



WELL LOCATION CERTIFICATION:
 THE EXISTING WELL SHOWN FOR LOT 5 (TAG #HO-20-0067) HAS BEEN FIELD LOCATED AND IS ACCURATELY SHOWN

INITIAL SYSTEM TRENCH INFO:

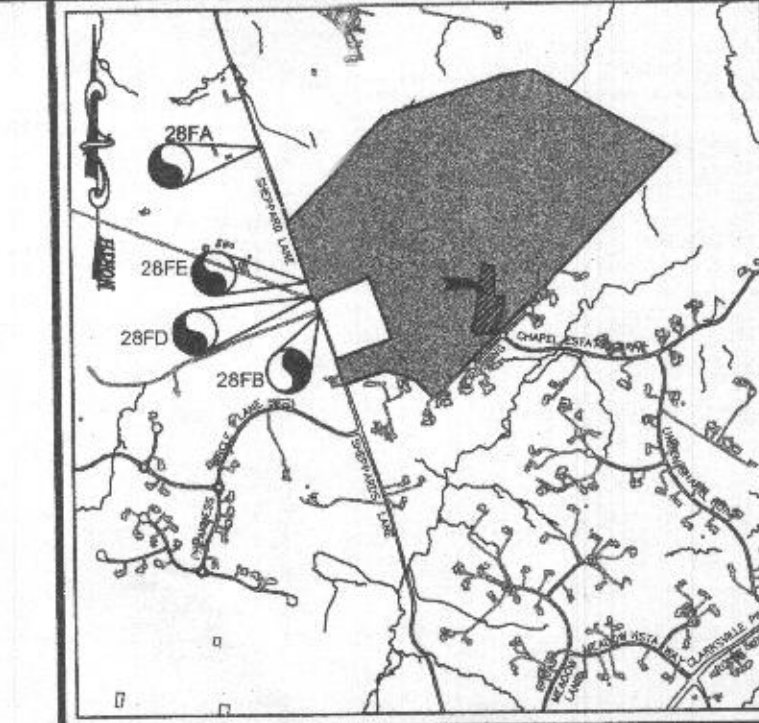
TRENCH LENGTH	TRENCH WIDTH	DEPTH TO BOTTOM OF EXISTING TRENCH	DEPTH TO BOTTOM OF GROUND
1	50'	377.19	373.69
2	50'	377.72	374.22
3	50'	376.19	372.69

SYSTEM CALCULATIONS:
INITIAL & FIRST REPLACEMENT SYSTEMS:
 6 BEDROOMS AT 900gpd / 1/2 ABSORPTION RATE = 750 SQ. FT.
 750 SQ. FT. / 2 (TRENCH WIDTH) x 40 (SIDEWALL REDUCTION) = 150 LINEAR FEET
 150 TOTAL LINEAR FEET OF TRENCH ARE PROVIDED WITH EACH SYSTEM.
 (3 TRENCHES OF 50 FEET IN LENGTH)

SECOND REPLACEMENT SYSTEM:
 6 BEDROOMS AT 900gpd / 0.8 ABSORPTION RATE = 1,125 SQ. FT.
 1,125 SQ. FT. / 3 (TRENCH WIDTH) x 50 (SIDEWALL REDUCTION) = 188 LINEAR FEET
 188 TOTAL LINEAR FEET OF TRENCH ARE PROVIDED WITH THE SECOND REPLACEMENT SYSTEM.
 (4 TRENCHES OF 47 FEET IN LENGTH)

PLAN VIEW
 SCALE: 1"=30'

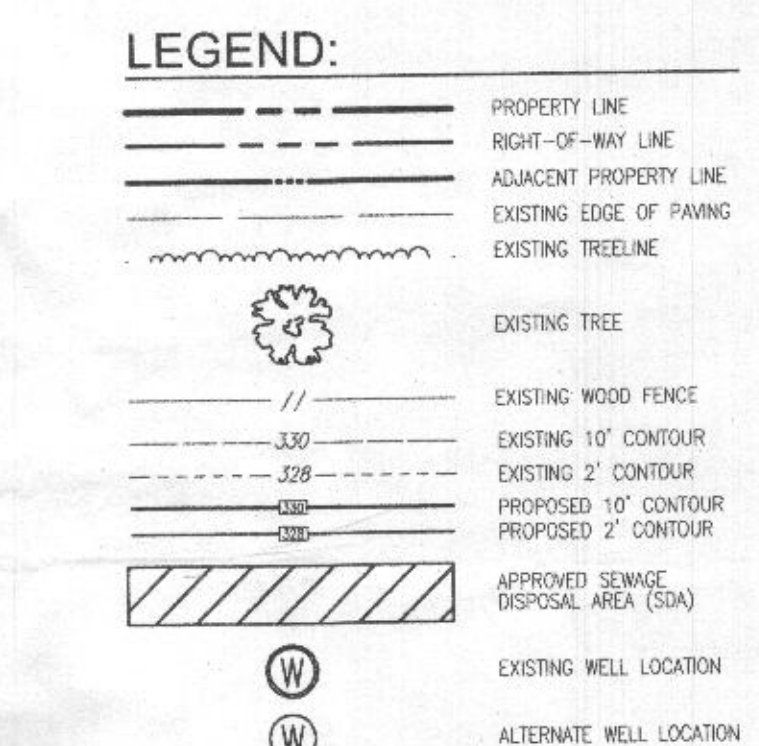
- GENERAL NOTES:**
- ANY CHANGE TO THE LOCATIONS OR DEPTHS TO ANY COMPONENTS MUST BE APPROVED BY THE ENGINEER AND THE HOWARD COUNTY HEALTH DEPARTMENT PRIOR TO INSTALLATION. A REVISED SITE PLAN MAY BE REQUIRED.
 - THE MAXIMUM EARTH COVER OVER THE TANK IS 3 FEET. GREATER EARTH COVER WILL REQUIRE A HEAVY LOAD BEARING TANK.
 - ELECTRICAL WORK FOR THE INSTALLATION MUST BE PERFORMED BY A LICENSED ELECTRICIAN.
 - THE WELL (HO-20-0067) HAS BEEN FIELD LOCATED AND IS ACCURATELY SHOWN.
 - ALL WELLS AND SEPTIC SYSTEMS LOCATED WITHIN 100' OF THE PROPERTY BOUNDARIES AND 200' DOWN GRADIENT OF ANY WELLS AND/OR SEPTIC SYSTEMS HAVE BEEN SHOWN.
 - ANY CHANGES TO A PRIVATE SEWAGE AREA SHALL REQUIRE A REVISED PERCOLATION CERTIFICATION PLAN.
 - THE EXISTING TOPOGRAPHY SHOWN HEREON IS TAKEN FROM HOWARD COUNTY GIS AND SUPPLEMENTED WITH FIELD RUN TOPOGRAPHICAL SURVEYS PREPARED BY ROBERT H. VOGEL ENGINEERING, INC., DATED MAY 2015.



