SEWAGE TREATMENT SYSTEM (STS) DESIGN FOR
Hanover Township
2592 Old Oxford Road
Hamilton, OH 45013
Par#B1010015000026
4.00 Acres

Designed By:
SCS ENGINEERS
2060 Reading Road, #200
Cincinnati OH 45202
513-826-4174
Design date: October 27, 2023
Site Visited: August 2, 2023

Design Details:
Pretreatment effluent from a Jet J-800-PLT aerobic treatment unit (ATU) with Jet 952 UV disinfection which will pump to a distribution box then gravity feed to a partially buried ATL sand bed.

Design Rationale:
This septic system design is for a new bathroom facility with 43 parking spaces designed for a Daily Design Peak Flow of 516 GPD. The peak flow should not be reached on a routine basis. Average flows of 310 GPD can be accommodated routinely with typical residential wastewater strength as specified in Ohio Administrative Code (OAC) 3701-29 for households.

Shallow soil with a seasonal water table at 14" and flow restrictive layer of greater than 45% clay content at 30" measured from the ground's surface. Conditions require an 18" Vertical Separation Distance with 8" In Situ Soil. The use of the JET ATU with UV disinfection provides a 24" soil depth credit.

The Soil Loading rate for this silty clay loam with moderate sub-angular blocky structure is 0.6 GPD/sq.ft for pretreated effluent. The Linear Loading Rate for this silty clay loam with moderate sub-angular blocky structure, an infiltrative distance of greater than 24", and 1% slope is 3.4 GPD/Ln. Ft. The slope that identified in the proposed soil absorption area was determined from field measurement.

ATL Minimum Design Length is 350 ft of ATL Conduit for a 600 GPD design. The minimum square footage of basal area is 600 GPD/0.6 GPD/sqft = 1,000 sq ft). The ATL bed will consist of four rows of conduit 90' long, with an absorption bed 92' in length and 12' in width and 14" in depth. This system provides a total of 360 ln ft of ATL conduit and 1,104 sq.ft. of basal area (1,000 sq. ft. required).

System Installation, Operation And Maintenance (O&M)
All system devices and components must be operated and maintained in accordance with the Ohio Department of Health (ODH) product approval and Ohio Environmental Protection Agency (OEPA) Operation Permit Terms and Conditions. System devices and components must be installed per ODH product approval and this design. Where conflicts exist, consult OEPA or designer for guidance before proceeding.
Infiltrator ATL: https://www.scsengineers.com/state/infiltrator/

Means for O&M is provided by the driveway which is within standard distances and elevations for a service truck.

Changes and Use of This Design
This plan is the sole ownership of the designer and may not be altered, changed, used or manipulated without approval of OEPA and SCS Engineers. SCS Engineers is available to make adjustments and address questions about the system design.
It is the responsibility of the contractor to verify that the system can be installed as designed, based on their preliminary lay-out of the job. It is the responsibility the installer and property owner to inform the designer of any field or other conditions that may affect the installation, operation or maintenance of the STS, including site disturbances that may affect the performance of a soil absorption component. If design changes are needed, redesign fees may apply.

System Protection
Property owner and installer are responsible to protect the soil absorption areas from disturbance. Only excavate basal area when soil is dry and friable to a depth of 23". Keep wheeled traffic off basal area. It is the owner and installation contractors responsibility to locate underground utilities. If utilities interfere with the designed system, construction shall not proceed without approval from OEPA and SCS Engineers.
No clearwater connections (downspouts, pool/spa water, footer tiles, cisterns, etc) shall be connected to this STS.
All system components must meet the horizontal isolation distances specified in OAC 3701-29-06(G)(3).

System Cost Information
The property owner has been informed of system options and briefed on cost factors. According to OAC 3701-29-10(B)(5), designers of STS systems must include approximate installation costs and operational costs of STS options to assist the homeowner in the selection of the STS options.
SCS Engineers estimates costs as follows :
$38,500 - 46,400 Installation cost*
$800 annual operational cost*
*This is a general estimate of costs for this system. It is not a bid to install or service the STS. Contact a licensed installer and service provider or distributor for actual bids.

