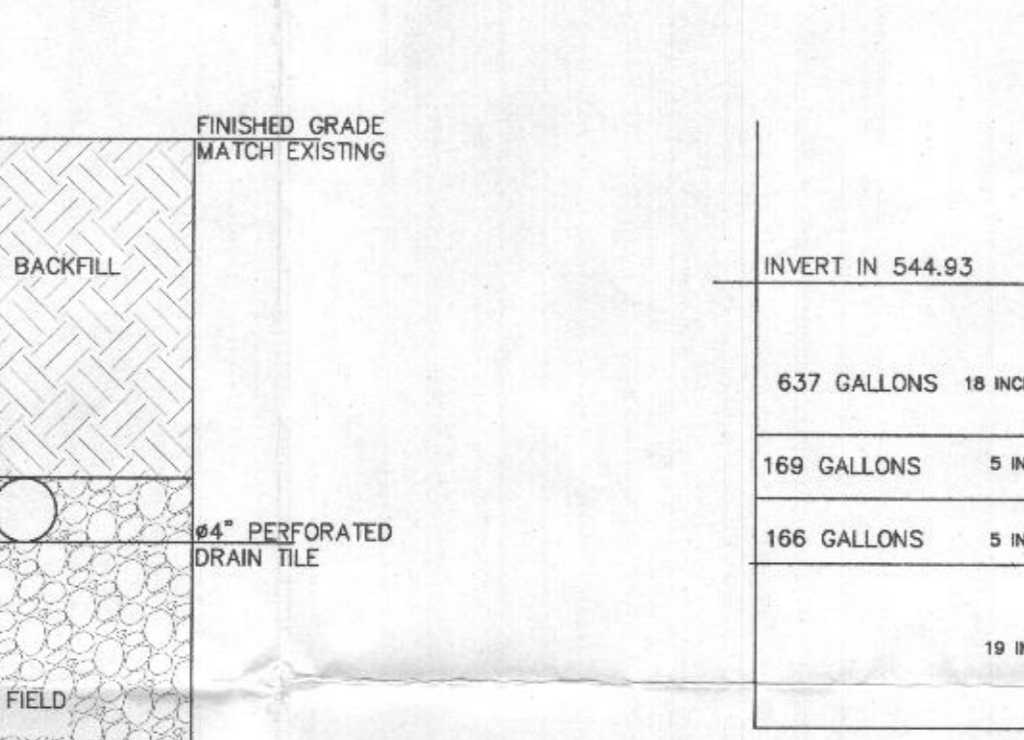


**SEPTIC TANK
SEWER SYSTEM ELEVATIONS**

DESCRIPTION	ELEVATION
BASEMENT ELEVATION	548.33
INVERT OUT OF THE HOUSE	545.83
INVERT INTO SEPTIC TANK	545.23
INVERT OUT OF SEPTIC TANK	544.97
FINISHED GRADE AT SEPTIC TANK	549.43
TOP OF THE SEPTIC TANK	546.43
INVERT INTO PUMP TANK	544.93
INVERT OUT OF PUMP TANK	546.50
FINISHED GRADE AT PUMP TANK	551.00
TOP OF THE PUMP TANK	546.17
INVERT INTO DISTRIBUTION BOX	559.00

PUMP TANK



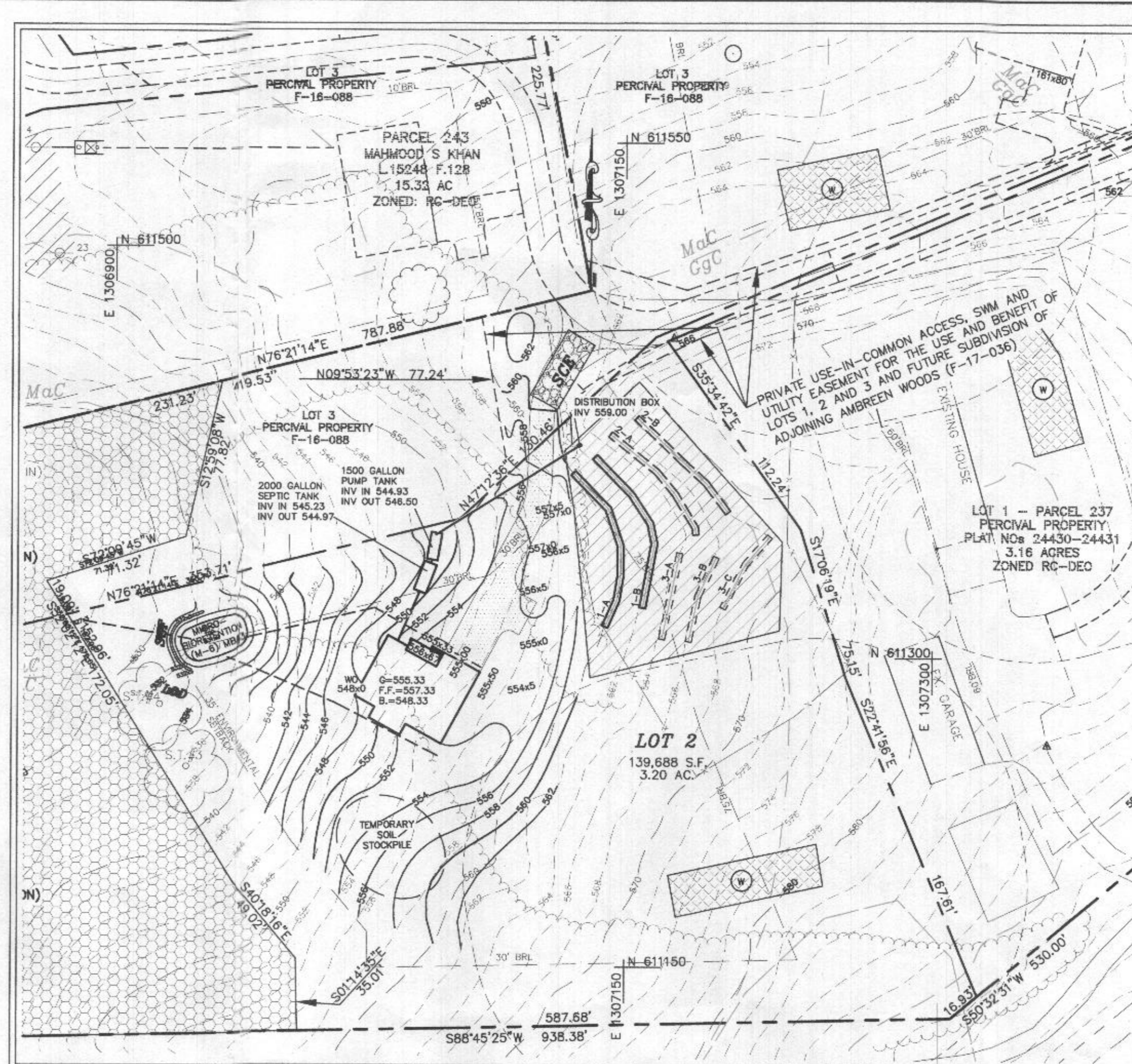
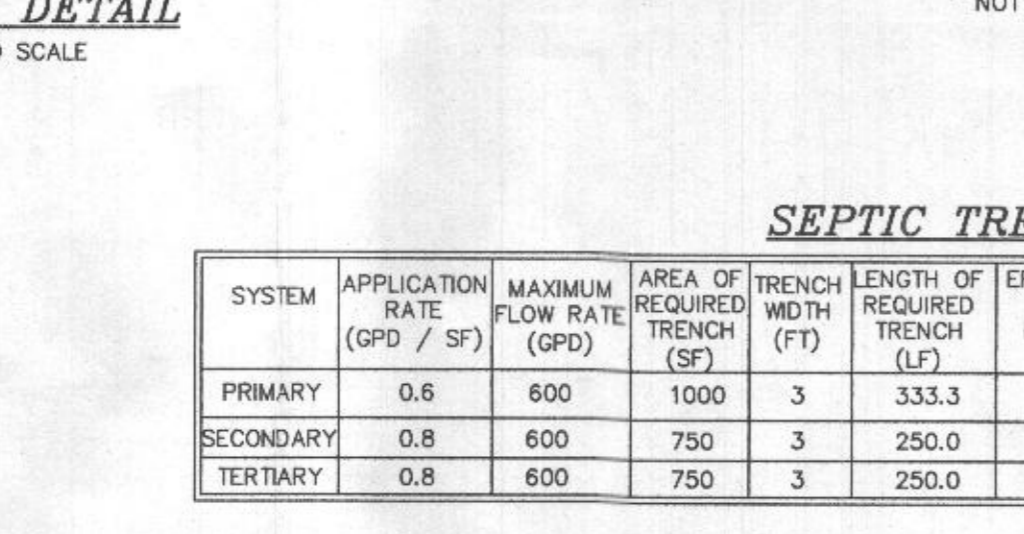
SEPTIC TRENCH ELEVATIONS

TRENCH	EX. GROUND ELEVATION	INVERT ELEVATION	BOTTOM OF TRENCH EL.
PRIMARY A	560.0	556.0	552.5
PRIMARY B	562.0	558.0	554.5
SECONDARY A	565.0	561.5	558.5
SECONDARY B	568.0	564.5	561.5
TERTIARY A	564.0	560.5	557.5
TERTIARY B	566.0	562.5	559.5
TERTIARY C	568.0	564.5	561.5

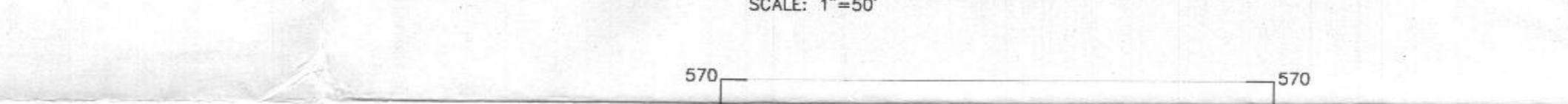
SOILS TABLE (WITHIN LOD)

SYMBOL	RATING	NAME	K FACTOR	MAP #
GgC	(B)	GLENELG LOAM, 8-15% SLOPES.	.24	3
GmC	(C)	GLENVILLE SILT LOAM, 8-15% SLOPES	.43	3
McC	(B)	MANOR LOAM, 8-15% SLOPES	.28	3