VICINITY MAP
 SCALE: 1"=2000'
 ADC MAP COORDINATES: 25-05

BENCHMARKS

BENCHMARK	N	E	ELEV.
HOWARD COUNTY BENCHMARK 28FA	N 572,456.68	E 1,328,957.64	ELEV: 348.21'
HOWARD COUNTY MONUMENT	N 570,710.84	E 1,329,524.63	ELEV: 385.45'
HOWARD COUNTY BENCHMARK 28FD	N 570,895.88	E 1,329,461.33	ELEV: 381.91'
HOWARD COUNTY MONUMENT	N 571,047.81	E 1,329,404.44	ELEV: 380.85'



THIS AREA DESIGNATES A PRIVATE SEWAGE AREA OF AT LEAST 10,000 SQUARE FEET AS REQUIRED BY THE MARYLAND STATE DEPARTMENT OF THE ENVIRONMENT FOR INDIVIDUAL SEWAGE DISPOSAL. IMPROVEMENTS OF ANY NATURE IN THIS AREA ARE RESTRICTED UNTIL PUBLIC SEWERAGE IS AVAILABLE. THESE AREAS SHALL BECOME NULL AND VOID UPON CONNECTION TO A PUBLIC SEWERAGE SYSTEM. THE COUNTY HEALTH OFFICER SHALL HAVE THE AUTHORITY TO GRANT ADJUSTMENTS TO THE PRIVATE SEWAGE AREA. RECONSTRUCTION OF A MODIFIED SEWAGE AREA SHALL NOT BE NECESSARY.

Approved Septic System Plan
 Howard County Health Department
 Hank Oswald 7/30/24
 Signature Date

OWNER:
 GRATIA PLENA, LLC
 11140 HOLLOWOOD ROAD
 ELLICOTT CITY, MD 21042
 (443) 677-4612

DEVELOPER:
 TRINITY HOMES MARYLAND, LLC
 3675 PARK AVENUE, SUITE 301
 ELLICOTT CITY, MD 21043
 (410) 480-0023

ONSITE SEWAGE DISPOSAL SYSTEM DESIGN PLAN

CUNNINGHAM PROPERTY - LOT 5
 11908 CARITAS WAY
 ELLICOTT CITY, MD 21042

5TH ELECTION DISTRICT
 TAX MAP: 28 PARCEL: 25
 DPZ REF'S: HO-10-03E, ECP-16-030,
 ECP-17-050, GP-17-03B, SDP-18-004 & F-19-040

BLOCK: 13
 ZONED: RC-DEO
 HOWARD COUNTY, MARYLAND

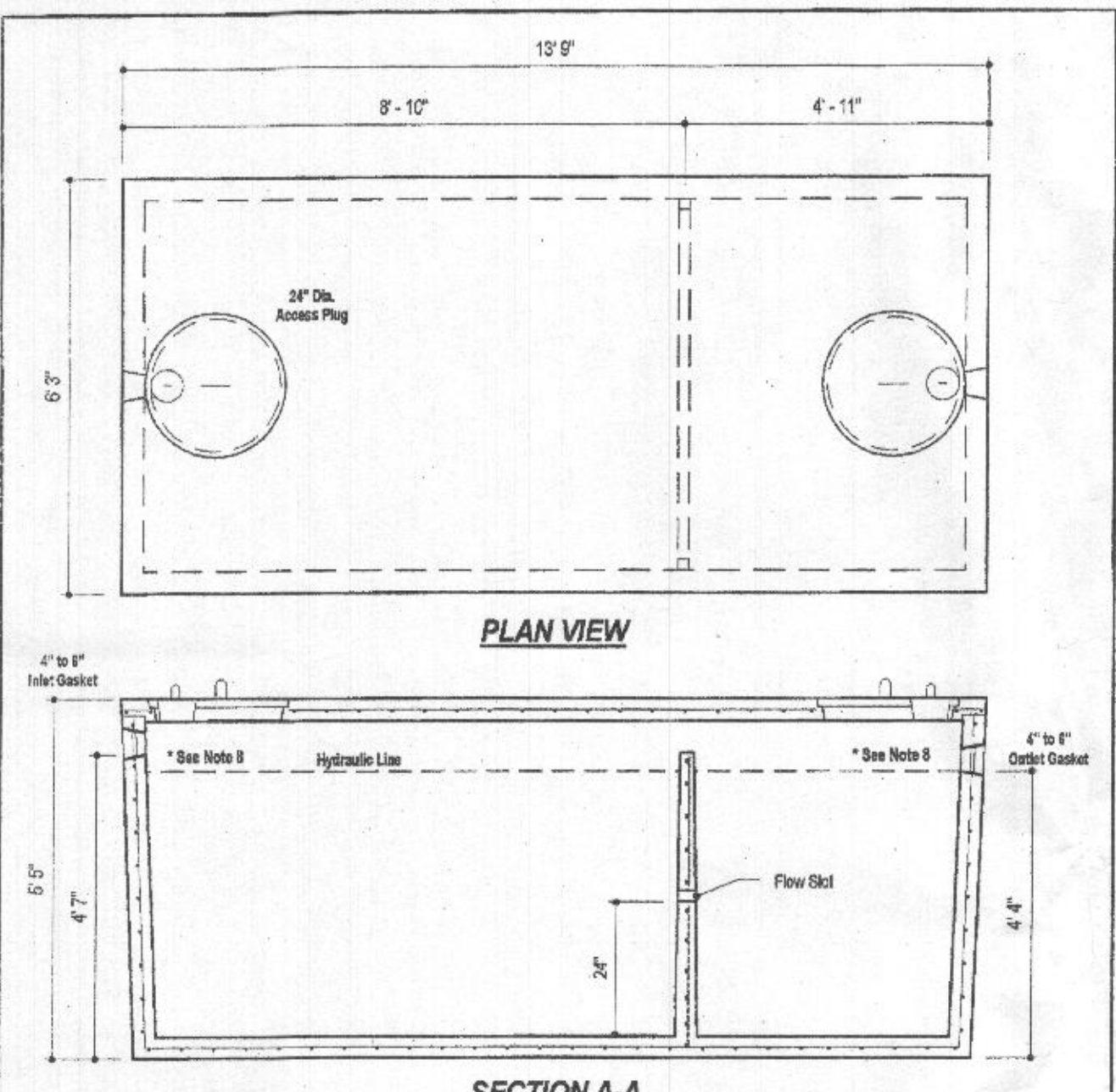
VOGEL ENGINEERING
 +
TIMMONS GROUP
 3300 NORTH RIDGE ROAD, SUITE 110, ELLICOTT CITY, MD 21043
 P: 410.461.7666 F: 410.461.8961 www.timmons.com

PROFESSIONAL CERTIFICATE

DESIGN BY: RHV
 DRAWN BY: JMR
 CHECKED BY: RHV
 DATE: JULY 2024
 SCALE: AS SHOWN
 W.O. NO.: 14-62

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16183, EXPIRATION DATE: 08-27-2024