Disclaimer
This plan set is not a site plan to be used for constructing anything other than the Sewage Treatment System. If an accurate legal site plan is required, contact a professional surveyor. This plan offers no guarantee as to the accuracy of information provided. This plan offers no guarantees for site stability. If site stability may be an issue, a geotechnical engineer should be consulted. Plan is only as accurate as the information provided by the property owner to the designer. Easements, right-of-ways, hidden objects or information not communicated to the designer invalidates the design. It is the property owner's responsibility to review this plan and information provided to verify all site conditions and design assumptions are correct. If conflicts are found or additional information must be supplied, the owner shall contact the designer and installation shall not proceed until the approval is granted. This design shall in no way be taken as guarantee that the system will function in a satisfactory manner for any given period of time, or that SCS Engineers or any of its agents or employees assume any liability for damages, consequential or direct, which are caused, or which may be caused by a malfunction of the STS.

PRELIMINARY
NOT FOR CONSTRUCTION
DATE: 03/20/2024

2 WORKING DAYS
BEFORE YOU DIG
CALL TOLL FREE *800-362-2764*
OHIO UTILITIES PROTECTION SERVICE

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CONSULTING ENGINEERS, INC.
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07223169.00	Hanover Twp SEPTIC V1	OCT 2023	N.T.S.

SHEET 1

GENERAL NOTES AND DESIGN BASIS

2592 Old Oxford Road - Hanover Memorial Park
PARCEL NUMBER: B1010015000026
BUTLER COUNTY OHIO - 4.00 ACRES

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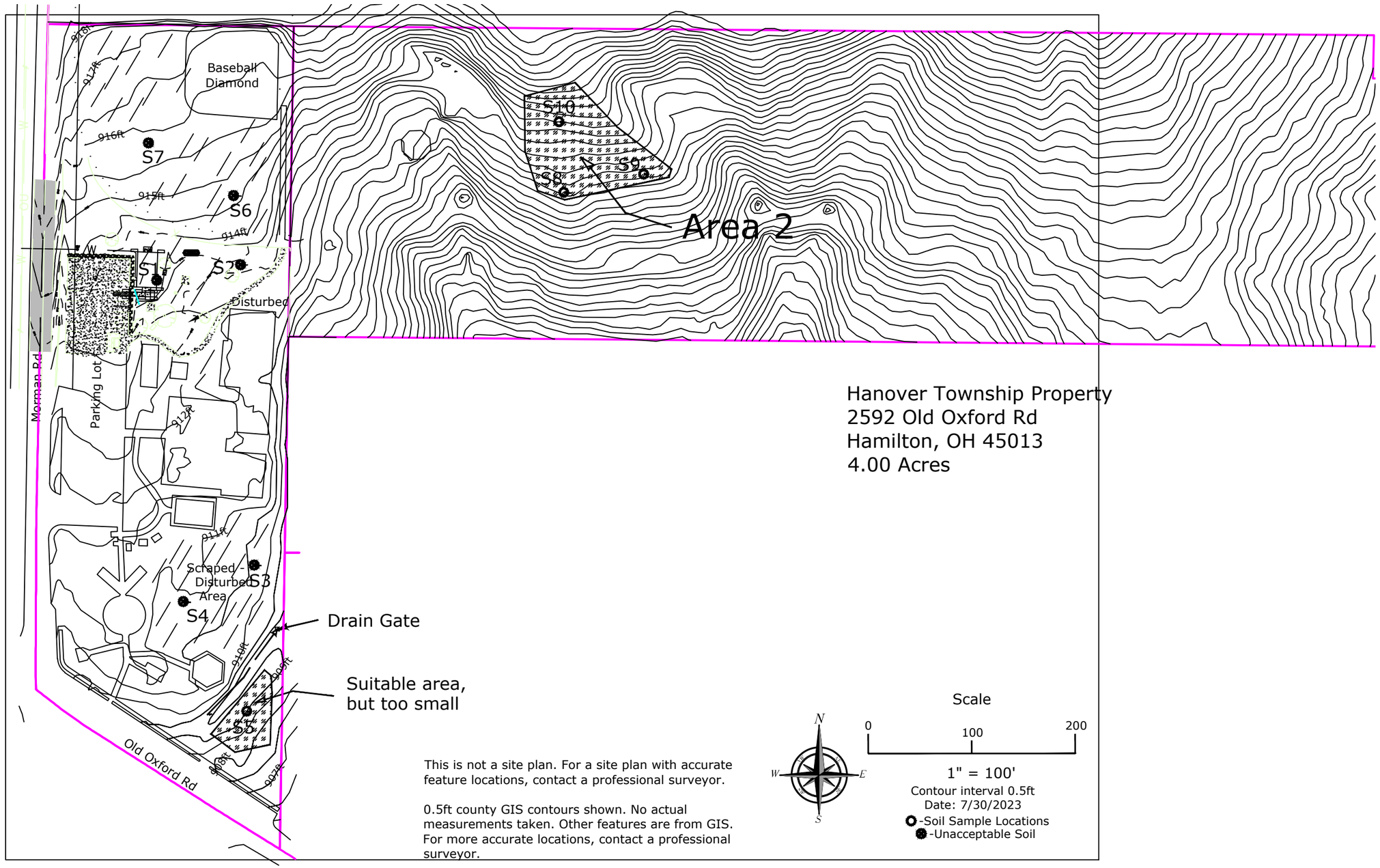