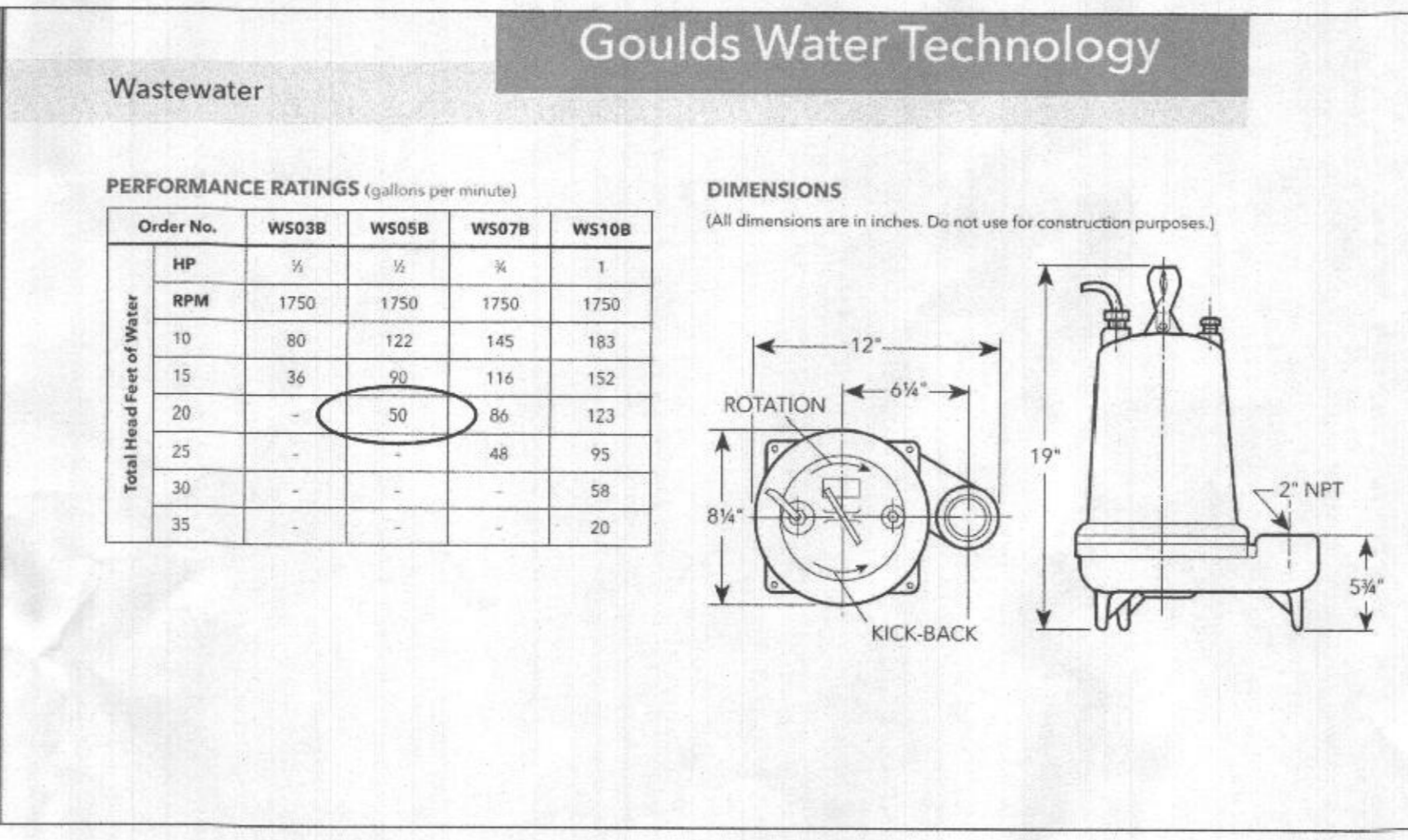
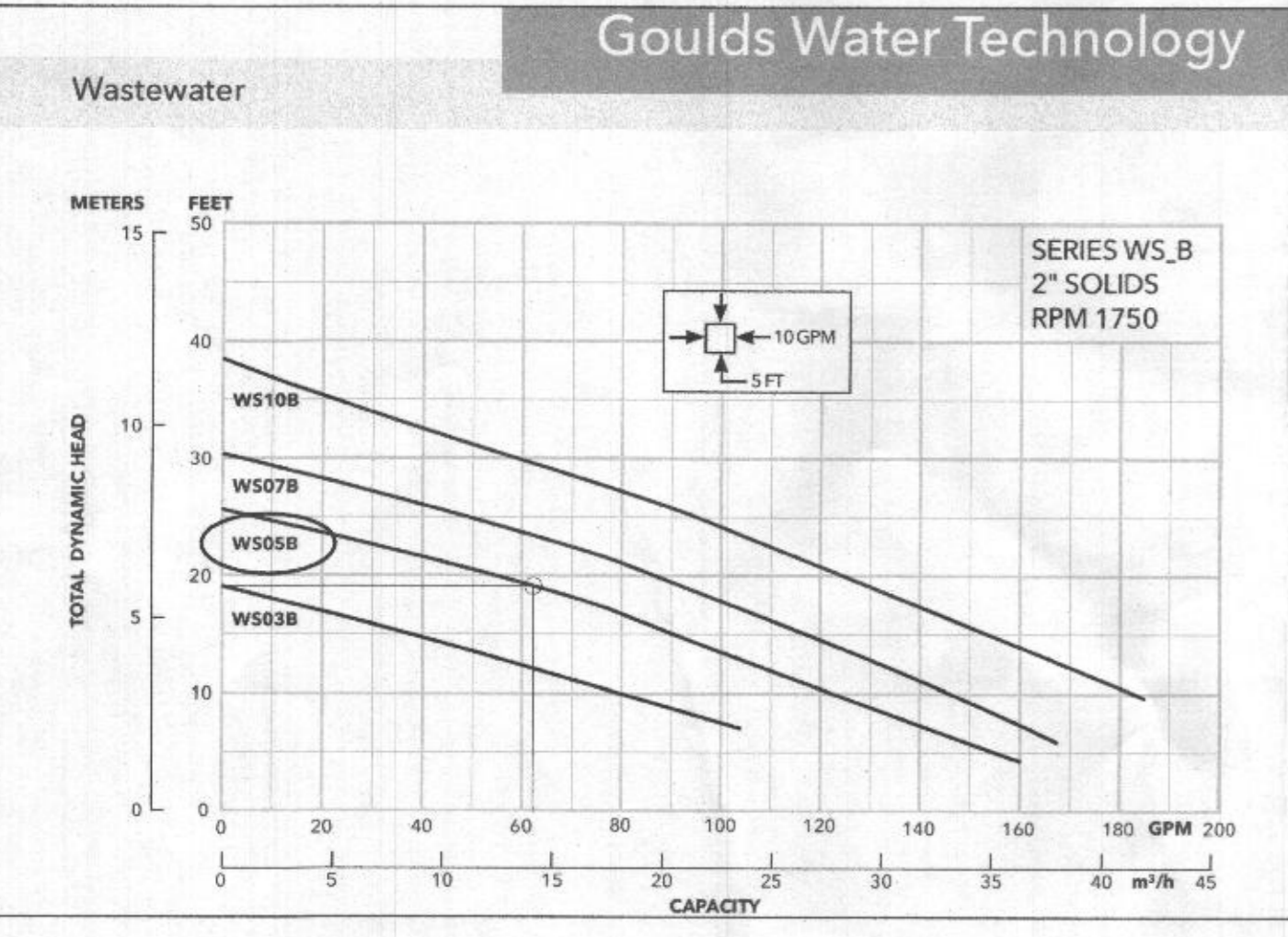
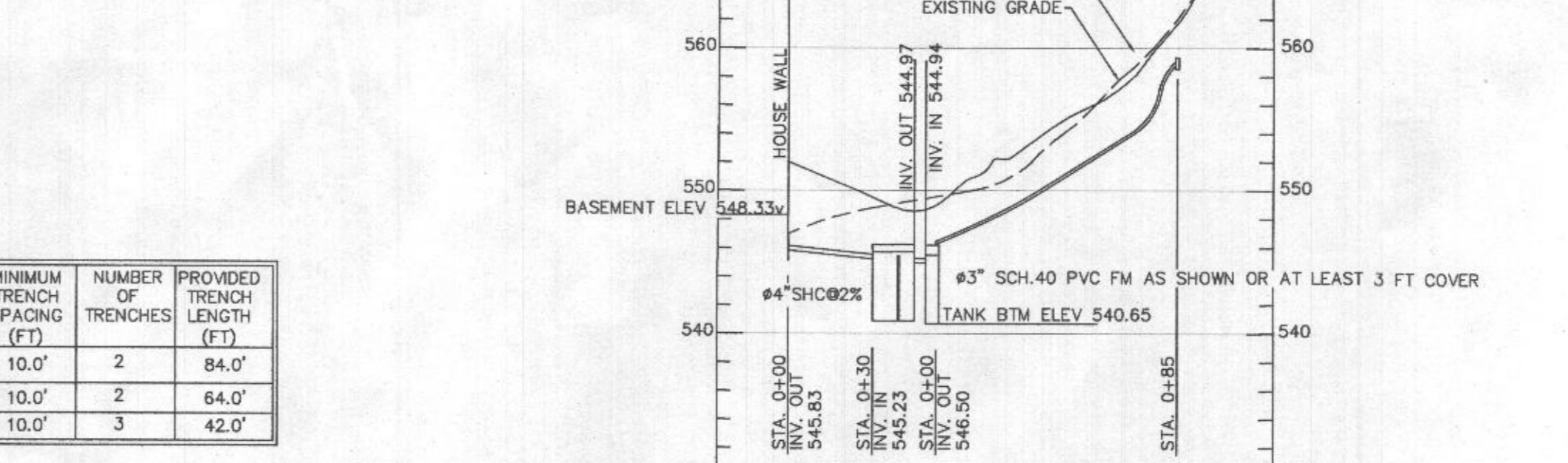
PUMP CONTROL ELEVATIONS



