



SEWAGE TREATMENT SYSTEM (STS) DESIGN FOR Lela Booker 9897 Skyridge Drive, Cincinnati, OH, 45252 Par# 510-0251-0037-00 0.519 Acres

Designed By:
SCS ENGINEERS
 2060 Reading Road, #200
 Cincinnati OH 45202
 513-421-5353
Design Date: May 15, 2023
Site Visited on Nov 11, 2021

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, Hamilton County Public Health Operation Permit Terms and Conditions. System devices and components must be installed per ODH product approval, Hamilton County Installation Manual and this design. Where conflicts exist, consult HCPH and designer for guidance before proceeding. Flow 2 UV Installation Manual: <http://ow.ly/I6Py30baK1V>
 Flow 2 UV O&M Manual: <http://ow.ly/sve930baK99>
 Sybr-Aer O&M Guide: <http://ow.ly/DMU330di197>
 Tuf-Tite: <http://www.tuf-tite.com/d-boxes.html>
 Hamilton County Installation Manual: <http://ow.ly/YUIW30dOkV6>
 This installation will require an electrical inspection(s) and approval by IBI (513) 381-6080, <http://www.inspectionbureau.com/>
 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 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

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 HCPH and designer. 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 priced 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 :

\$28,500 - 34,000 Installation cost*

\$1,000 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.

Design Details:

Building sewer to new Sybr-Aer FT Series aerobic treatment unit (ATU), capable of treating up to 600 GPD, containing F2-UV disinfection device and post-aeration to discharge. The Sybr-Aer FT Series ATU contains a pump, so the unit will have pump lockout for failsafe due to equipment failure.

Design Rationale:

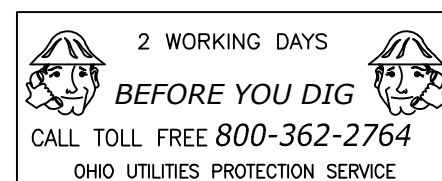
This design is for a 3 bedroom home with a Daily Design Peak Flow of 360 GPD. The peak flow should not be reached on a routine basis. Average flows of 216 GPD can be accommodated routinely with typical residential wastewater strength as specified in Ohio Administrative Code (OAC) 3701-29 for households.

Entire property has been scraped to level from original grade. There is only small portion of yard that has available soil, but is too small to fit any type of system within its boundary. The entire property contains clay loam to 2" then clay.

Conditions require an 18" Vertical Separation Distance with 8" In Situ Soil. There is not sufficient area of soil meeting these conditions while still meeting setback requirements. The owner chose a Sybr-Aer FT Series ATU for this project.

Owner will need to obtain a NPDES discharge permit through OEPA.

REV.	DATE	DESCRIPTION	CK. BY
△			
△			
△			



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 CONSULTING ENGINEERS, INC.
 2060 READING ROAD SUITE 200 CINCINNATI, OHIO 45202
 PH. (513) 421-5353