O Soil Test Location

100 50 0 100
SCALE: 1"=100'

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SHEET 2

SOIL LOCATIONS AND REPLACEMENT AREA

2592 Old Oxford Road - Hanover Memorial Park
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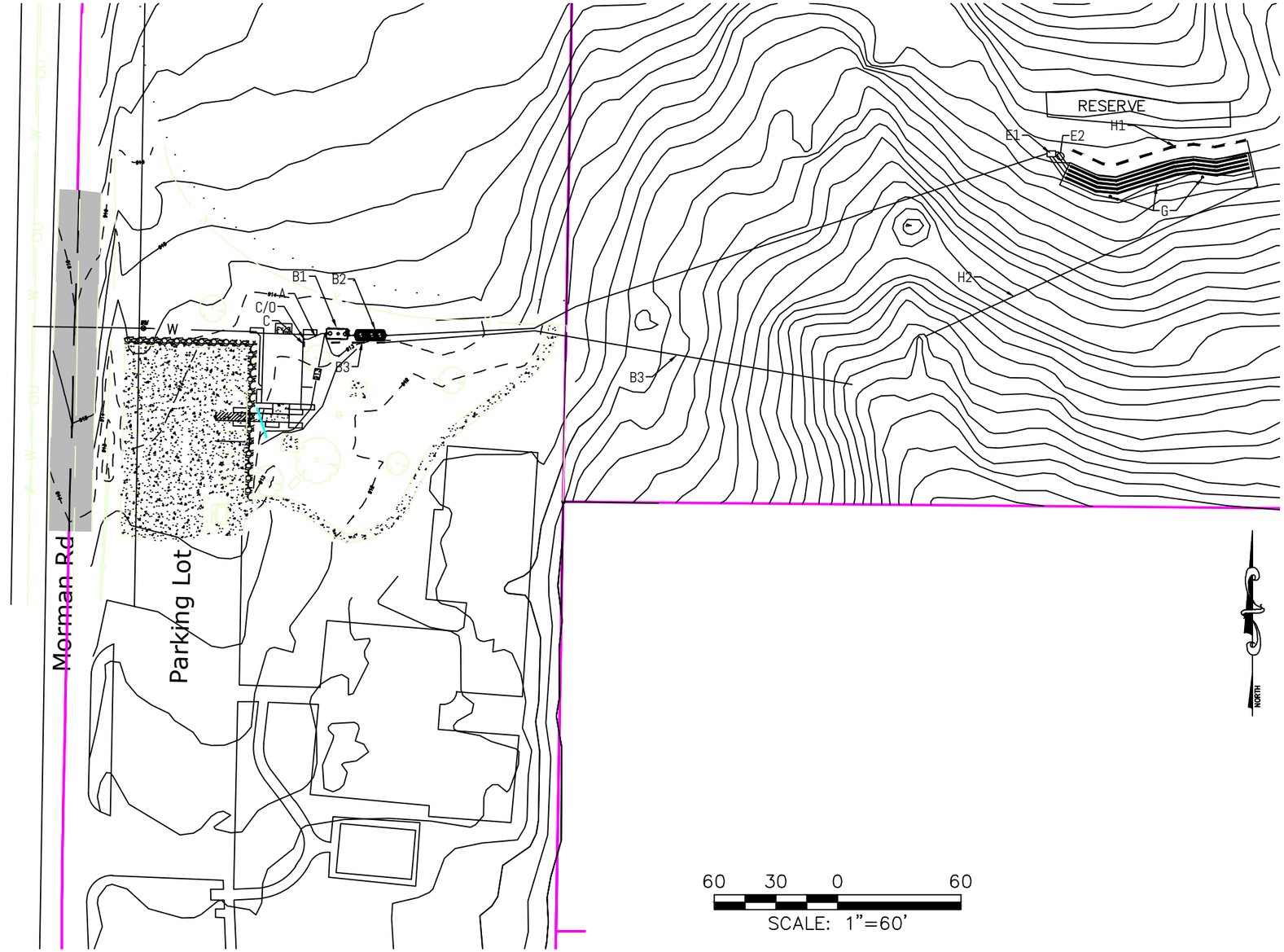