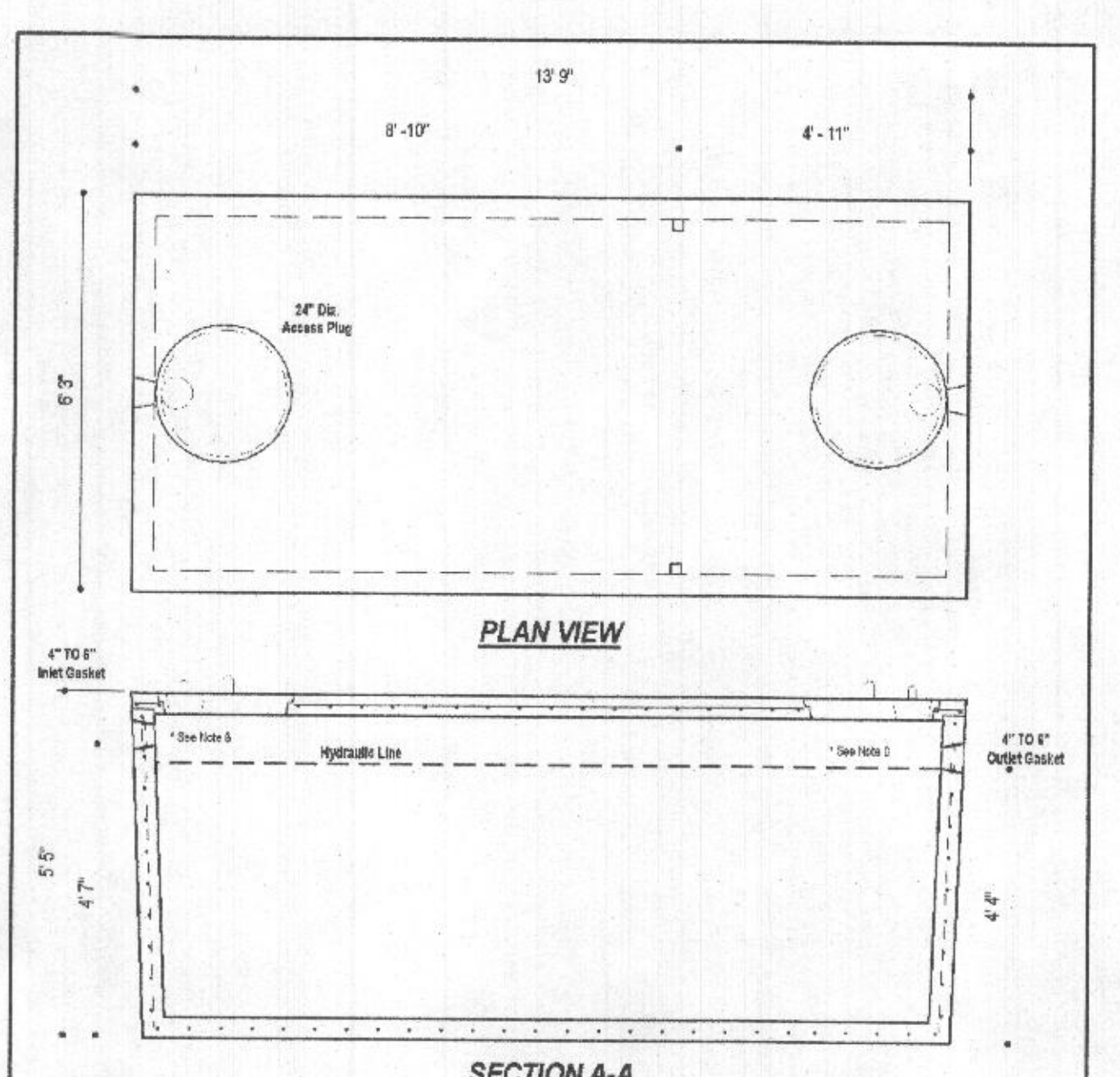
1 SHEET OF 2



DESIGN DATA & GENERAL NOTES

- Concrete strength 3000 p.s.i. @ 28 days. Density = 150 pcf.
- Concrete - Portland Type III per ASTM C 150-82.
- Reinforcing per ASTM A 618, Min. 5-1/2" cover.
- Top slab sealed with butyl tape mortar.
- 4" max. 4" max. 8" top thickness.
- Max 7" of cover.
- Depending on use of tank, Inlet & Outlet baffles may be required by code.

	6364 Race Road Elkridge, Maryland 21075 Tel. 410.796.1400 Fax. 410.796.1408 www.mayerbrosgroup.com	2,000 GALLON SEPTIC TANK 2-Compartment Stock Item [Approx. 19,900 lbs]	Dwg. No. 2000-2C No Scale Aug 11, 2008
	WEIGHT = 19,000 lbs.		



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	6364 Race Road Elkridge, Maryland 21075 Tel. 410.796.1400 Fax. 410.796.1408 www.mayerbrosgroup.com	2,000 GALLON SEPTIC TANK 1-Compartment Stock Item [Approx. 19,900 lbs]	Dwg. No. 2000-1C No Scale Aug 11, 2008
	WEIGHT = 19,000 lbs.		

Goulds Water Technology

Wastewater

APPLICATIONS
Specifically designed for the following uses:
• Homes, Farms, Trailer Courts, Morals, Schools, Hospitals, Industry, Effluent Systems

SPECIFICATIONS

Pump

- Solids handling capabilities: 1/2" 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 3 insulation on 1/2 - 1 1/2 HP models.
- Class 5 insulation on 2 HP models.

Single phase (60 Hz):

- Capacitor start motors for maximum starting torque.
- Built-in overload with automatic reset.

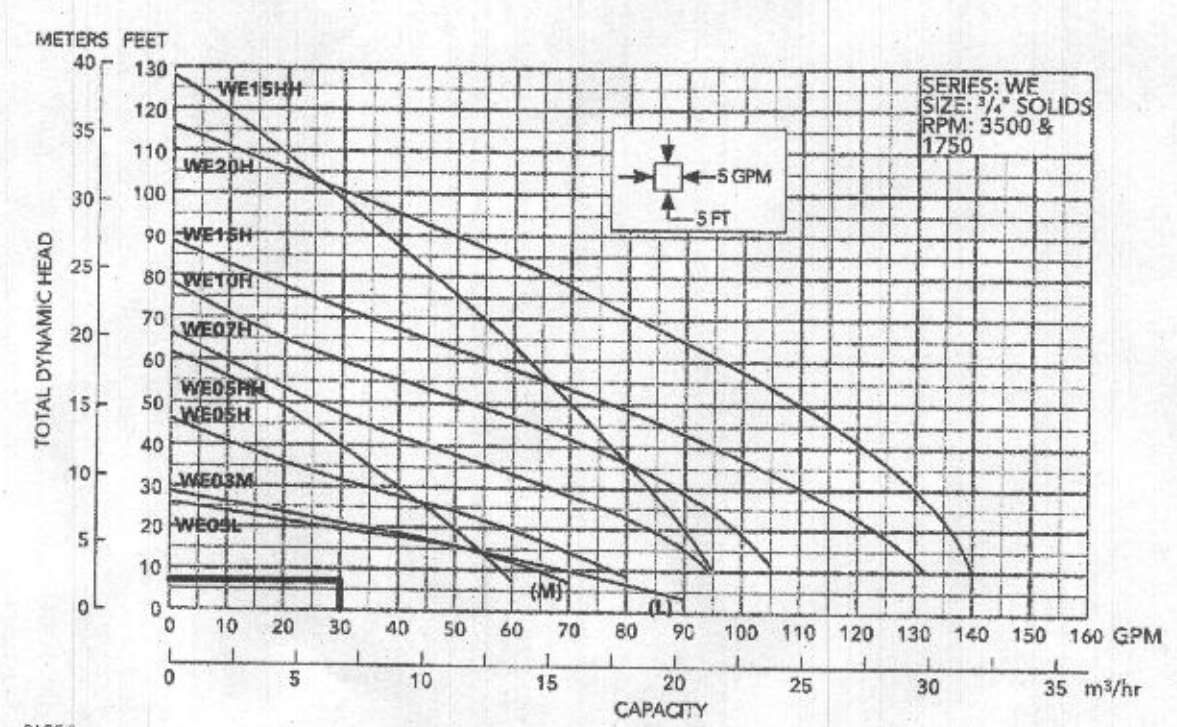
AGENCY LISTINGS

Tested to UL 778 and CSA 22.2 108 Standards
By Canadian Standards Association File #LR38349

2,000 GALLON PUMP TANK DETAIL
SCALE: 1"=4'