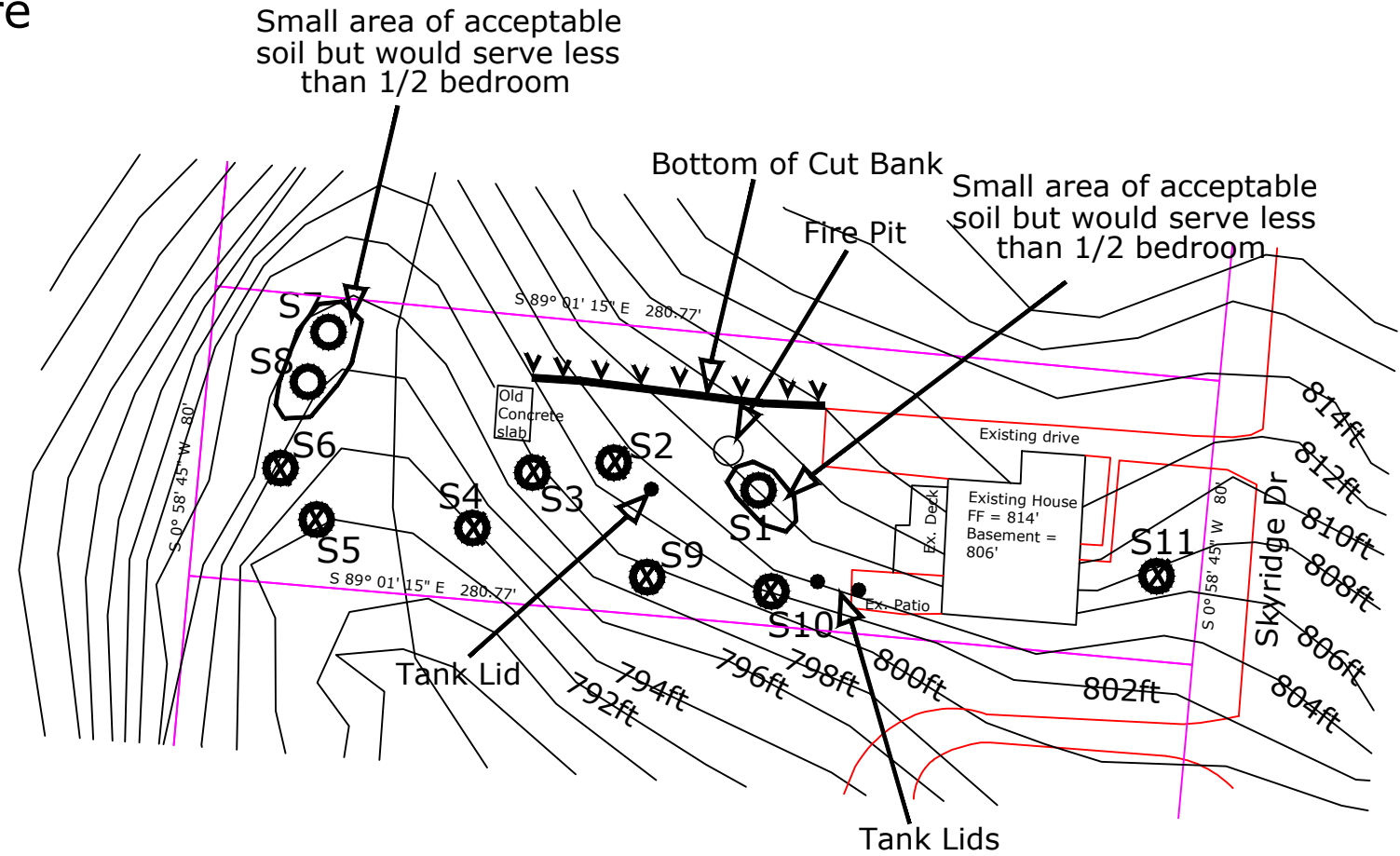
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SHEET 1
 GENERAL NOTES AND DESIGN BASIS
 9897 SKYRIDGE DRIVE - BOOKER RESIDENCE
 PARCEL NUMBER: 510-0251-0037-00
 HAMILTON COUNTY OHIO - 0.519 ACRES

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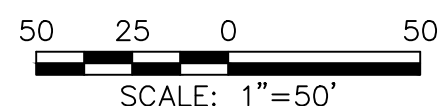
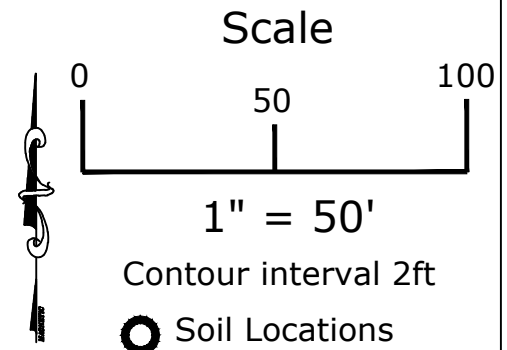
Booker Property
9897 Skyridge Dr
Cincinnati, OH 45252
0.519 Acre

A suitable area for dispersal
could not be located.



This is not a site plan. For a site plan with accurate feature locations, contact a Professional Surveyor.

2ft County GIS Contours shown. No actual measurements taken. Other features are from GIS. For more accurate locations, contact a Professional Surveyor.