A - 4 inch Schedule 40 PVC Building Sewer pipe with minimum 1% grade and cleanouts at point where building sewer leaves foundation wall, at 75 feet and every 100 feet thereafter.8

B1 - JET J-800-PLT 500 gallon ATU with JET 952 UV Disinfection Unit.
B2 - Dosing tank single compartment INFILTRATOR IM-1530 tank and a Champion CPE4-12 pump.
B3 - Tank Cavity Drain (See Sheet 4 for details).

C - Control Panels (Jet Model 197H & Aquaworx IPC-SCB02).

D - 2" Schedule 40 PVC pipe from Dose Tank to distribution box. Pipe shall have high point in elevation a minimum of 10 feet from d-box and transition to 4" SCH40 PVC pipe for last 10 feet to d-box.

E1 - Tuf-Tite 6HD2, or any other OEPA approved d-box containing a minimum of 1 inlet and 4 outlet ports. Distribution boxes shall use speed levelers to provide equal flow to ATL conduit rows.

E2 - 4" Schedule 40 PVC pipe from distribution box to ATL tubes.

F - ATL Conduit Bed. 4 Conduit rows at 60' end-fed and capped. Total bed length of 62', width of 12' and depth of 8". See Sheet 5.

G - Inspection ports. See Sheet 6.

H1 - 12" wide x 24" minimum depth Interceptor drain in gravel sloped 1/16" per foot to outlet. Gravel to the surface. Depth will be about 28 inches at the connection to the outlet line.

H2 - Interceptor drain outlet line must be solid walled rigid pipe; Portion with <12" cover must be 4" Sch 40 PVC, Minimum of last 10' must be 4" Sch 40 PVC w/ Animal Guard at outlet; 6" min. freeboard. Sloped minimum 1/8" per foot to outlet.

