels are manufactured to UL508A requirements. All enclosures are NEMA rated.
4. Pressure switch tubing is used for high and low level pressure detection.
5. All piping from the blower to the ECOPOD to be 2" sch 40 PVC pipe.
6. All blowers are housed in a polyethylene enclosure supplied with necessary piping for installation.
7. Inlet Filters must be mounted on outside of enclosure. Filters not mounted on outside could contribute to blower malfunction and void manufacture's warranty.
8. Filter elements must be non-paper type.

THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF DELTA TREATMENT SYSTEMS, LLC. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF DELTA TREATMENT SYSTEMS, LLC IS PROHIBITED. DESIGN AND INVENTION RIGHTS ARE RESERVED IN THE INTEREST OF TECHNOLOGICAL ADVANCEMENT. ALL PRODUCTS ARE SUBJECT OF DESIGN AND OR MATERIAL CHANGE WITHOUT NOTICE.

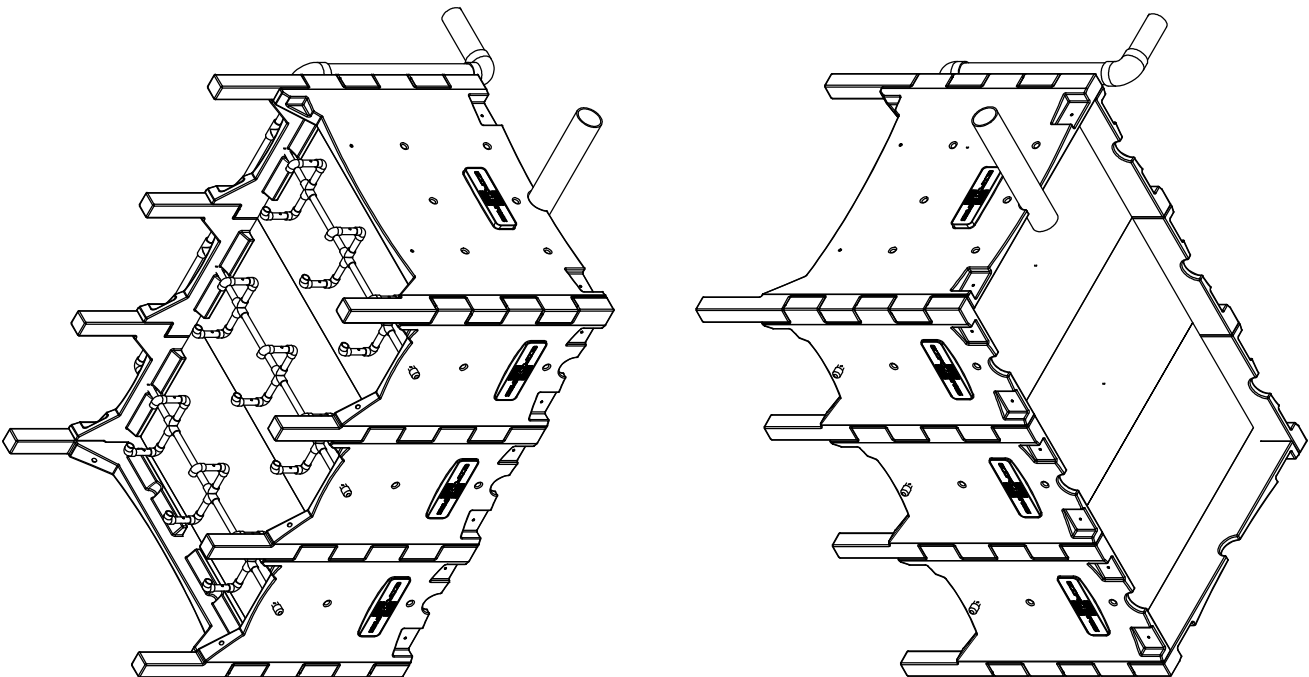


## E150NCA BLOWER/ CP DETAIL

DWN BY: L.CUTRER	DATE: 06/14/13	SCALE: N.T.S.	DWG. NO.: E150N_CA	REV: 2	PAGE: 2 OF 3
---------------------	-------------------	------------------	-----------------------	-----------	-----------------

**ECOPOD SERIES SPECIFICATIONS**

1. The ECOPOD Series is an Advanced, Fixed Film Wastewater Treatment device from 500 to 1,500 GPD. It has been tested under NSF Std 40 and 245 and exceeds (Class 1) requirements for effluent quality. The ECOPOD significantly reduces nutrients in the wastewater as well as BOD & TSS and performs nitrification and de-nitrification in a single tank. The ECOPOD series utilizes a Fixed Film process which is characteristically stable, reliable, and sturdy. Fixed Film is a preferred treatment process in many areas for on-site wastewater treatment systems.
  2. The ECOPOD shall essentially consist of a media container, engineered media, air diffusion system, specially designed discharge outlet tee, blower assembly, and control/alarm panel. Additional features and accessories are as shown on the Delta Treatment Systems job drawing and as hereinafter specified and described.
  3. The reactor tank shall be sized to provide a minimum of 33.6 hours of hydraulic detention time at the average daily flow (ADF). The dilution zone shall also be designed as to provide optimum liquid-solid separation and shall be sized to provide 24 hours hydraulic detention at the ADF rate.
  4. The aeration blower shall provide the system with sufficient capacity to furnish the treatment units air requirements. The blower(s) shall be capable of delivering a minimum of 4,850 cubic feet per pound of BOD5 influent at required discharge pressure.
  5. An electrical control panel shall be furnished with each compressor that will protect the compressor from overload and failure to start. Included in the panel shall be a pressure switch alarm system that will sound an alarm upon loss of air supply as well as a high water. System shall be NSF/ANSI International certified utilizing UL rated components in an indoor/outdoor NEMA rated enclosure.
  6. Air delivery system shall be constructed of schedule 40 PVC pipe. Patented air ports shall be designed for non-clogging and shall be maintenance free.
  7. All necessary piping and valves inside the plant shall be PVC and provided by the manufacturer. At the exterior wall of the plant, as shown on the plans, the manufacturer shall provide properly sized inlet and outlet connections. The manufacturer shall not be responsible for piping or valves outside the plant. Contractor or owner shall be responsible for necessary piping and valves between all systems.
  8. All workmanship and materials shall be of the highest quality. The waste treatment plant shall be the product of an experienced manufacturer actively engaged in manufacturing and research and development of sewage treatment systems. NSF International test documents shall be available upon request of the engineer.
- Delta Treatment Systems has a limited warranty on the parts in each treatment system for a period of (2) years. All warranty questions shall be resolved through Delta Treatment Systems. The warranty on the treatment device is that the device is free from defects in material and workmanship from the date of installation treating household wastewater. The warranty does not cover treatment processes and devices that have been flooded, by external means, or that have been disassembled by unauthorized persons, improperly installed, subjected to external damage or damaged due to altered or improper wiring of overload protection.



THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF DELTA TREATMENT SYSTEMS, LLC. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF DELTA TREATMENT SYSTEMS, LLC. IS PROHIBITED. DESIGN AND INVENTION RIGHTS ARE RESERVED IN THE INTEREST OF TECHNOLOGICAL ADVANCEMENT. ALL PRODUCTS ARE SUBJECT OF DESIGN AND OR MATERIAL CHANGE WITHOUT NOTICE.



**E150NCA REACTOR**

DWN BY:	DATE:	SCALE:	DWG. NO.:	REV:	PAGE:
L.CUTRER	06/14/13	N.T.S.	E150N_CA	2	3 OF 3