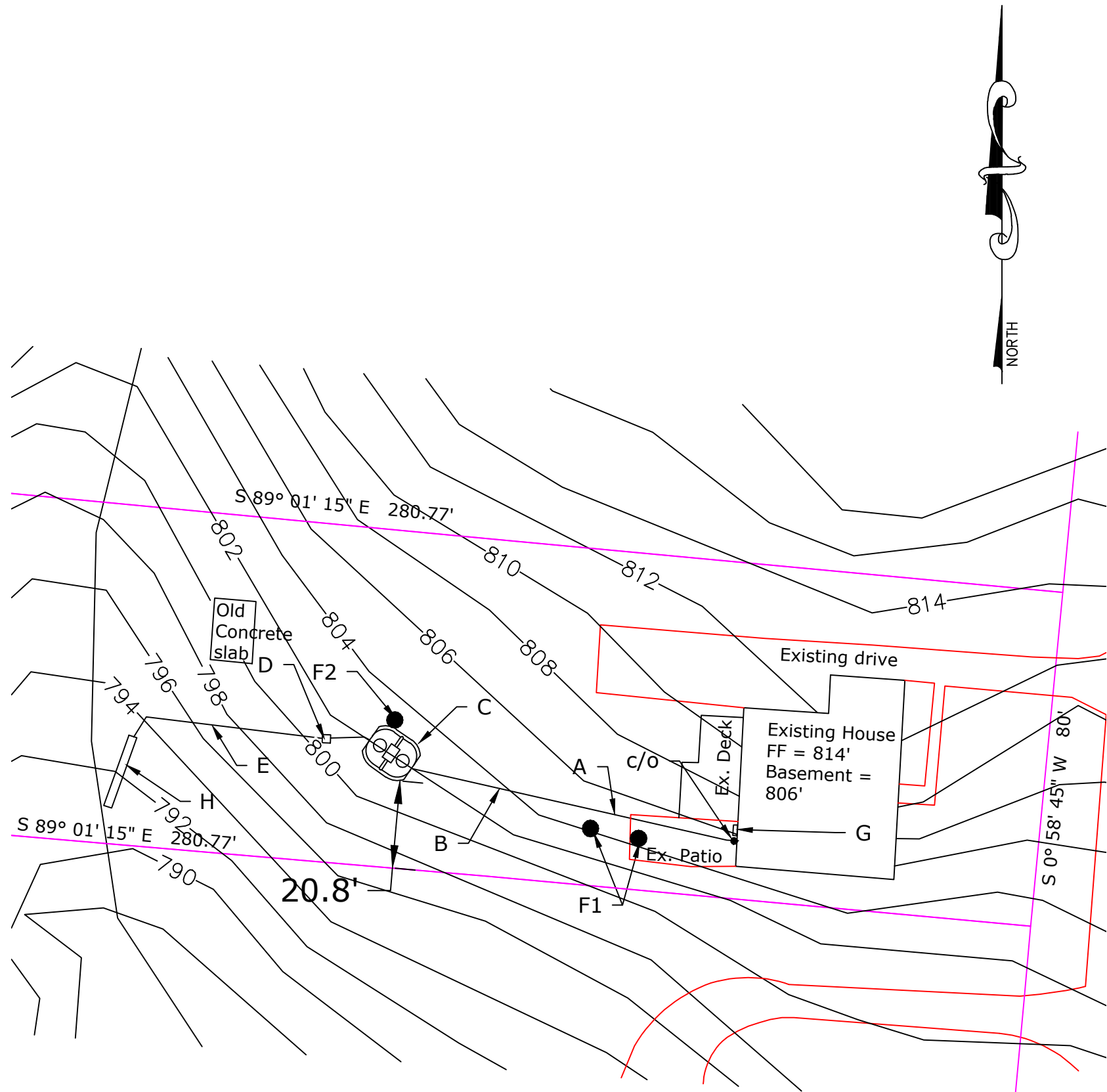
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PROJ. NO. 07221291.00	CADD FILE: BOOKER SEPTIC V1	DATE: MAY 2023	SCALE: AS SHOWN
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SHEET 2