NOTE:
ALL PIPE (WITH THE EXCEPTION OF INTERCEPTOR AND PERIMETER DRAIN PIPES) SHALL BE SCHEDULE 40 PVC MEETING ASTM D1785

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SHEET 3

SEPTIC SYSTEM LAYOUT AND COMPONENTS

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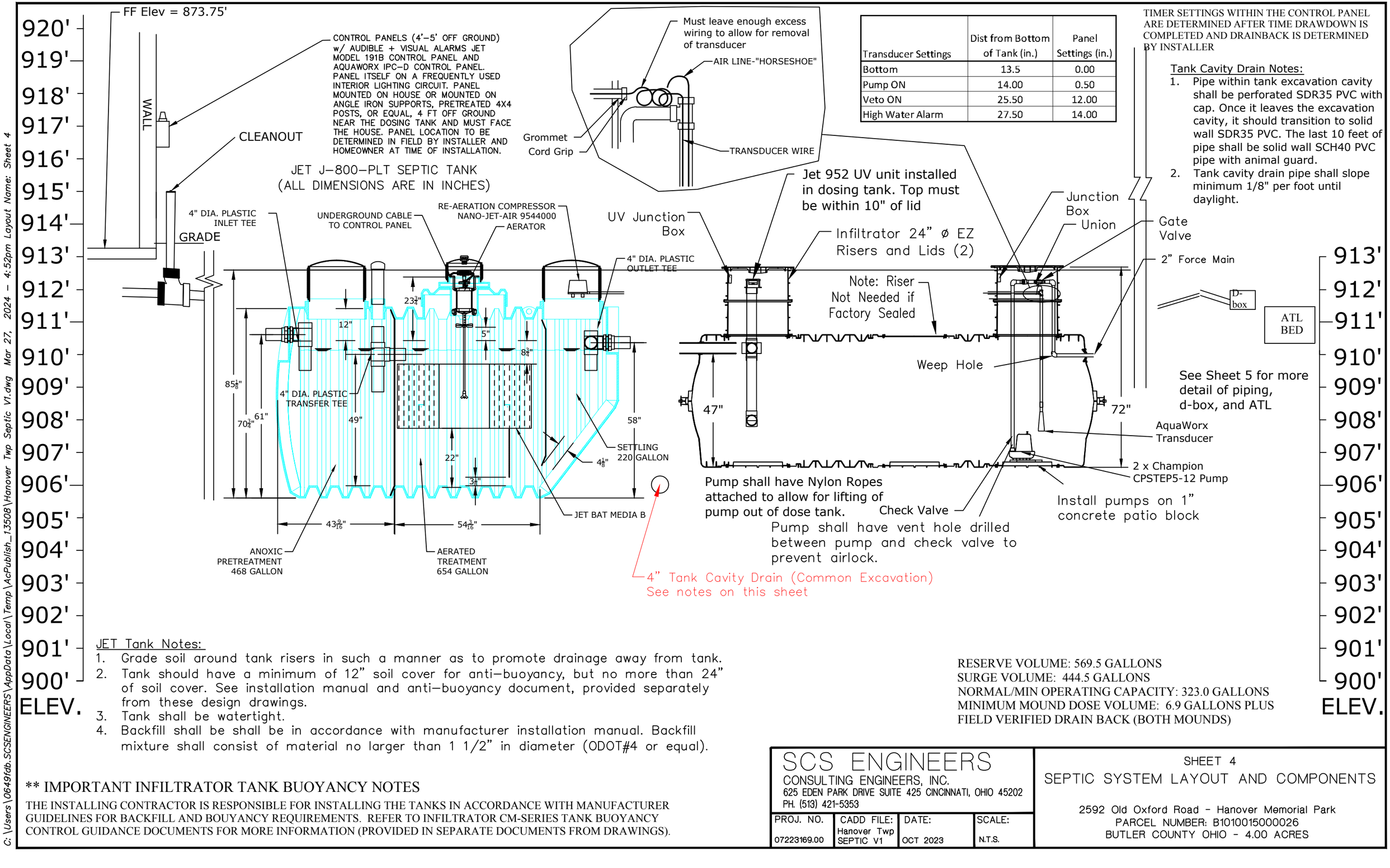

Transducer Settings	Dist from Bottom of Tank (in.)	Panel Settings (in.)
Bottom	13.5	0.00
Pump ON	14.00	0.50
Veto ON	25.50	12.00
High Water Alarm	27.50	14.00

TIMER SETTINGS WITHIN THE CONTROL PANEL ARE DETERMINED AFTER TIME DRAWDOWN IS COMPLETED AND DRAINBACK IS DETERMINED BY INSTALLER

Tank Cavity Drain Notes:

1. Pipe within tank excavation cavity shall be perforated SDR35 PVC with cap. Once it leaves the excavation cavity, it should transition to solid wall SDR35 PVC. The last 10 feet of pipe shall be solid wall SCH40 PVC pipe with animal guard.
2. Tank cavity drain pipe shall slope minimum 1/8" per foot until daylight.

See Sheet 5 for more detail of piping, d-box, and ATL

JET Tank Notes:

1. Grade soil around tank risers in such a manner as to promote drainage away from tank.
2. Tank should have a minimum of 12" soil cover for anti–buoyancy, but no more than 24" of soil cover. See installation manual and anti–buoyancy document, provided separately from these design drawings.
3. Tank shall be watertight.
4. Backfill shall be shall be in accordance with manufacturer installation manual. Backfill mixture shall consist of material no larger than 1 1/2" in diameter (ODOT#4 or equal).

** IMPORTANT INFILTRATOR TANK BUOYANCY NOTES

THE INSTALLING CONTRACTOR IS RESPONSIBLE FOR INSTALLING THE TANKS IN ACCORDANCE WITH MANUFACTURER GUIDELINES FOR BACKFILL AND BOUYANCY REQUIREMENTS. REFER TO INFILTRATOR CM-SERIES TANK BUOYANCY CONTROL GUIDANCE DOCUMENTS FOR MORE INFORMATION (PROVIDED IN SEPARATE DOCUMENTS FROM DRAWINGS).