ON-SITE SEWAGE DISPOSAL SYSTEM PLAN

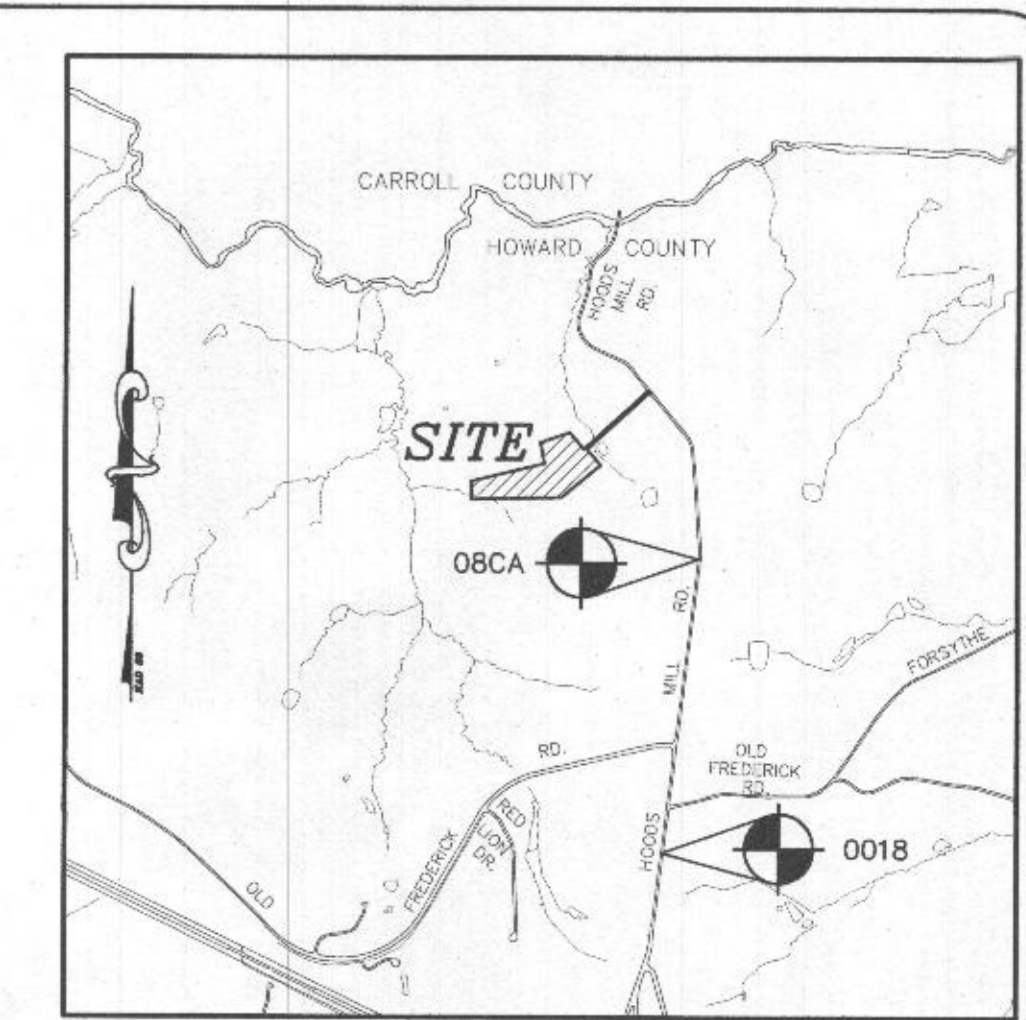


SEPTIC TANK AND F.M. PROFILE



ON-SITE SEWAGE DISPOSAL SYSTEM PUMP DESIGN

SEWAGE DISPOSAL AREA INVERT ELEVATION	PRIMARY
558.0 FT	558.0 FT
DISTANCE FROM DISTRIBUTION BOX	10.0 FT
ASSUME 1% SLOPE OR STEEPER	
DISTRIBUTION BOX INVERT OUT	559.0 FT
DISTRIBUTION BOX INVERT IN	559.0 FT
DISTANCE TO PUMP TANK	85.0 FT
PUMP TANK INVERT OUT ELEVATION	546.5 FT
PUMP OUTLET TO INVERT OUT	5.0 FT
STATIC HEAD	17.5 FT
FORCE MAIN 3 IN DIAMETER SCH 40 PVC	3.068 IN
AREA	0.05134 SQ FT
NO INTERMEDIATE LOW POINTS; MIN VELOCITY = 2 FPS	
FLOW RATE = 0.10268 CFS, USE	46 GPM
FOR CALCULATING DYNAMIC HEAD, USE	50 GPM
HEAD LOSS IN FEET/100 FT OF PIPE = 0.2083(100/C) ^{1.852} * 1.852 * D ^{4.8655} (HAZEN WILLIAMS EQN.)	
C = ROUGHNESS COEFFICIENT = 140	
Q = FLOW IN GPM = 48	
D = DIAMETER IN INCHES = 3.068	
HEAD LOSS IN FEET/100 FT OF PIPE = 0.670 FT	
HEAD LOSS IN FEET FOR ACTUAL LENGTH	0.569 FT
FITTINGS LOSS: USE EQUIVALENT PIPE LENGTH	
90° ELBOW 11.1 FT EQUIVALENT	.074 FT
2"x3" REDUCER 2.0 FT EQUIVALENT	.013 FT
TOTAL DYNAMIC HEAD =	18.17 FT
USE GOULD WS-05B OR EQUIVALENT 1/2 HP PUMP	
FM HOLDS 48 GALLONS OF SEWAGE. ALLOW FOR RUN BACK.	
600 GPD, PUMP RUNS 6X DAILY, 100 GALLONS PLUS RUNBACK	
USE 5 INCHES, 166 GALLONS +/-	
RUN TIME = 166 GALLONS/62 GPM = (MINUTES/RUN) 2 MIN. 40 SEC.	



VICINITY MAP

SCALE: 1"=200'
ADC MAP: 10 GRID: B-4

GENERAL NOTES:

- THE SUBJECT PROPERTY IS ZONED RC-DEO PER THE OCTOBER 6, 2013 COMPREHENSIVE ZONING PLAN.
- PARCEL BACKGROUND:
TAX MAP: 8
PARCEL: 237 LOT: 2
DEED REFERENCE: L 17425, F 88
ELECTION DISTRICT: FOURTH
ZONING: RC-DEO
AREA: 3.20 ACES
DPZ FILES: EOP-15-059, F-16-088
- Z TOPOGRAPHY FOR THE DEVELOPED AREAS IS BASED ON FIELD RUN SURVEY PERFORMED BY MILDENBERG, BOENDER & ASSOC., INC. ON OR ABOUT DECEMBER 2014.
- PRIVATE WELL AND SEPTIC WILL BE UTILIZED.
- THIS AREA DESIGNATES A PRIVATE SEWERAGE EASEMENT OF AT LEAST 10,000 SQ. FT. AS REQUIRED BY THE MARYLAND STATE DEPARTMENT OF ENVIRONMENT FOR INDIVIDUAL SEWERAGE DISPOSAL IMPROVEMENTS OF ANY NATURE IN THIS AREA ARE RESTRICTED UNTIL PUBLIC SEWERAGE IS AVAILABLE. THIS EASEMENT 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 SEWERAGE EASEMENT. RECORDATION OF A MODIFIED EASEMENT SHALL NOT BE NECESSARY.
- ANY CHANGES TO THE LOCATION OR DEPTHS TO ANY COMPONENTS MUST BE APPROVED BY THE ENGINEER AND THE HOWARD COUNTY HEALTH DEPARTMENT PRIOR TO INSTALLATION. A REVISED PLAN MAY BE REQUIRED.
- THE MAXIMUM EARTH COVER OVER THE SEPTIC AND PUMP TANKS IS THREE (3) FEET. GREATER EARTH COVER WILL REQUIRE A HEAVY LOAD BEARING TANK.
- THE MAXIMUM EARTH COVER OVER A HEAVY LOAD BEARING TANK IS FIVE (5) FEET. GREATER EARTH COVER IS NOT ALLOWED.
- ANY WELLS OR SEPTIC SYSTEMS LOCATED WITHIN 100' OF THE PROPERTY BOUNDARIES AND 200' DOWN GRADIENT OF ANY WELL AND/OR SEPTIC SYSTEMS HAVE BEEN SHOWN.
- ALL TRENCHES ARE FED BY GRAVITY FROM THE DISTRIBUTION BOX.

WELL CERTIFICATION

THE EXISTING WELL, TAG # HO-15-0365 HAS BEEN FIELD LOCATED AND IS ACCURATELY SHOWN.

ON-SITE SEWAGE DISPOSAL SYSTEM:

RESIDENTIAL SYSTEM DESIGN:
4 BEDROOM HOUSE (LIVING AREA=3,580 SQ.FT.)
INCLUDES BSM 1248 SF X 50X + 1ST AND 2ND FLR 2956 SF
150 GALLONS X # OF BEDROOMS = VOLUME OF WASTEWATER /DAY
150 X 4 = 600 GPD

PRIMARY SYSTEM:
PERC RATE = 16-30 MINUTES/INCH
APPLICATION RATE = 0.6 GPD/SQ.FT.
DESIGN FLOW + APPLICATION RATE = SQ.FT. OF TRENCH REQUIRED
600 + 0.8 = 1000 SQ.FT.
SQ.FT. REQUIRED + WIDTH OF TRENCH = LENGTH OF TRENCH
1000 + 3.0' = 333.3 FT
USE 36" OF GRAVEL BELOW DRAIN PIPE
333.3 X 0.5 = 166.67' USE TWO (2) TRENCHES (83.3')
USE TWO (2) REQUIRED LENGTH OF TRENCHES (83.3'), PROVIDE (84") A MINIMUM OF 10' BETWEEN TRENCHES UTILIZING SIDEWALL REDUCTION CREDIT.
MINIMUM TANK CAPACITY = 2000 GALLONS
USE MAYER BROS. PRODUCT OR EQUIVALENT.

SECONDARY SYSTEM:
PERC RATE = 6-15 MINUTES/INCH
APPLICATION RATE = 0.8 GPD/SQ.FT.
DESIGN FLOW + APPLICATION RATE = SQ.FT. OF TRENCH REQUIRED
600 + 0.8 = 750 SQ.FT.
SQ.FT. REQUIRED + WIDTH OF TRENCH = LENGTH OF TRENCH
750 + 3.0' = 250.0 FT
USE 36" OF GRAVEL BELOW DRAIN PIPE
250.0 X 0.50 = 125.0' USE TWO (2) TRENCHES (63')
A MINIMUM OF 10' BETWEEN TRENCHES UTILIZING SIDEWALL REDUCTION CREDIT.

TERTIARY SYSTEM:
PERC RATE = 6-15 MINUTES/INCH
APPLICATION RATE = 0.8 GPD/SQ.FT.
DESIGN FLOW + APPLICATION RATE = SQ.FT. OF TRENCH REQUIRED
600 + 0.8 = 750 SQ.FT.
SQ.FT. REQUIRED + WIDTH OF TRENCH = LENGTH OF TRENCH
750 + 3.0' = 250.0 FT
USE 36" OF GRAVEL BELOW DRAIN PIPE
250.0 X 0.50 = 125.0' USE THREE (3) TRENCHES (42')
A MINIMUM OF 10' BETWEEN TRENCHES UTILIZING SIDEWALL REDUCTION CREDIT.

APPROVED FOR PRIVATE WATER AND PRIVATE SEWERAGE SYSTEMS
COUNTY HEALTH OFFICER
HOWARD COUNTY HEALTH DEPARTMENT
DATE: 6/9/2020
MICHAEL G. KREITSON, P.E.