OUTSIDE TO OUTSIDE DIM: 13.75' x 6.25'
INSIDE TO INSIDE DIM: 13.08' x 5.58'
INSIDE CROSS SECTION AREA: 72.99'²

2" PVC INLET 376.85
2-45° UNION
TOP OF CHAMBER 376.83
HIGH WATER ALARMS 376.45
PUMP OFF 377.82
PUMP ON 377.95
PUMP BASE 372.34
0.5' BLOCKING
ELEV. 371.84
BOTTOM 371.51
4" PVC INLET 376.10
ONE DAY RESERVE 376.10
900 GALLONS
4" PVC INLET 376.10

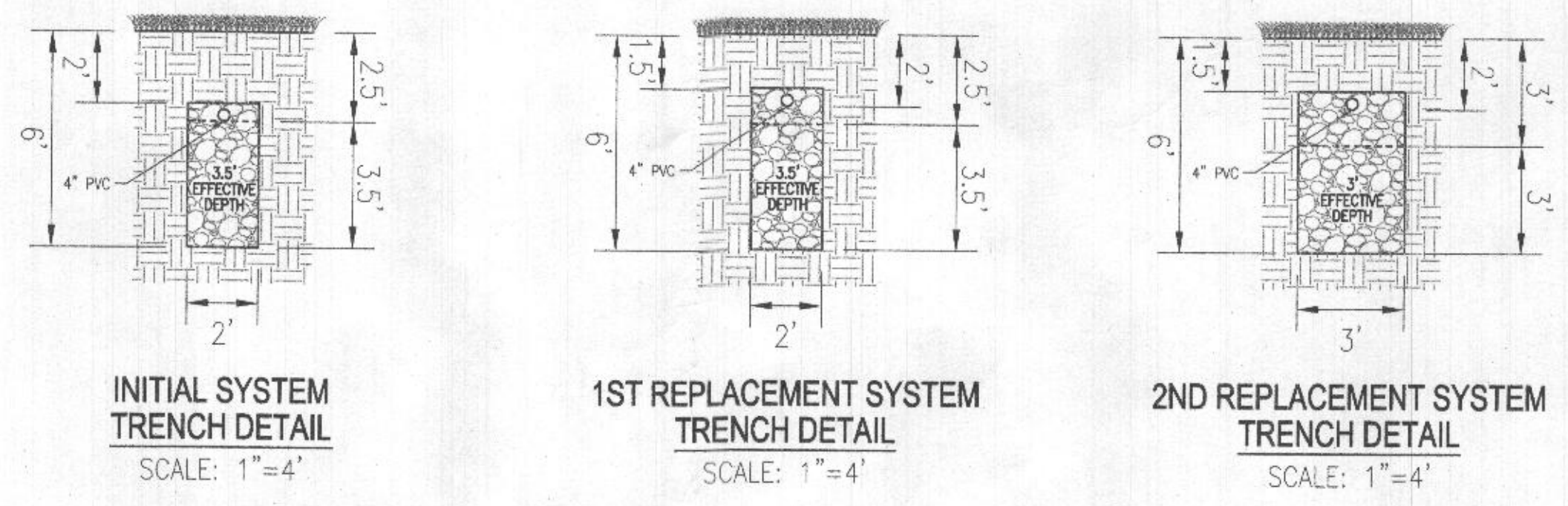
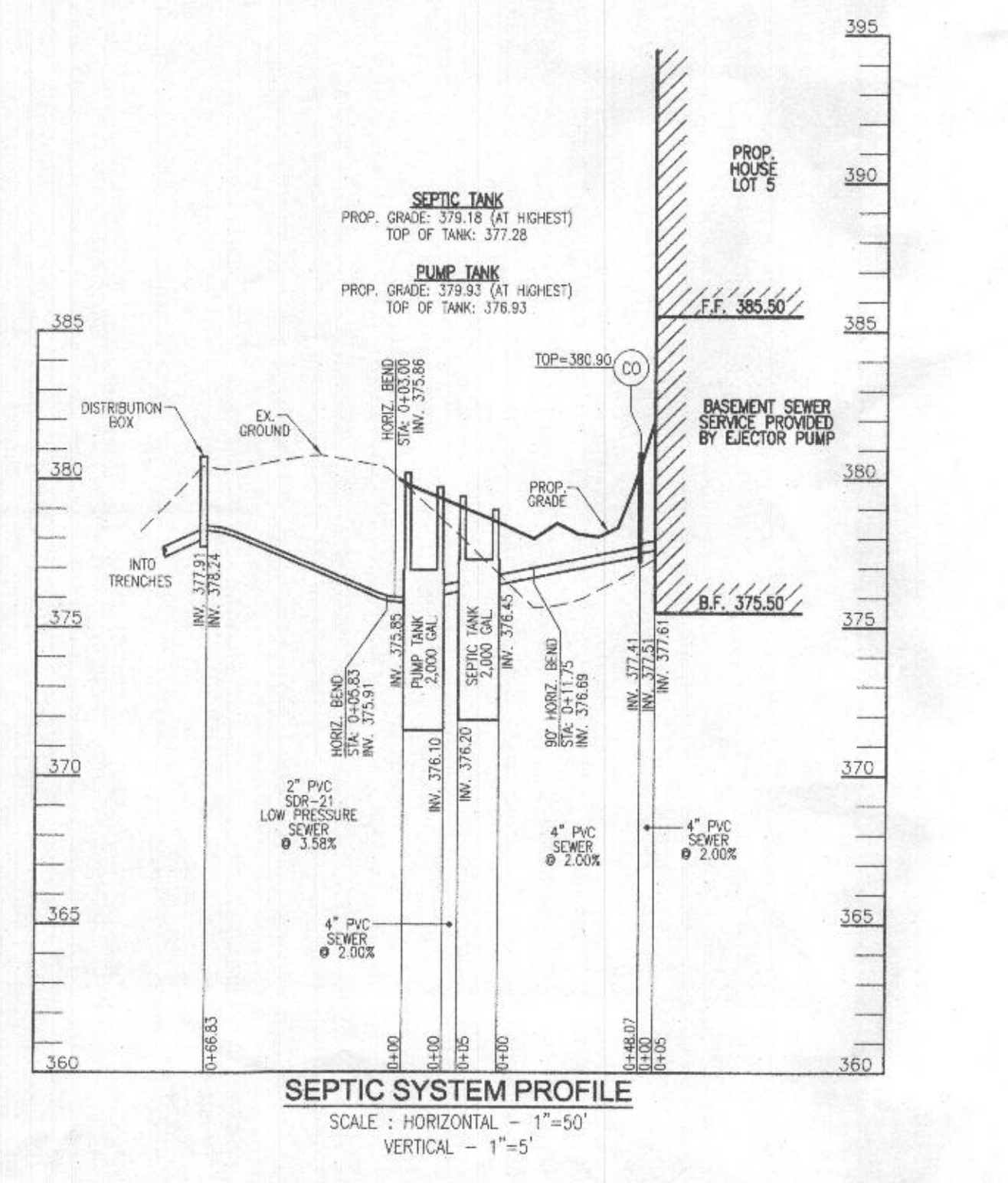


NO. BEDROOMS = 6
 DESIGN FLOW = 6 (150 GPD) = 900 GPD
 DOSE: 1/6 DESIGN FLOW = 150 GPD
 150 GALLONS/7.48 FT³/GAL = 20.05 FT³
 20.05 FT³/72.99 SF = 0.27'
 ONE DAY RESERVE: 900 GALLONS/7.48 FT³/GAL = 120.32 FT³
 120.32 FT³/72.99 SF = 1.65 FT