RESERVE VOLUME: 569.5 GALLONS
SURGE VOLUME: 444.5 GALLONS
NORMAL/MIN OPERATING CAPACITY: 323.0 GALLONS
MINIMUM MOUND DOSE VOLUME: 6.9 GALLONS PLUS FIELD VERIFIED DRAIN BACK (BOTH MOUNDS)

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SHEET 4
SEPTIC SYSTEM LAYOUT AND COMPONENTS

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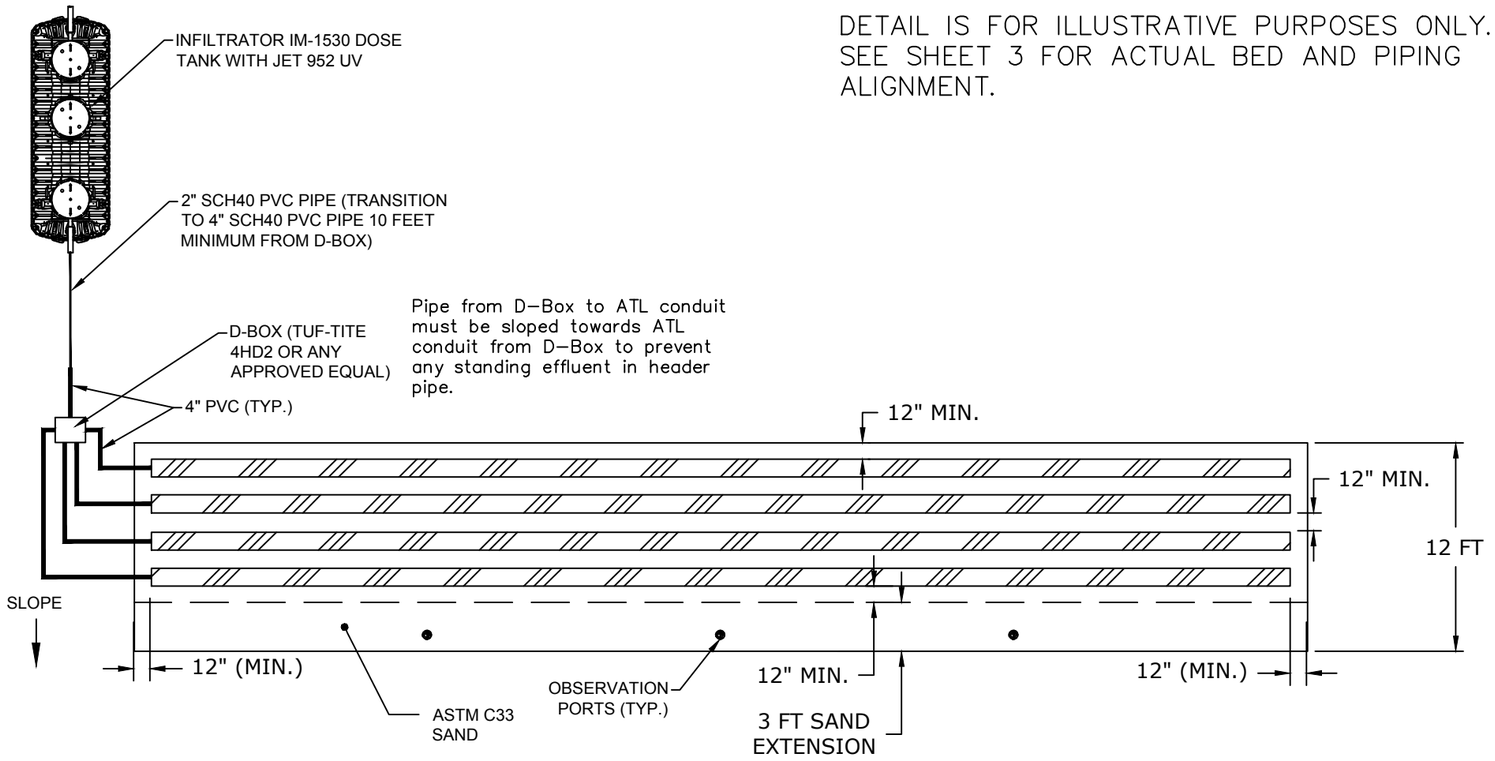
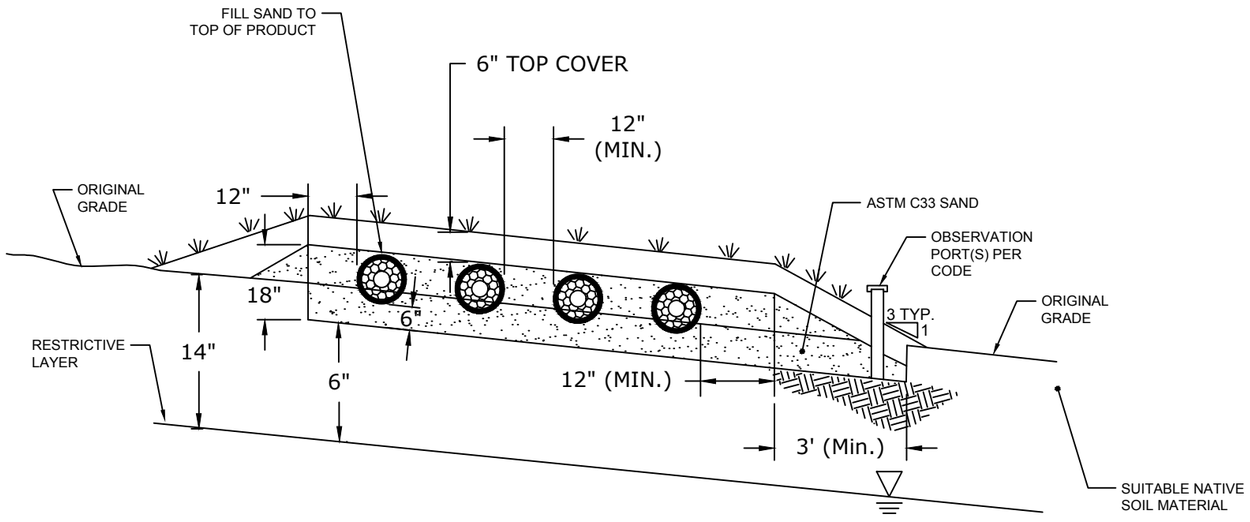
DETAIL IS FOR ILLUSTRATIVE PURPOSES ONLY. SEE SHEET 3 FOR ACTUAL BED AND PIPING ALIGNMENT.