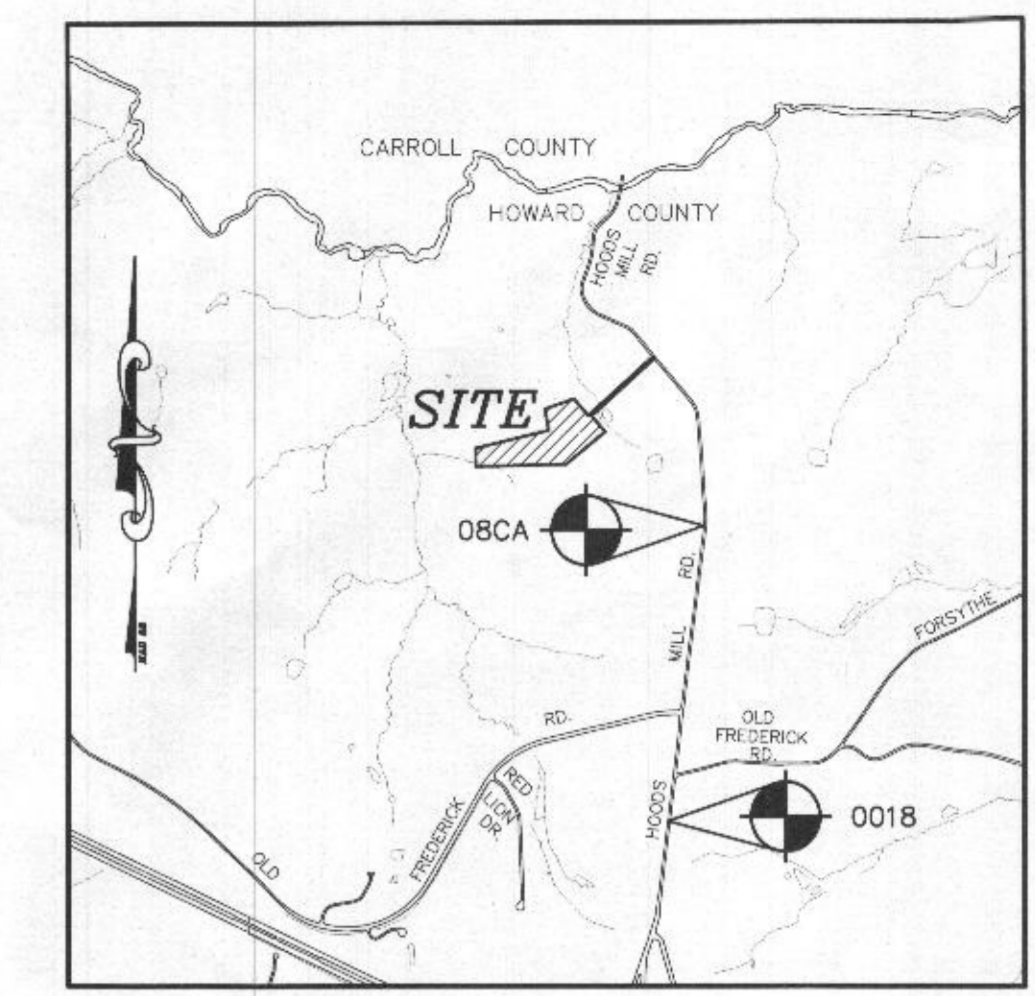
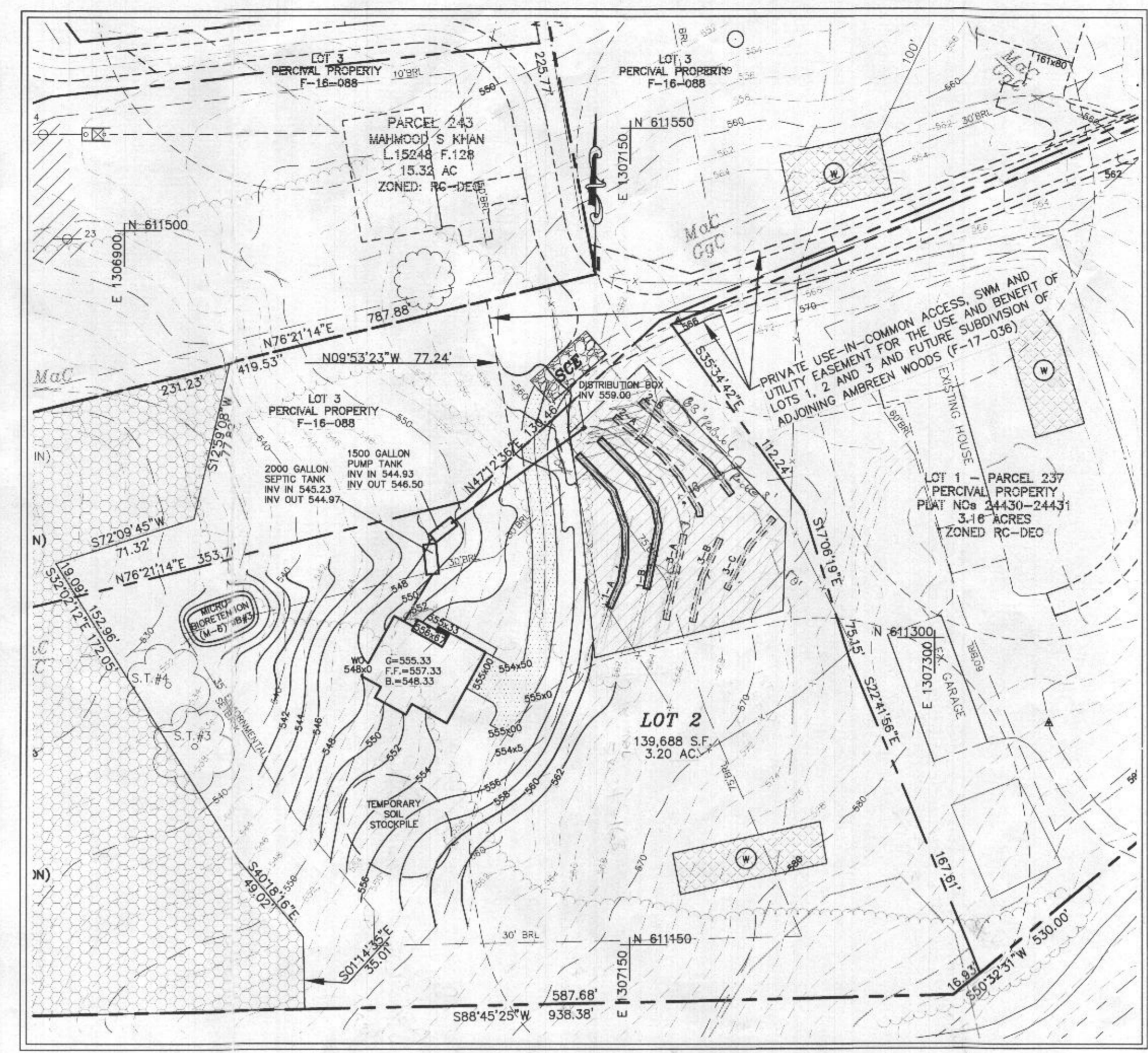
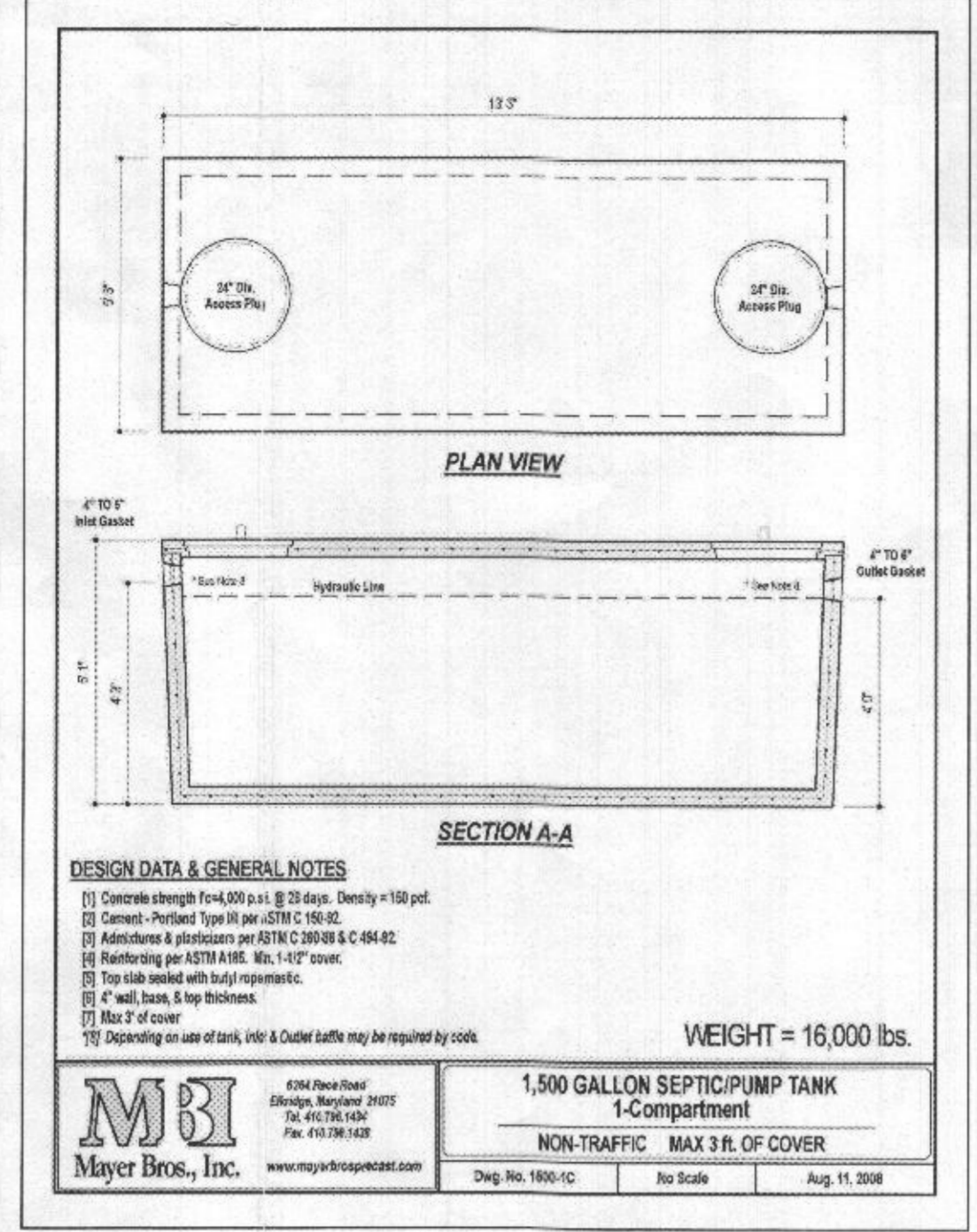
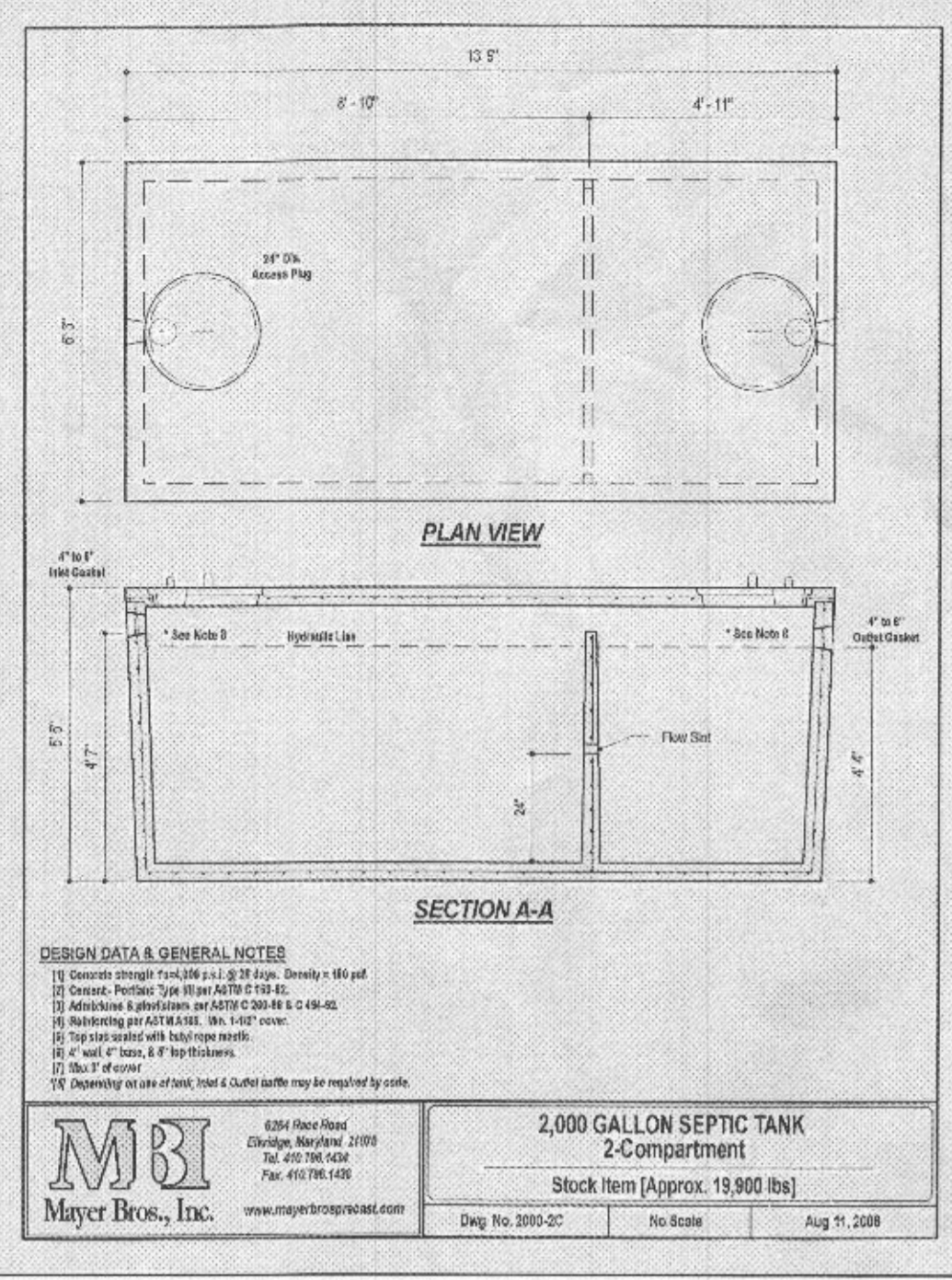
OWNER/DEVELOPER
BURKARD HOMES
1511 RITCHIE HIGHWAY #305
ARNOOLD, MD 21045
240-375-1052