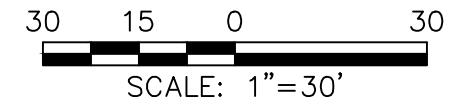
SOIL SAMPLING LOCATIONS
9897 SKYRIDGE DRIVE - BOOKER RESIDENCE
PARCEL NUMBER: 510-0251-0037-00
HAMILTON COUNTY OHIO - 0.519 ACRES

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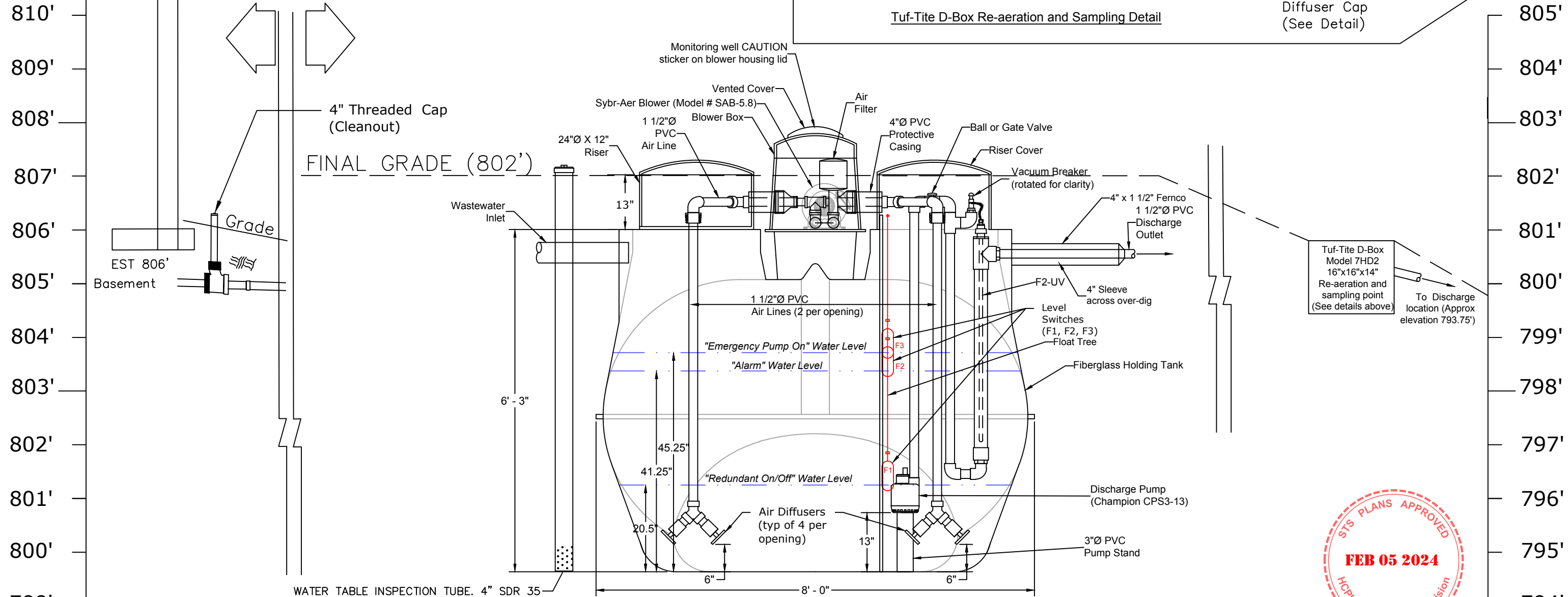
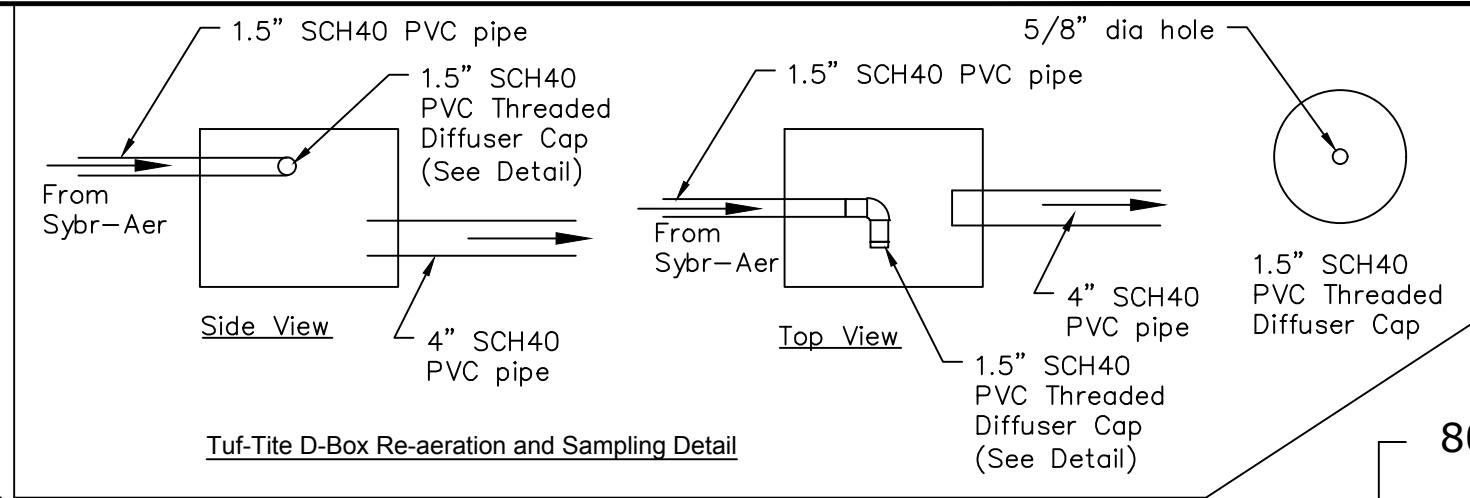
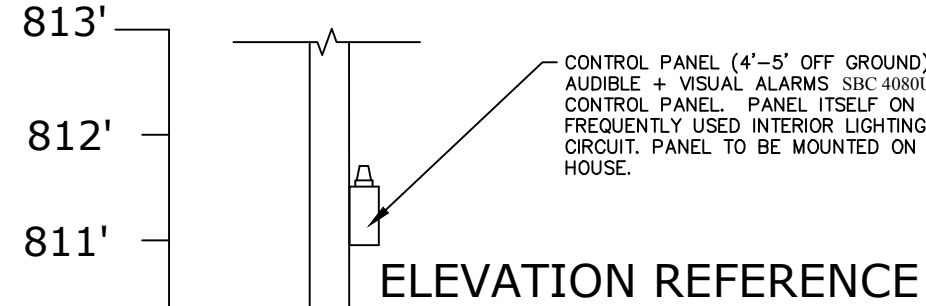
- A - New 4" SCH40 PVC Building sewer pipe shall be a minimum 1% grade and cleanout immediately where the pipe leaves the foundation wall.
- B - Sybr-Aer FT Series 600 GPD ATU with UV disinfection device and water table inspection tube (See Sheet 4 for detail). System has pump with pump lockout for failsafe.
- C - Syber-Aer 1.5" discharge pipe assembly
- D - Re-aeration and sampling chamber - Tuf-Tite D-Box Model 7HD2 (16"x16"x14"). See detail Sheet 4. Lid needs to be securely fastened with non-corrosive stainless steel screws.
- E - 4 inch Schedule 40 PVC discharge pipe. Animal Guard required at outlet. Sloped minimum 1/8" per foot to existing discharge pipe. Outlet shall have a 45 degree elbow at the end to turn effluent downstream.
- F1 & F2 - Approximate location of existing original septic tank (F1) and d-box (F2). Tank and d-box shall be abandoned per OAC 3701-29-21, and in conformance with HCPH permitting and reporting requirements.
- G - Sybr-Aer control panel model SBC 4080UV
- H - 2 foot wide x 6-inch deep gravel channel from discharge pipe to drainage swale