ATL DESIGN PARAMETERS (MAIN):

The minimum length of Infiltrator ATL conduits per bedroom is 70 feet. To determine the minimum total length of Infiltrator ATL conduits:

NO. OF EQUIVALENT BEDROOMS = 5 (600 GPD)
TOTAL MINIMUM LENGTH OF CONDUITS = 350'
SITE GRADE = 5%
SILR = 0.6 (GPD/FT2) - 600/0.6 = 1,000 FT2
NO. OF CONDUIT RUNS = 4
LENGTH OF CONDUIT RUNS = 90'
LENGTH OF ATL SAND BED = 92'
TOTAL LENGTH OF CONDUITS = 360'
WIDTH OF ATL BED = 12'
TOTAL AREA OF SAND = 1,104 SQ. FT.

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SHEET 5
ATL SUBSURFACE SEPTIC SYSTEM GENERAL PLAN
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Pump Selection for a Non-Pressurized System - Commerical Project

Hanover Township / 2592 Old Oxford Road

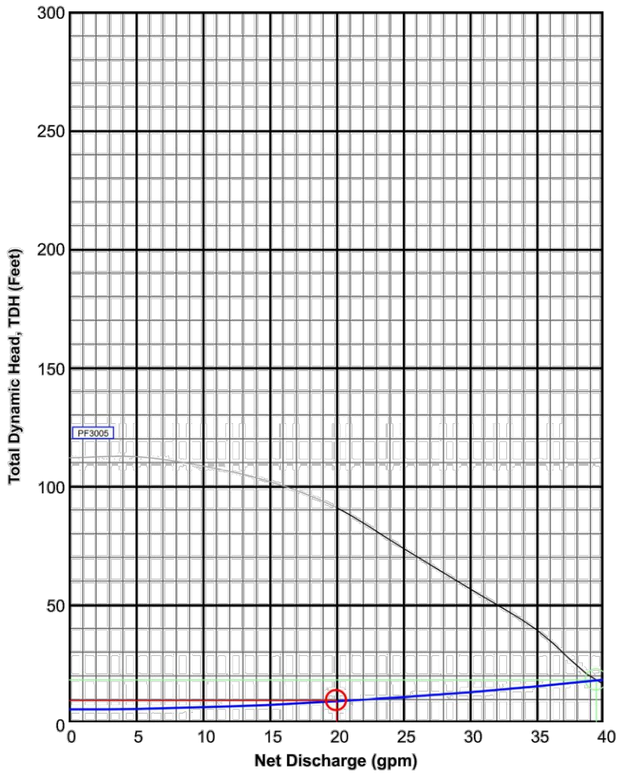
Parameters		
Discharge Assembly Size	2.00	inches
Transport Length	355	feet
Transport Pipe Class	40	
Transport Line Size	2.00	inches
Distributing Valve Model	None	
Max Elevation Lift	6	feet
Design Flow Rate	20	gpm
Flow Meter	None	inches
'Add-on' Friction Losses	0	feet