TDH (FRICTION + STATIC)
 FRICTION FITTINGS: UNION: 1x2 = 2
 45° ELBOW (H+V): 6x8 = 48
 90° ELBOW: 1x7 = 7
 FITTING EQ. LENGTH: 57.0 LF
 PIPE LENGTH: 66.8 LF
 TOTAL LENGTH: 123.8 LF

FRICTION LOSS (30 GPM): (1.54)(123.8)/100 = 1.91'
 STATIC: 378.24-373.66 (PUMP OFF) = 4.56'
 TDH: 4.56+1.91 = 6.47'
 USE GOULDS WE33 (OR EQUIVALENT)

FLOW: 30 GPM
 H=6.47'
 USE GOULDS WE33 (OR EQUIVALENT)



OWNER
GRATIA PLENA, LLC
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ELLICOTT CITY, MD 21042
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DEVELOPER
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3675 PARK AVENUE, SUITE 301
ELLICOTT CITY, MD 21043
(410) 480-0023

ONSITE SEWAGE DISPOSAL SYSTEM DESIGN PLAN

CUNNINGHAM PROPERTY - LOT 5
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ELLICOTT CITY, MD 21042

5TH ELECTION DISTRICT
TAX MAP: 29 PARCEL: 25
DPE REF: HO-10-036, ECP-16-030
ECP-17-050, DP-17-038, SDP-18-004 & F-19-040

BLOCK: 13
ZONED: RC-DEO
HOWARD COUNTY, MARYLAND

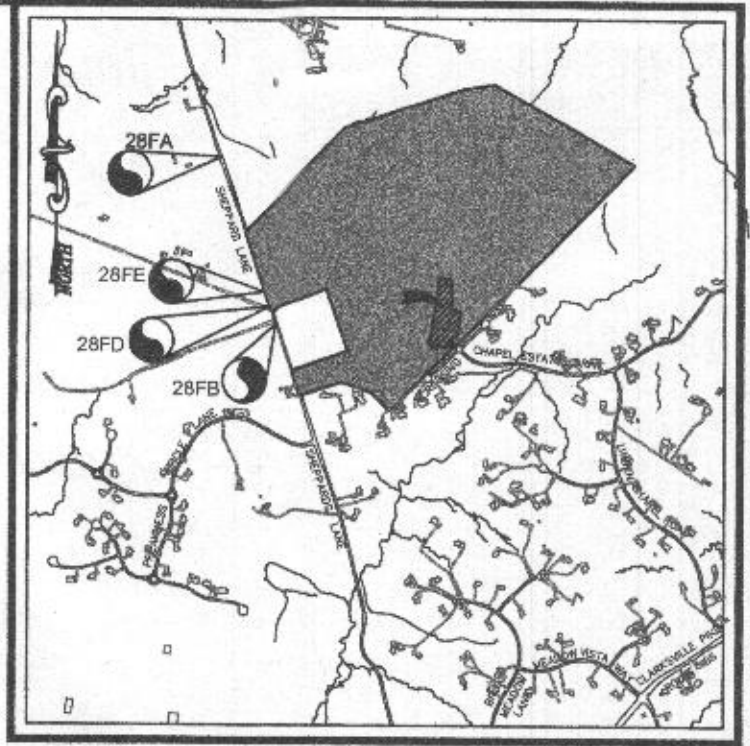
VOGEL ENGINEERING
TIMMONS GROUP
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PROFESSIONAL CERTIFICATE
 I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A FULLY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193
 EXPIRATION DATE: 09-27-2024

DESIGN BY: RHV
 DRAWN BY: JMR
 CHECKED BY: RHV
 DATE: AUGUST 2023
 SCALE: AS SHOWN
 W.O. NO.: 14-62

7/23/24
 16193
 PROFESSIONAL ENGINEER
 ROBERT H. VOGEL, PE, No. 16193

2 SHEET OF 2



VICINITY MAP
 SCALE: 1"=2000'
 ADC MAP COORDINATES: 25-05

BENCHMARKS

HOWARD COUNTY BENCHMARK 28FA	N 572,456.68	E 1,328,957.64	ELEV.: 348.21'
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LEGEND:

- PROPERTY LINE
- RIGHT-OF-WAY LINE
- ADJACENT PROPERTY LINE
- EXISTING EDGE OF PAVING
- EXISTING TREE LINE
- EXISTING TREE
- EXISTING WOOD FENCE
- EXISTING 10' CONTOUR
- EXISTING 2' CONTOUR
- PROPOSED 10' CONTOUR
- PROPOSED 2' CONTOUR
- APPROVED SEWAGE DISPOSAL AREA (SDA)
- EXISTING WELL LOCATION
- ALTERNATE WELL LOCATION

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ONSITE SEWAGE DISPOSAL SYSTEM DESIGN PLAN

CUNNINGHAM PROPERTY - LOT 5
 11108 CARITAS WAY
 ELLICOTT CITY, MD 21042

5TH ELECTION DISTRICT
 TAX MAP: 29 PARCEL: 25
 DEZ REF'S: HO-10-03E, EDP-16-030, BLOC: 13
 EDP-17-050, GP-17-03B, SDP-18-004 & F-19-040
 ZONED: RC-DEO
 HOWARD COUNTY, MARYLAND

VOGEL ENGINEERING

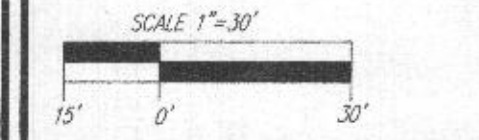
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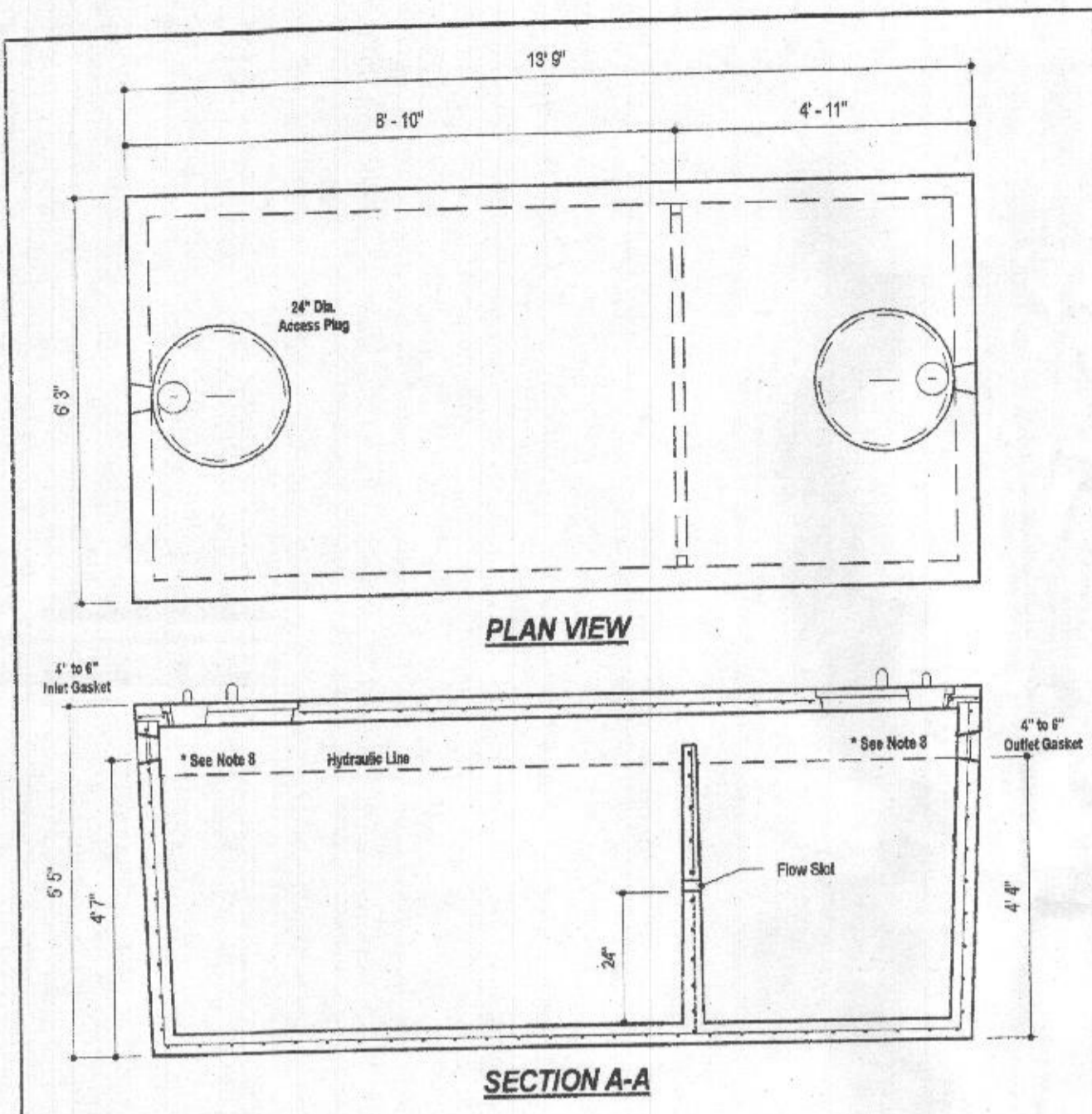
PROFESSIONAL CERTIFICATE