Project: 18-010
Date: JUN. 2020
Illustration: engineering
Scale: MKG
Approval: MKG
Description: 50 ft SAA

PERCIVAL PROPERTY LOT 2
14529 AMBREEN WAY
TAX MAP 08, GRID 05, PARCEL 237
FOURTH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND
ON-SITE SEWAGE DISPOSAL SYSTEM

MILDENBERG, BOENDER & ASSOC., INC.
Engineers Planners Surveyors
7350-B Cruise Drive, Columbia, MD 21044
(410) 997-0296 Fax
(410) 997-0296 Tel

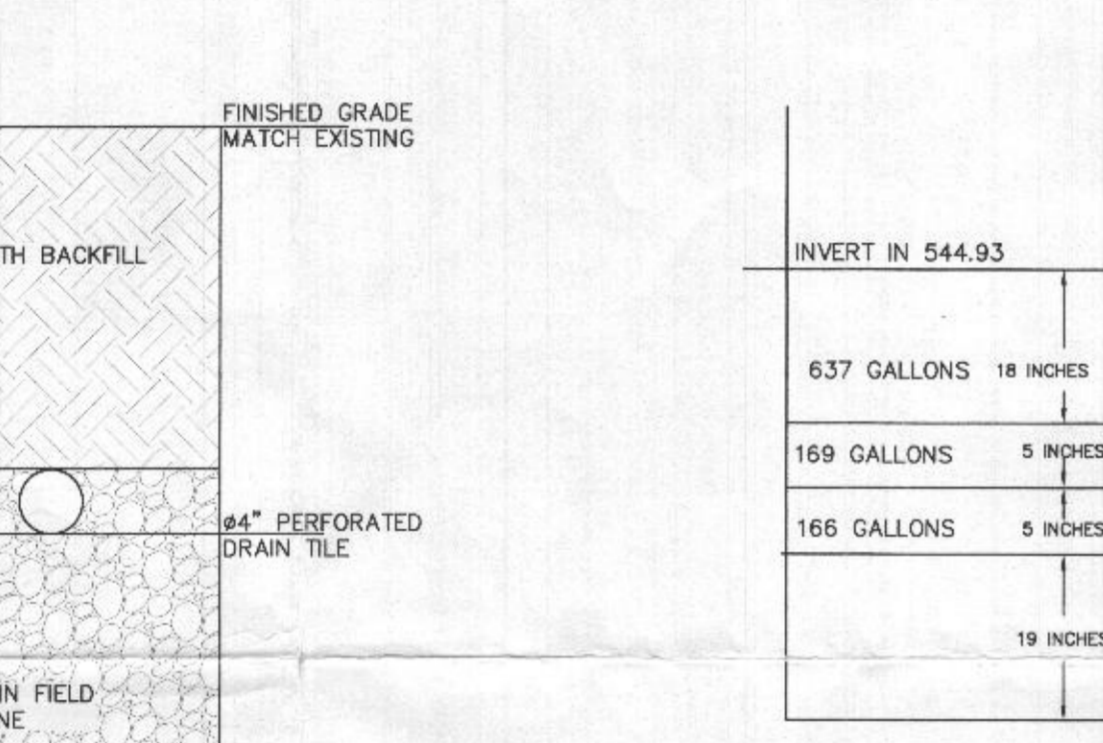
1 OF 1



**SEPTIC TANK
SEWER SYSTEM ELEVATIONS**

DESCRIPTION	ELEVATION
BASEMENT ELEVATION	548.33
INVERT OUT OF THE HOUSE	545.83
INVERT INTO SEPTIC TANK	545.23
INVERT OUT OF SEPTIC TANK	544.97
FINISHED GRADE AT SEPTIC TANK	549.43
TOP OF THE SEPTIC TANK	546.43
INVERT INTO PUMP TANK	544.93
INVERT OUT OF PUMP TANK	546.50
FINISHED GRADE AT PUMP TANK	551.00
TOP OF THE PUMP TANK	546.17
INVERT INTO DISTRIBUTION BOX	559.00

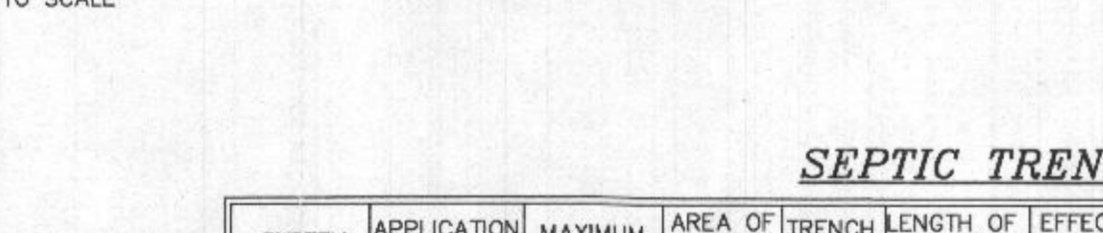
PUMP TANK



SEPTIC TRENCH ELEVATIONS

TRENCH	EX. GROUND ELEVATION	INVERT ELEVATION	BOTTOM OF TRENCH EL.
PRIMARY A	560.0	556.0	552.5
PRIMARY B	562.0	558.0	554.5
SECONDARY A	565.0	561.5	558.5
SECONDARY B	568.0	564.5	561.5
TERTIARY A	564.0	560.5	557.5
TERTIARY B	566.0	562.5	559.5
TERTIARY C	568.0	564.5	561.5