Calculations		
Transport Velocity	1.9	fps

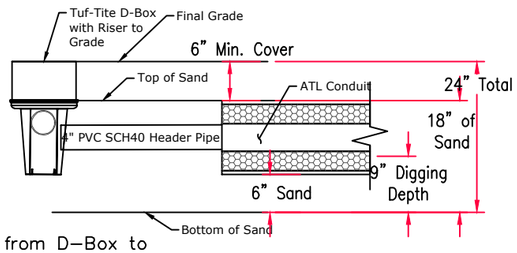
Frictional Head Losses		
Loss through Discharge	0.8	feet
Loss in Transport	2.6	feet
Loss through Valve	0.0	feet
Loss through Flowmeter	0.0	feet
'Add-on' Friction Losses	0.0	feet

Pipe Volumes		
Vol of Transport Line	61.9	gals

Minimum Pump Requirements		
Design Flow Rate	20.0	gpm
Total Dynamic Head	9.4	feet

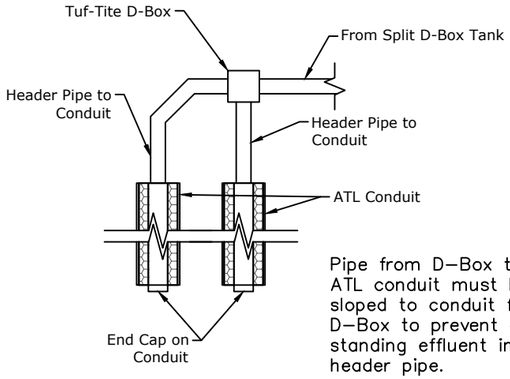


ATL Connection Cross Section



Pipe from D–Box to ATL conduit must be sloped to conduit from D–Box to prevent any standing effluent in header pipe.

Detail - D-Box Connection



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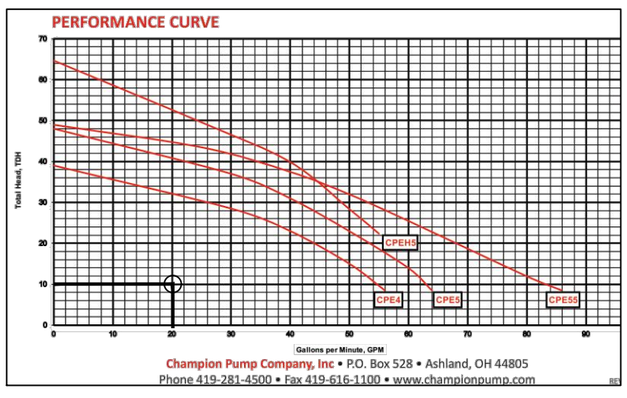
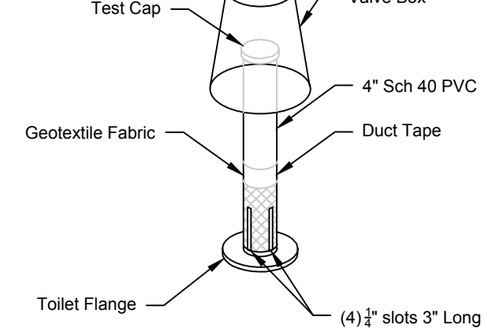


CHAMPION CPE4-12 (0.4 HP) PUMP

Detail - Observation Ports



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SHEET 6
CONNECTION AND TRENCH DETAILS

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