NOTE: ALL PIPE SHALL BE SCHEDULE 40 PVC MEETING ASTM 1785 or D2665 UNLESS OTHERWISE SPECIFIED.



SCS ENGINEERS CONSULTING ENGINEERS, INC. 2060 READING ROAD SUITE 200 CINCINNATI, OHIO 45202 PH. (513) 421-5353				SHEET 3	
				SEPTIC SYSTEM LAYOUT 9897 SKYRIDGE DRIVE - BOOKER RESIDENCE PARCEL NUMBER: 510-0251-0037-00 HAMILTON COUNTY OHIO - 0.519 ACRES	
PROJ. NO. 07221291.00	CADD FILE: BOOKER SEPTIC V1	DATE: MAY 2023	SCALE: AS SHOWN		

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THE INSTALLING CONTRACTOR IS RESPONSIBLE FOR INSTALLING THE TANKS IN ACCORDANCE WITH MANUFACTURER GUIDELINES FOR BACKFILL AND BUOYANCY REQUIREMENTS. BACKFILL SHALL BE ODOT #8 GRAVEL (NOT WASHED RIVER ROCK) - 1"Ø OR LESS (C-33 CONCRETE SAND OR GRITS IS ALSO ACCEPTABLE).

ALL SECTION NOTATIONS REFERENCE THE HAMILTON COUNTY INSTALLER'S MANUAL

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SHEET 4
 SYSTEM HYDRAULIC PROFILE
 9897 SKYRIDGE DRIVE - BOOKER RESIDENCE
 PARCEL NUMBER: 510-0251-0037-00
 HAMILTON COUNTY OHIO - 0.519 ACRES

Soil and Site Evaluation for Sewage Treatment and Dispersal



County: Hamilton
 Township/Sec.: Colerain
 Property Address/Location: 9897 Syridge Dr
Cincinnati, OH 45252
 Parcel # / Subdiv. Lot #: 5100251003700,
 Applicant Name: Booker
 Address: c/o SCS, 2060 Reading Road Suite 200
Cincinnati, OH 45202
 Phone #: 513-375-0586
 Lot #: _____
 Test Hole #: S2-S6, S9-S11
 Latitude/Longitude: N464292 W1365178
 Method: Pit Auger Probe

Land Use/Vegetation: Grass and Brush
 Landform: upland
 Position on Landform: side slope
 Percent Slope: 16-19%
 Shape of Slope: linear
 Coord. Method/Accuracy: GPS - 5ft.

Date: 11/11/2021 Certification Stamp or Certification#: #30586
 Evaluator: Dan Michael
903 North Broadway Signature: Dan Michael, CPSS
Lebanon, OH 45036
 Phone #: 513-934-1040

Soil Profile		Estimating Soil Saturation			Estimating Soil Permeability							Other Soil Features
		Munsell Color (hue, value, chroma)			Texture			Structure				
Horizon	Depth (inches)	Matrix color	Redoximorphic Features		Class	Approx. % clay	Approx. % Fragments	Grade	Size	Type (shape)	Consistence	
			Concentrations	Depletions								
^Ap	0 - 2	10YR 4/2 dark grayish brown			clay loam	35%	2%	2- moderate	f	gr	friable	
^Cd	2 - +	2.5Y 4/4 olive brown			clay	55%	7%	0-structureless		m - massive	very firm	very high in clay strongly calcareous
Limiting Conditions		Depth to (in.)	Descriptive notes		Remarks/Risk Factors:							
Perched Seasonal Water Table		>40 in.			This lot has been scraped off to be made level from the original grade. 2 ver small patches of acceptable soil exist,							
Ground Water/Aquifer		>60 in.			but their size is of no help. These small areas are only about 12 inches to high clay.							
Highly Permeable Material (range)		>60 in.										
Bedrock		>60 in.	Fractured - Karst (circle one)									
Highly Weathered Soil		N/A										
Flow Restrictive Layer		2 in.	High Clay Compacted									
Fractured Glacial Till		>60 in.										
Other High Risk Limiting Conditions		>60 in.										

Note: The evaluation shall include a complete site plan or site drawing including all requirements in paragraphs (B)(1) through (B)(4) of OAC 3701-29-08

Table 3. Soil Infiltration Loading Rates.