TRENCH DETAIL

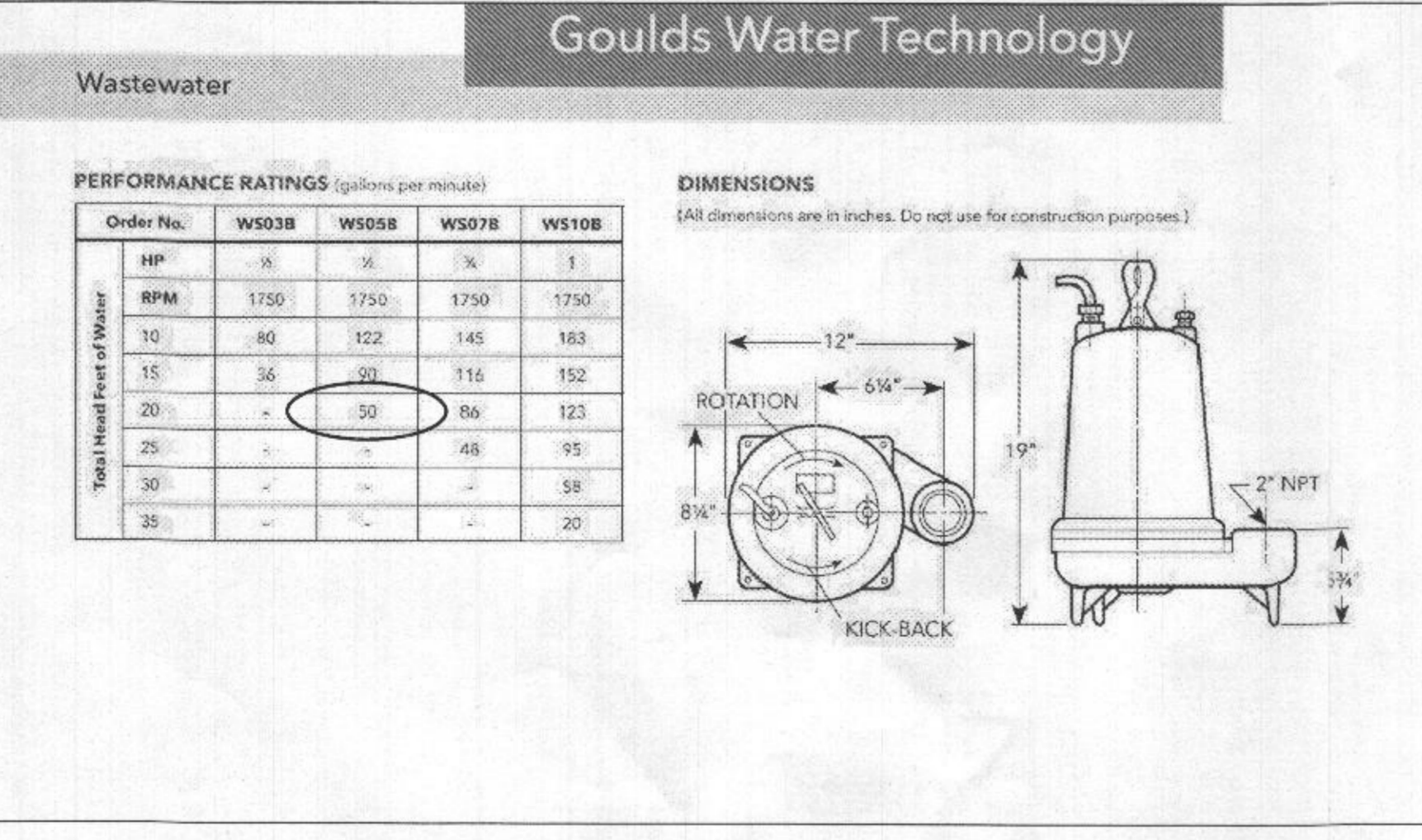
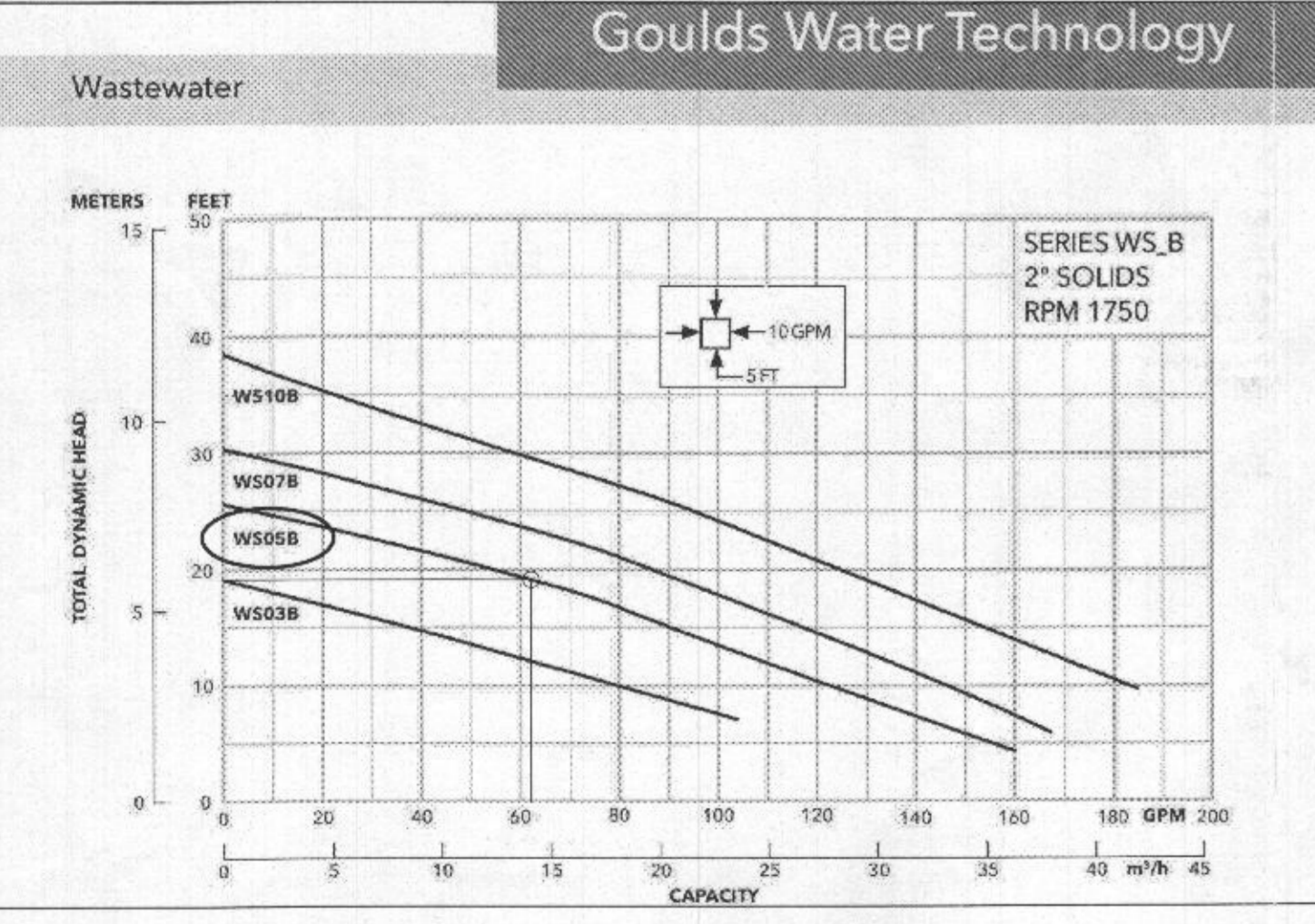
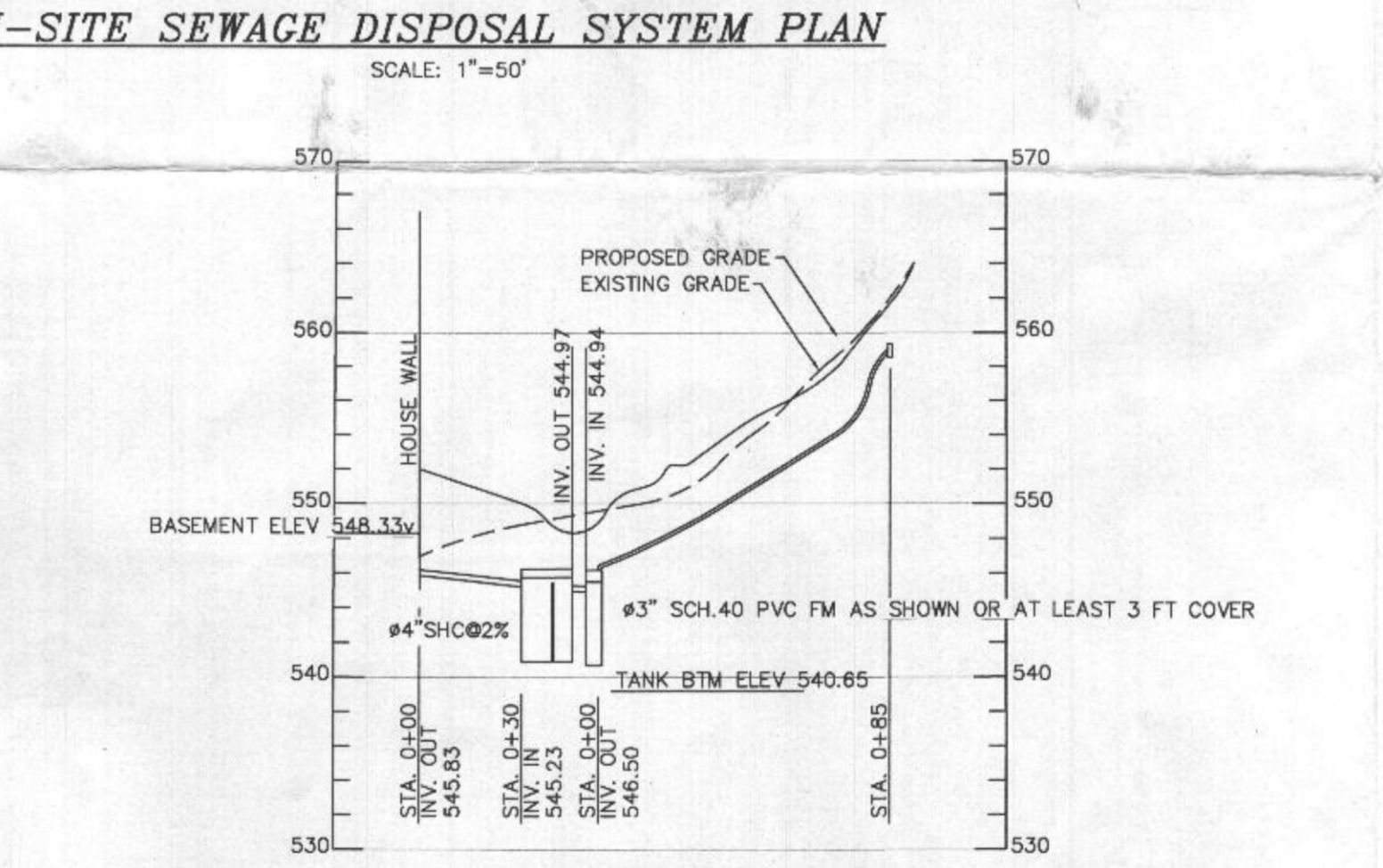
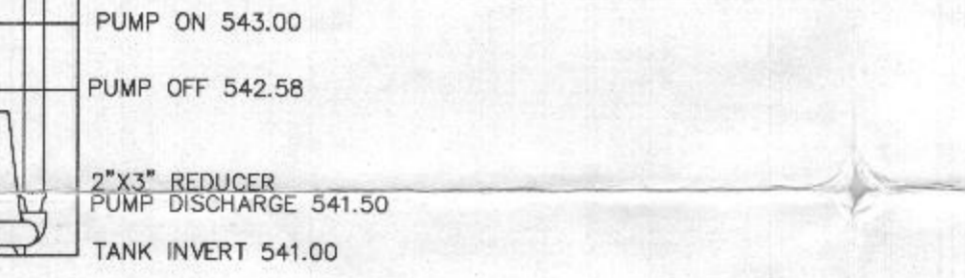


SOILS TABLE (WITHIN LOD)

SYMBOL	RATING	NAME	K FACTOR	MAP #
GgC	(B)	GLENELG LOAM, 8-15% SLOPES.	.24	3
GmC	(C)	GLENVILLE SILT LOAM, 8-15% SLOPES.	.43	3
MoC	(B)	MANOR LOAM, 8-15% SLOPES	.28	3

SEPTIC TRENCH SIZING

SYSTEM	APPLICATION RATE (GPD / SF)	MAXIMUM FLOW RATE (GPD)	AREA OF REQUIRED TRENCH (SF)	TRENCH WIDTH (FT)	LENGTH OF TRENCH (LF)	EFFECTIVE DEPTH BEGINS (FT)	TRENCH DEPTH (FT)	TRENCH REDUCTION FACTOR**	ADJUSTED LENGTH OF TRENCH (LF)	MINIMUM TRENCH SPACING (LF)	NUMBER OF TRENCHES	PROVIDED TRENCH LENGTH (FT)
PRIMARY	0.6	600	1000	3	333.3	4.5	7.5	0.50	166.7	10.0'	2	84.0'
SECONDARY	0.8	600	750	3	250.0	3.5	6.5	0.50	125.0	10.0'	2	64.0'
TERTIARY	0.8	600	750	3	250.0	3.5	6.5	0.50	125.0	10.0'	3	42.0'



ON-SITE SEWAGE DISPOSAL SYSTEM PUMP DESIGN

SEWAGE DISPOSAL AREA INVERT ELEVATION	PRIMARY
DISTANCE FROM DISTRIBUTION BOX	558.0 FT
ASSUME 1% SLOPE OR STEEPER	10.0 FT
DISTRIBUTION BOX INVERT OUT	559.0 FT
DISTRIBUTION BOX INVERT IN	85.0 FT
DISTANCE TO PUMP TANK	546.5 FT
PUMP TANK INVERT OUT ELEVATION	5.0 FT
PUMP OUTLET TO INVERT OUT	
STATIC HEAD	17.5 FT
FORCE MAIN 3 IN DIAMETER SCH 40 PVC	3.068 IN
AREA	0.05134 SQ FT
NO INTERMEDIATE LOW POINTS; MIN VELOCITY =	2 FPS
FLOW RATE = 0.10268 CFS.	46 GPM
FOR CALCULATING DYNAMIC HEAD, USE	50 GPM
HEAD LOSS IN FEET/100 FT OF PIPE =	
0.2083(100/C) ^{1.852} Q ^{1.852} /D ^{4.8655} (HAZEN WILLIAMS EQN.)	
C = ROUGHNESS COEFFICIENT = 140	
Q = FLOW IN GPM = 46	
D = DIAMETER IN INCHES = 3.068	
HEAD LOSS IN FEET/100 FT OF PIPE =	0.670 FT
HEAD LOSS IN FEET FOR ACTUAL LENGTH	0.569 FT
FITTINGS LOSS: USE EQUIVALENT PIPE LENGTH	
90° ELBOW 11.1 FT EQUIVALENT	.074 FT
2\"/>	
TOTAL DYNAMIC HEAD =	18.17 FT
USE GOULD WS-05B OR EQUIVALENT 1/2 HP PUMP	
FM HOLDS 48 GALLONS OF SEWAGE. ALLOW FOR RUN BACK.	
600 GPD, PUMP RUNS 6X DAILY, 100 GALLONS PLUS RUNBACK	
USE 5 INCHES, 166 GALLONS +/-	
RUN TIME = 166 GALLONS/62 GPM = (MINUTES/RUN) 2 MIN. 40 SEC.	

GENERAL NOTES:

- THE SUBJECT PROPERTY IS ZONED RC-DEO PER THE OCTOBER 6, 2013 COMPREHENSIVE ZONING PLAN.
- PARCEL BACKGROUND:**
TAX MAP : 8
PARCEL : 237
DEED REFERENCE: L 17425, F 88
ELECTION DISTRICT FOURTH
ZONING : RC-DEO
AREA : 3.20 AC±
DPZ FILES: EOP-15-059, F-16-088
- 2' TOPOGRAPHY FOR THE DEVELOPED AREAS IS BASED ON FIELD RUN SURVEY PERFORMED BY MILDENBERG, BOENDER & ASSOC., INC. ON OR ABOUT DECEMBER 2014.
- PRIVATE WELL AND SEPTIC WILL BE UTILIZED.
- THIS AREA DESIGNATES A PRIVATE SEWERAGE EASEMENT OF AT LEAST 10,000 SQ. FT. AS REQUIRED BY THE MARYLAND STATE DEPARTMENT OF ENVIRONMENT FOR INDIVIDUAL SEWERAGE DISPOSAL IMPROVEMENTS OF ANY NATURE IN THIS AREA ARE RESTRICTED UNTIL PUBLIC SEWERAGE IS AVAILABLE. THIS EASEMENT 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 SEWERAGE EASEMENT. RECORDATION OF A MODIFIED EASEMENT SHALL NOT BE NECESSARY.
- ANY CHANGES TO THE LOCATION OR DEPTHS TO ANY COMPONENTS MUST BE APPROVED BY THE ENGINEER AND THE HOWARD COUNTY HEALTH DEPARTMENT PRIOR TO INSTALLATION. A REVISED PLAN MAY BE REQUIRED.
- THE MAXIMUM EARTH COVER OVER THE SEPTIC AND PUMP TANKS IS THREE (3) FEET. GREATER EARTH COVER WILL REQUIRE A HEAVY LOAD BEARING TANK.
- THE MAXIMUM EARTH COVER OVER A HEAVY LOAD BEARING TANK IS FIVE (5) FEET. GREATER EARTH COVER IS NOT ALLOWED.
- ANY WELLS OR SEPTIC SYSTEMS LOCATED WITHIN 100' OF THE PROPERTY BOUNDARIES AND 200' DOWN GRADIENT OF ANY WELL AND/OR SEPTIC SYSTEMS HAVE BEEN SHOWN.
- ALL TRENCHES ARE FED BY GRAVITY FROM THE DISTRIBUTION BOX.