DESIGN BY: RHV
 DRAWN BY: JMR
 CHECKED BY: RHV
 DATE: JULY 2024
 SCALE: AS SHOWN
 W.C. NO.: 14-62

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1 SHEET OF 2



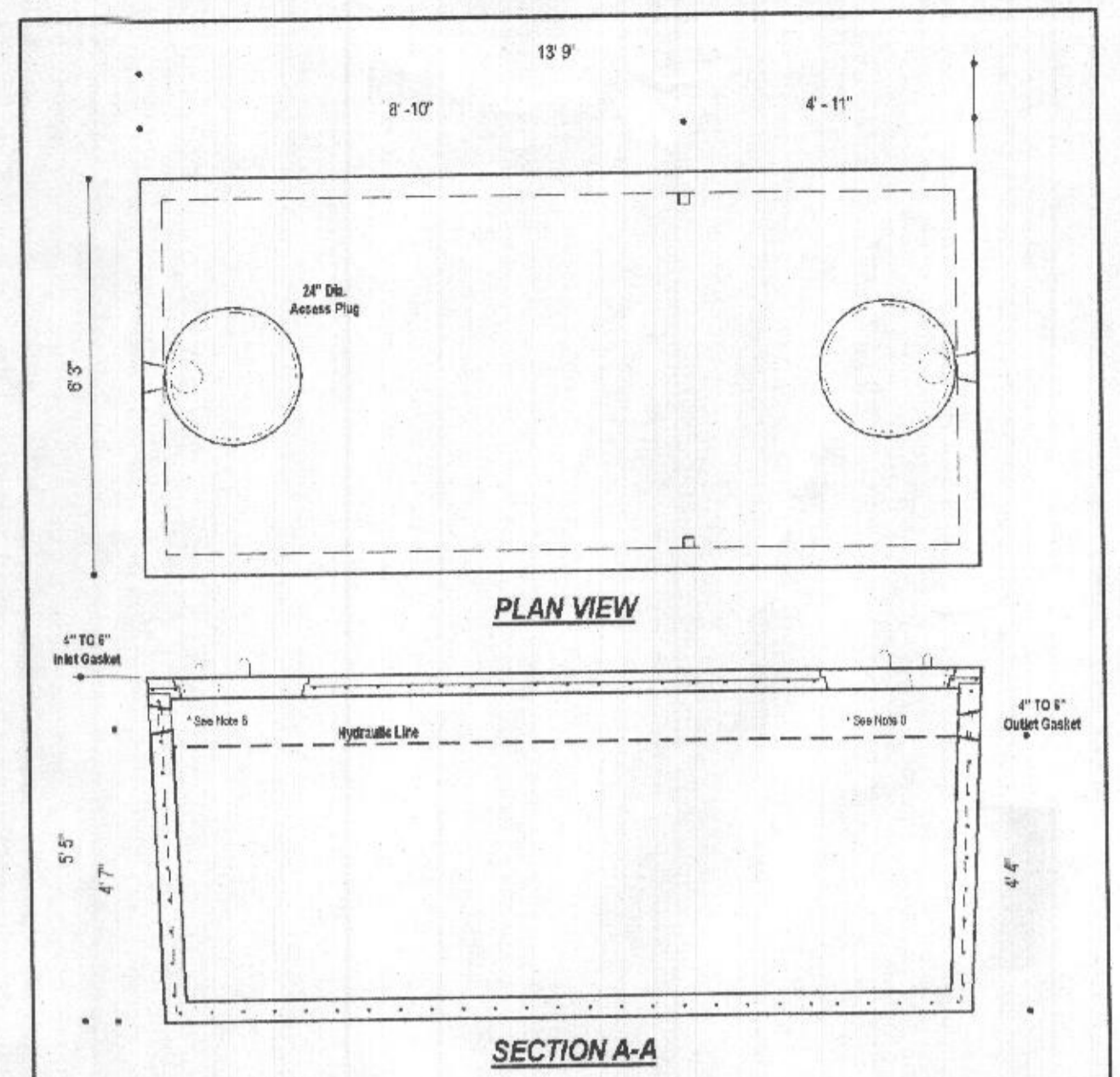


DESIGN DATA & GENERAL NOTES

- Concrete strength 4000 p.s.i. @ 28 days. Density = 150 pcf.
- Concrete - Portland Type III per ASTM C 150-02.
- Reinforcement & placement per ASTM C 309-06 & C 454-02.
- Reinforcing per ASTM A 618, Min. 5/16" cover.
- Top slab coated with high tear strength.
- 4" wall, 4" base, 6" top thickness.
- 4" x 4" cover.
- Depending on use of tank, Inlet & Outlet baffles may be required by code.

2,000 GALLON SEPTIC TANK
2-Compartment
Stock Item [Approx. 19,900 lbs]

Dwg. No. 2000-2C No Scale Aug 11, 2008



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MBI
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1-Compartment
Stock Item [Approx. 19,900 lbs]

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Wastewater

GOULDS WATER TECHNOLOGY

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Pump

- Solids handling capabilities: 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 3 insulation on 2 - 1 1/2 HP models.
- Class F insulation on 2 HP models.