9897 Syridge Dr Lot# Soil#-S2-S6, S9-S11

Soil Characteristics			Soil Infiltration Loading RRate (gpd/ft2)		
Texture	Structure		CBOD5		Row
	Shape	Grade	>25mg/L (septic tank effluent)	<=25mg/L (pretreated effluent)	
COS, S, LCOS,LS	--	OSG	0.8	1.6	1
FS, VFS, LFS, LVFS	--	OSG	0.4	1	2
CSL, SL	--	OM	0.2	0.6	3
	PL	1	0.2	0.5	4
		2, 3	0	0	5
	PR/BK/GR	1	0.4	0.7	6
		2, 3	0.6	1	7
FSL, VFSL	--	OM	0.2	0.5	8
	PL	1,2,3	0	0	9
		1	0.2	0.6	10
	PR/BK/GR	2,3	0.4	0.8	11
		1	0.4	0.6	14
L	--	OM	0.2	0.5	12
	PL	1,2,3	0	0	13
		1	0.4	0.6	14
	PR/BK/GR	2,3	0.6	0.8	15
		1	0.4	0.6	14
SIL	--	OM	0	0	16
	PL	1,2,3	0	0	17
		1	0.4	0.6	18
	PR/BK/GR	2,3	0.6	0.8	19
		1	0.4	0.6	18
SCL, CL, SICL	--	OM	0	0	20
	PL	1,2,3	0	0	21
		1	0.2	0.3	22
	PR/BK/GR	2,3	0.4	0.6	23
		1	0.2	0.3	22
SC, C, SIC	--	OM	0	0	24
	PL	1,2,3	0	0	25
		1	0	0	26
	PR/BK/G	2,3	0.2	0.3	27
		1	0	0	26



Soil Characteristics			Hydraulic Linear Loading Rate (gpd/ft)									Row
			Slope 0-4%			Slope 5-9%			Slope >10%			
Texture	Structure		Infiltrative Distance, (Inches)			Infiltrative Distance, (Inches)			Infiltrative Distance, (Inches)			
	Shape	Grade	8 - 12	12- 24	24- 48	8 - 12	12- 24	24- 48	8 - 12	12- 24	24- 48	
COS, S, LCOS,LS	--	OSG	4.0	5.0	6.0	5.0	6.0	7.0	6.0	7.0	8.0	1
FS, VFS, LFS, LVFS	--	OSG	3.5	4.5	5.5	4.0	5.0	6.0	5.0	6.0	7.0	2
CSL, SL	--	OM	3.0	3.5	4.0	3.6	4.1	4.6	5.0	6.0	7.0	3
	PL	1	3.0	3.5	4.0	3.6	4.1	4.6	4.0	5.0	6.0	4
		2, 3										5
	PR/BK/GR	1	3.5	4.5	5.5	4.0	5.0	6.0	5.0	6.0	7.0	6
2, 3		3.5	4.5	5.5	4.0	5.0	6.0	5.0	6.0	7.0	7	
FSL, VFSL	--	OM	2.0	2.3	2.6	2.4	2.7	3.0	2.7	3.2	3.7	8
	PL	1,2,3										9
		1	3.0	3.5	4.0	3.3	3.8	4.3	3.6	4.1	4.6	10
	GR	2,3	3.3	3.8	4.3	3.6	4.1	4.6	3.9	4.4	4.9	11
--		OM	2.0	2.3	2.6	2.4	2.7	3.0	3.2	3.2	3.7	12
L	PL	1,2,3	-	-	-	-	-	-	-	-	-	13
		1	3.0	3.5	4.0	3.3	3.8	4.3	3.6	4.1	4.6	14
	GR	2,3	3.3	3.8	4.3	3.6	4.1	4.6	3.9	4.4	4.9	15
		--	OM	2.0	2.5	3.0	2.2	2.7	3.2	2.4	2.9	3.4
SIL	PL	1,2,3										17
		1	2.4	2.7	3.0	2.7	3.0	3.3	3.0	3.5	4.0	18
	GR	2,3	2.7	3.0	3.3	3.0	3.5	4.0	3.3	3.8	4.3	19
		--	OM									
SCL, CL, SICL	PL	1,2,3										21
		1	2.0	2.5	3.0	2.2	2.7	3.2	2.4	2.9	3.4	22
	GR	2,3	2.4	2.9	3.4	2.7	3.0	3.3	3.0	3.5	4.0	23
		--	OM									
SC, C, SIC	PL	1,2,3										25
		1										26
	GR	2,3	2.0	2.5	3.0	2.2	2.7	3.2	2.4	2.9	3.4	27