WELL CERTIFICATION

THE EXISTING WELL, TAG # HO-15-0365 HAS BEEN FIELD LOCATED AND IS ACCURATELY SHOWN.

ON-SITE SEWAGE DISPOSAL SYSTEM:

RESIDENTIAL SYSTEM DESIGN:
4 BEDROOM HOUSE (LIVING AREA=3,580 SQ.FT.)
INCLUDES BSMT 1248 SF X 50K + 12ND FLR 2956 SF
150 GALLONS X # OF BEDROOMS = VOLUME OF WASTEWATER /DAY
150 X 4 = 600 GPD

PRIMARY SYSTEM:
PERC RATE = 16-30 MINUTES/INCH
APPLICATION RATE = 0.6 GPD/SQ.FT.
DESIGN FLOW + APPLICATION RATE = SQ.FT. OF TRENCH REQUIRED
600 + 0.6 = 1000 SQ.FT.
SQ.FT. REQUIRED + WIDTH OF TRENCH = LENGTH OF TRENCH
1000 + 3.0' = 333.3 FT
USE 36\"/>

SECONDARY SYSTEM:
PERC RATE = 8-15 MINUTES/INCH
APPLICATION RATE = 0.8 GPD/SQ.FT.
DESIGN FLOW + APPLICATION RATE = SQ.FT. OF TRENCH REQUIRED
600 + 0.8 = 750 SQ.FT.
SQ.FT. REQUIRED + WIDTH OF TRENCH = LENGTH OF TRENCH
750 + 3.0' = 250.0 FT
USE 36\"/>

TERTIARY SYSTEM:
PERC RATE = 6-15 MINUTES/INCH
APPLICATION RATE = 0.8 GPD/SQ.FT.
DESIGN FLOW + APPLICATION RATE = SQ.FT. OF TRENCH REQUIRED
600 + 0.8 = 750 SQ.FT.
SQ.FT. REQUIRED + WIDTH OF TRENCH = LENGTH OF TRENCH
750 + 3.0' = 250.0 FT
USE 36\"/>

project	18-010	date	MAR 2020
illustration	MKG	engineering	MKG
scale	MKG	approval	MKG
revisions	AS SHOWN	date	MAR 2020

no.	description

PERCIVAL PROPERTY
LOT 2
TAX MAP 08, GRID 05, PARCEL 237
HOWARD COUNTY, MARYLAND
FOURTH ELECTION DISTRICT
ON-SITE SEWAGE DISPOSAL SYSTEM

MILDENBERG, BOENDER & ASSOC., INC.
Engineers Planners Surveyors
7850-B Onaca Drive, Columbia, MD 21044
(410) 997-0286 Tel. (410) 997-0286 Fax

M:\2018\18-010 AMBREEN WOODS (FM)\DWG\18-010-4-2\Plan-view of septic-tank.dwg

APPROVED FOR PRIVATE WATER AND PRIVATE SEWERAGE SYSTEMS
COUNTY HEALTH OFFICER
HOWARD COUNTY HEALTH DEPARTMENT
DATE: 5/18/2020
MICHAEL C. KRETSCH, P.E.

OWNER/DEVELOPER
BURKARD HOWES
1511 RITCHIE HIGHWAY #305
ARNOLD, MD 21045
240-375-1052

Approved Septic System Plan
Howard County Health Department
Date: 5/18/2020

1. THIS IS NOT A BOUNDARY SURVEY.
2. THIS DRAWING WAS PREPARED WITHOUT THE BENEFIT OF A TITLE REPORT
3. BEARINGS SHOWN HEREON ARE BASED ON NAD83 DATUM.
4. DIMENSION SHOWN FROM THE BUILDINGS TO THE PROPERTY LINE ARE AT AN ACCURACY OF 1.0' (PLUS OR MINUS)
5. THE INFORMATION SHOWN HAS BEEN ESTABLISHED BY CURRENT ACCEPTABLE SURVEY PROCEDURES AND FROM AVAILABLE RECORD INFORMATION. THIS DRAWING IS TO BE USED FOR TITLE TRANSFER FINANCING, OR REFINANCING ONLY AND IS NOT TO BE USED FOR THE ESTABLISHMENT OF PROPERTY LINES, LOCATION OF FENCES, GARAGES, BUILDINGS, OR OTHER EXISTING OR FUTURE IMPROVEMENTS.
6. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED BY ME OR UNDER MY RESPONSIBLE CHARGE, AND THAT I AM A DULY LICENSED PROFESSIONAL LAND SURVEYOR UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 21351, EXPIRATION DATE: 07/15/21.

T.M.H.

10 / 5 / 2020

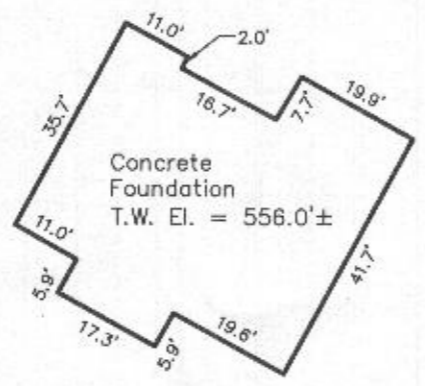
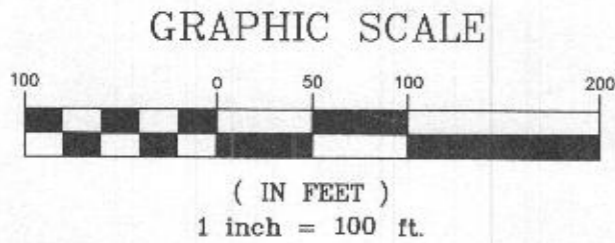
TODD M. HILL
 PROF. LAND SURVEYOR MARYLAND No. 21351

DATE



DETAIL
 Scale: 1" = 30'

Well Check OK



Parcel 212
 Maples
 L.8681 F.30
 Zoned: RC-DEO

Parcel 236
 O'Neill
 L.3678 F.39
 Zoned: RC-DEO

Lot 3
 Percival
 Property
 Plat 24431
 Zoned: RC-DEO

Lot 1
 Percival
 Property
 Plat 24431
 Zoned: RC-DEO

Lot 2
 Percival
 Property
 Plat 24431
 3.20 Ac.±
 Zoned: RC-DEO

Bulk Parcel
 'A'
 Percival
 Property
 Plat 24431
 Zoned:
 RC-DEO

Parcel 180
 Biersdorf
 L.1071 F.433
 Zoned: RC-DEO

Private Use-In-Common Access,
 SWM and Utility Easement for the
 use and benefit of Lots 1, 2, and 3
 and Future Subdivision of Adjoining
 Ambreen Woods (F-17-036)