Single phase (60 Hz):

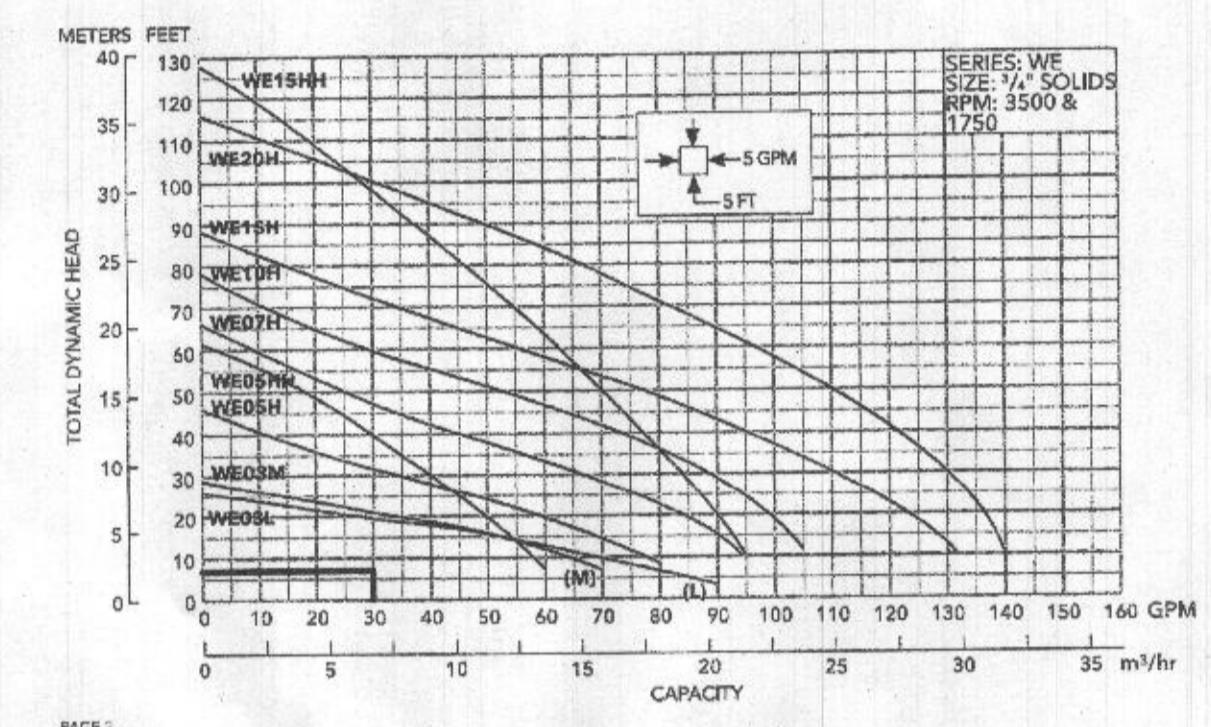
- Capacitor start motors for maximum starting torque.
- Built-in overload with automatic reset.

Three phase (60 Hz):

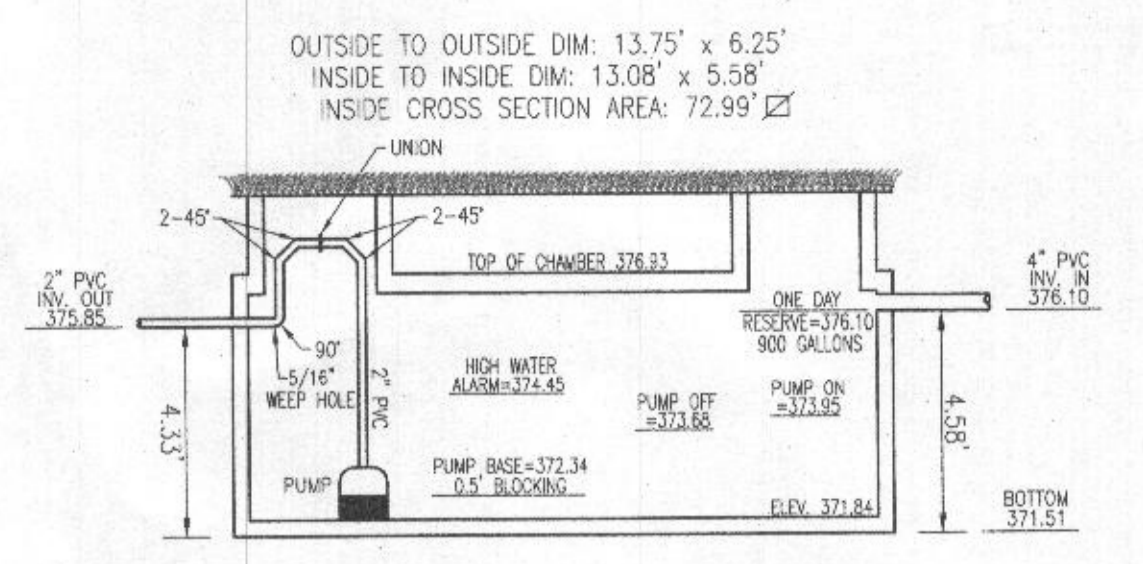
- Class 10 overload protection must be provided in separately ordered starter unit.
- STOW power cords all have bare lead cord ends.
- Designed for Continuous Operation: Pump ratings are within the motor manufacturer's recommended working limits, can be operated continuously without damage when fully submerged.
- Bearings: Upper and lower heavy duty ball bearing construction.
- Power Cable: Severe duty rated, oil and water resistant. Epoxy seal on motor end and 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 #LR38849



FLOW: 30 GPM
H=6.47
USE GOULDS WE35 (OR EQUIVALENT)



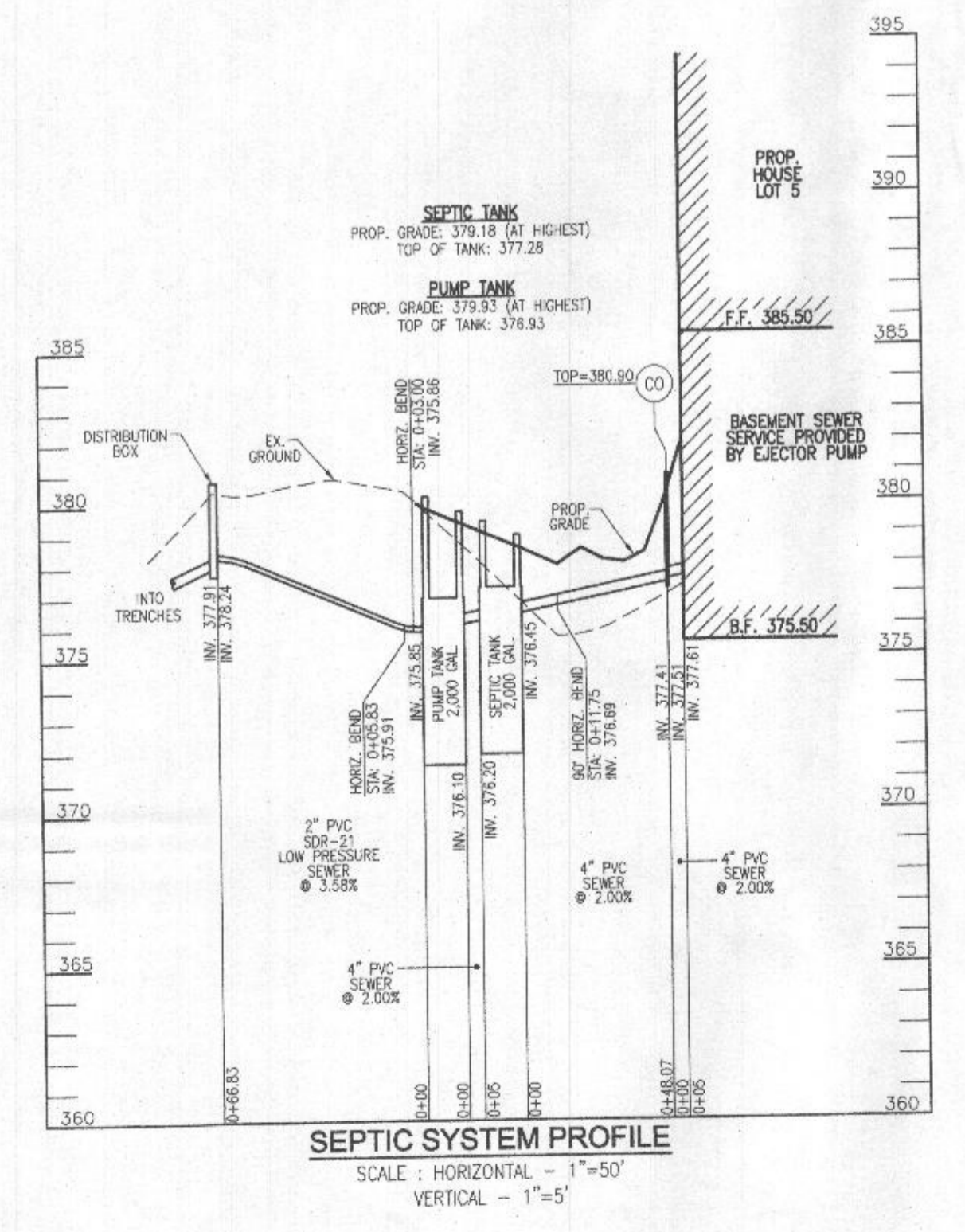
2,000 GALLON PUMP TANK DETAIL
SCALE: 1"=4'

NO. BEDROOMS = 6
DESIGN FLOW = 6 (150 GPD) = 900 GPD
DOSE: 1/8 DESIGN FLOW = 150 GPD
150 GALLONS/7.48 FT³/GAL = 20.05 FT³
20.05 FT³/72.99 SF = 0.27
ONE DAY RESERVE: 900 GALLONS/7.48 FT³/GAL = 120.32 FT³
120.32 FT³/72.99 SF = 1.65 FT

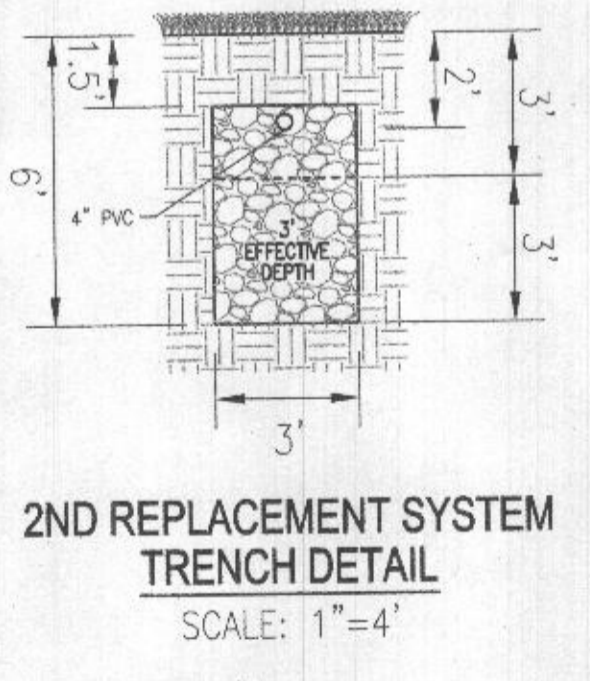
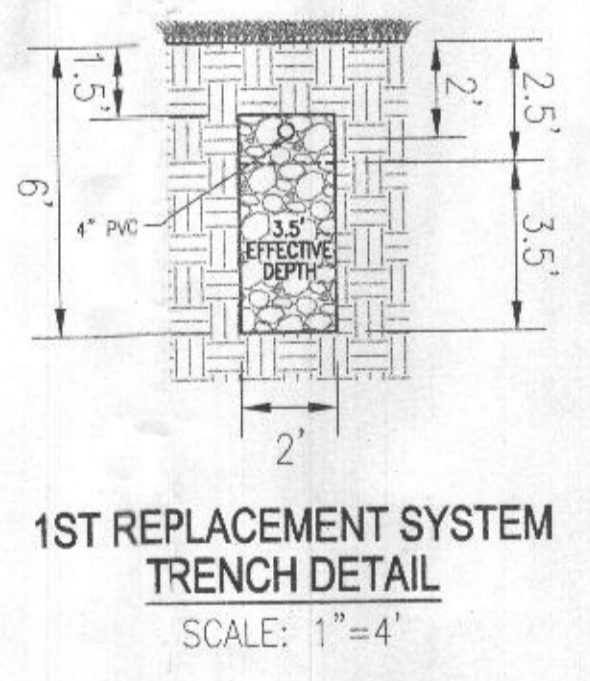
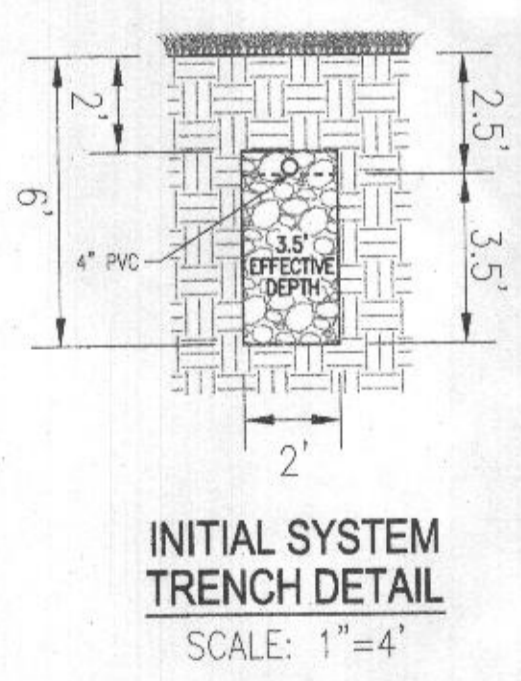
TDH (FRICTION + STATIC)
FRICTION FITTINGS: UNION: 1x2 = 2
45° ELBOW (+HV): 6x8 = 48
90° ELBOW: 1x7 = 7
FITTING EQ. LENGTH: 57.0 LF
PIPE LENGTH: 66.8 LF
TOTAL LENGTH: 123.8 LF

FRICTION LOSS (30 GPM): (1.54)(123.8)/100 = 1.91'
STATIC: 378.24 - 373.68 (PUMP OFF) = 4.56'
TDH: 4.56 + 1.91 = 6.47'

USE GOULDS WE35 (OR EQUIVALENT)



SEPTIC SYSTEM PROFILE
SCALE: HORIZONTAL = 1"=50'
VERTICAL = 1"=5'



OWNER
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11140 HOMERWOOD ROAD
ELLICOTT CITY, MD 21042
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EDP-17-05O, GP-17-03B, SDP-18-004 & F-19-04O
HOWARD COUNTY, MARYLAND

VOGEL ENGINEERING
TIMMONS GROUP

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PROFESSIONAL CERTIFICATE

DESIGN BY: RHV
DRAWN BY: JMR
CHECKED BY: RHV
DATE: AUGUST 2023
SCALE: AS SHOWN
W.O. NO.: 14-62

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16183, EXPIRATION DATE: 09-27-2024

ROBERT H. VOGEL, PE, NO. 16183

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