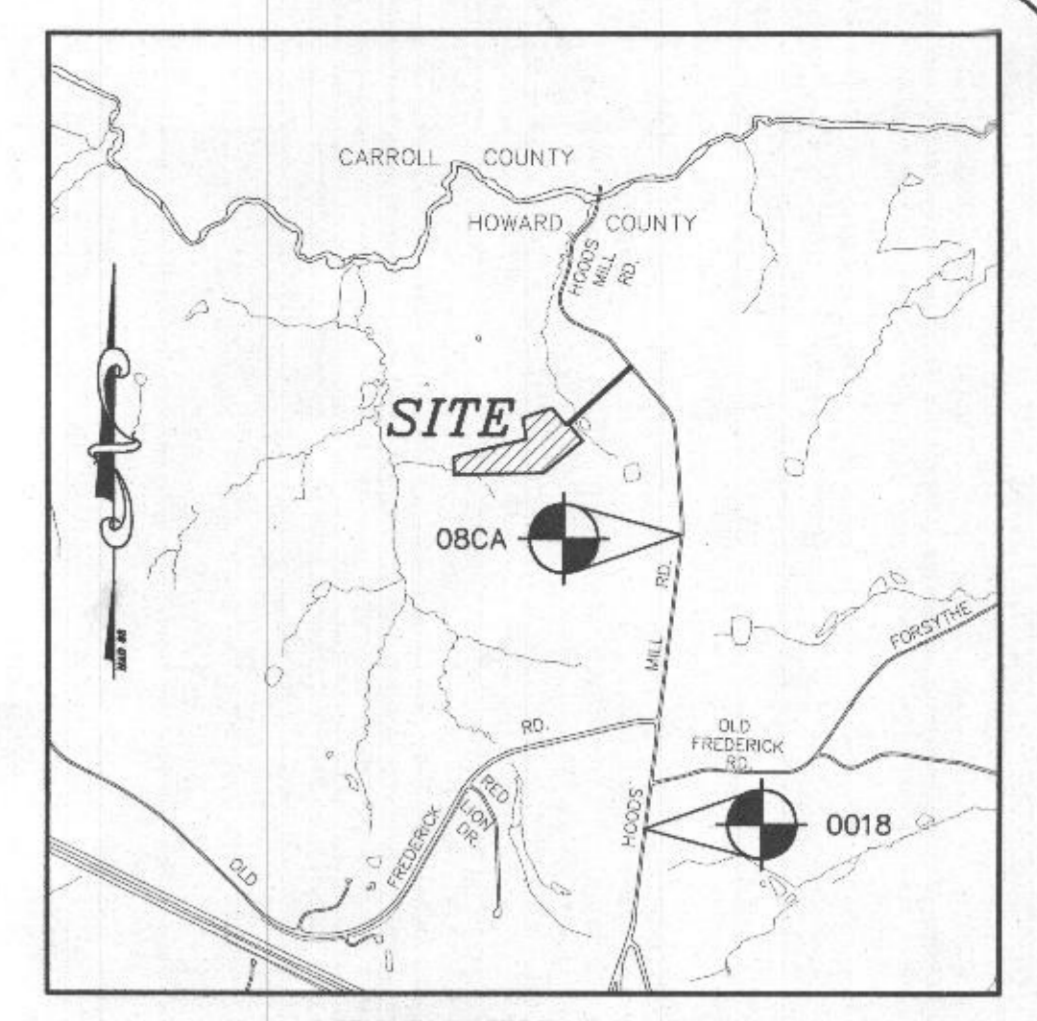
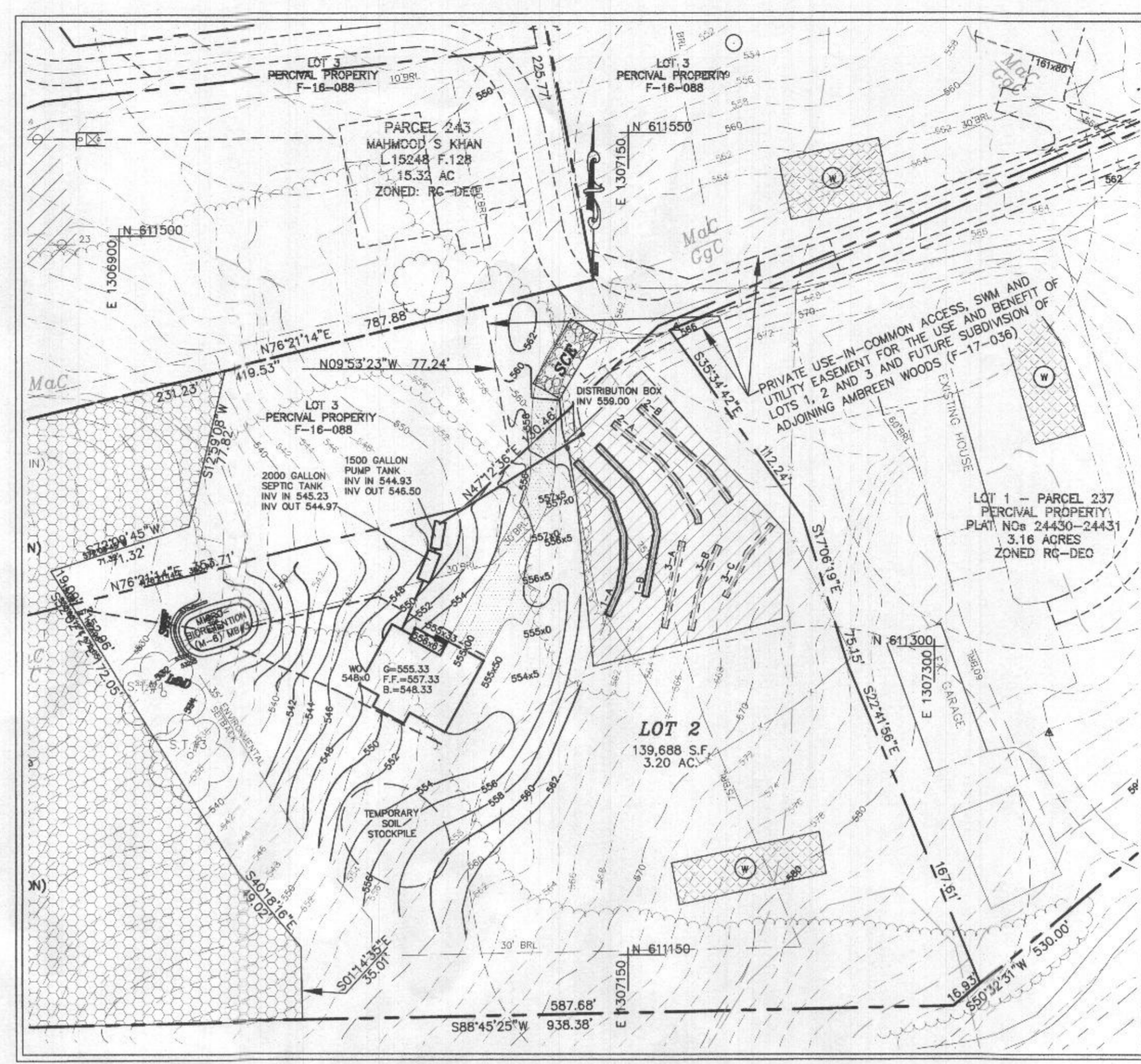
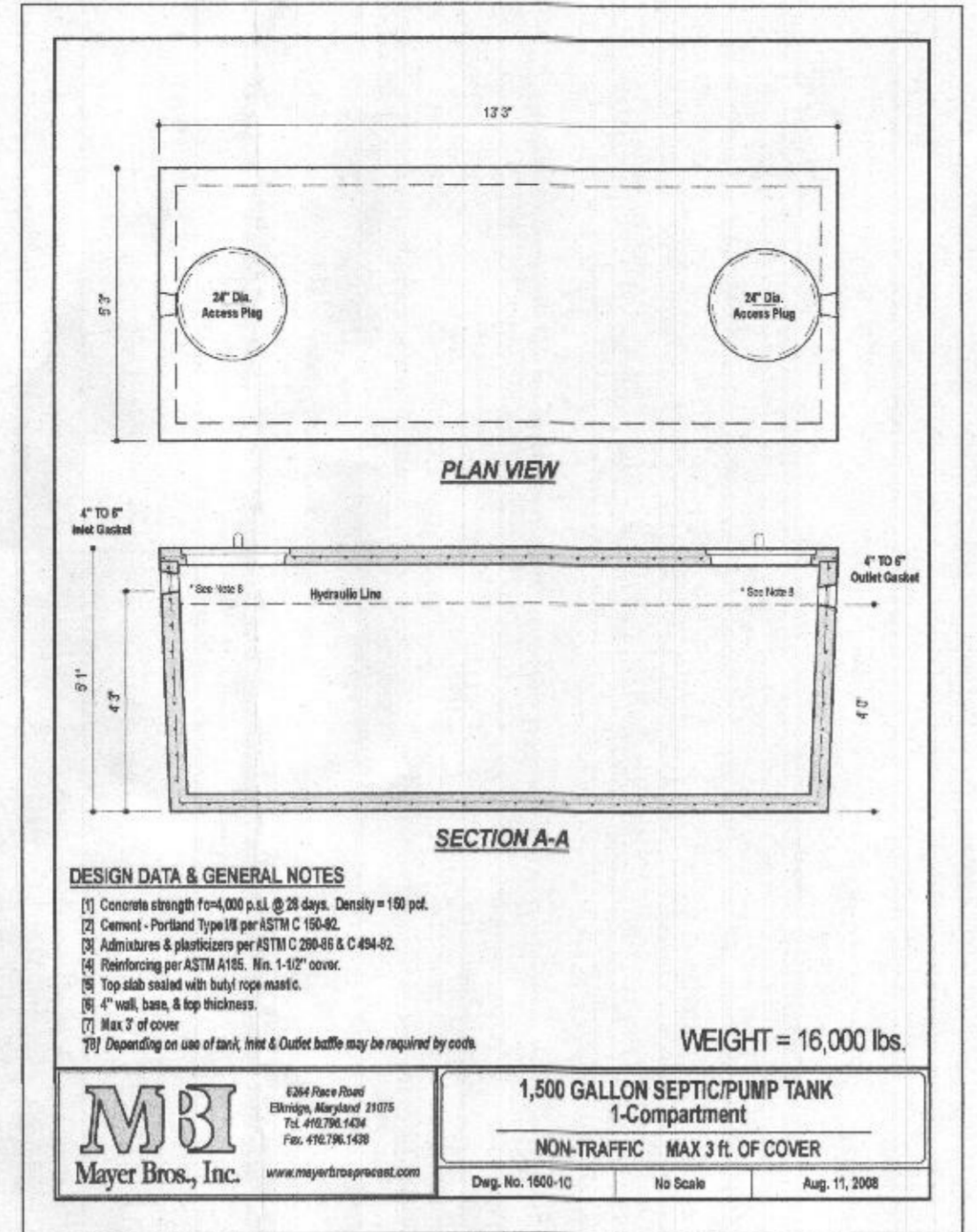
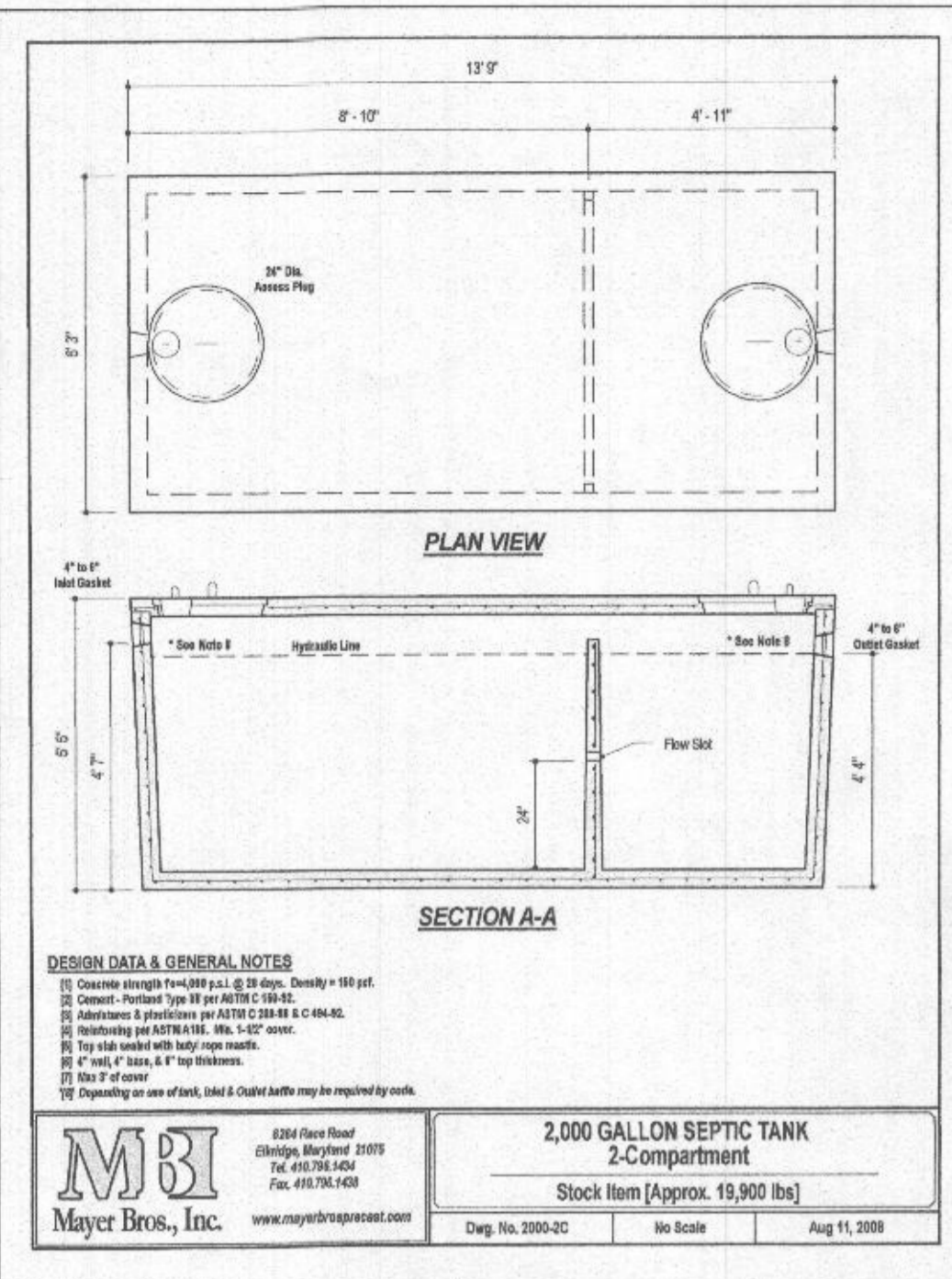
ADDRESS: 14529 Ambreen Way
 DEED REF.: 18241 / 317
 TOP OF WALL ELEV. = 556.0' ±
 FIRST FLOOR ELEV. =
 (DRAWING SIZE = 11" x 17")

LOT 2
PERCIVAL PROPERTY
 PLAT No. 24431
 FOURTH ELECTION DISTRICT
 HOWARD COUNTY, MARYLAND

MILDENBERG
BOENDER, & ASSOC., INC.

Engineers Planners Surveyors
 7350-B Grace Drive, Columbia, MD 21044 (410) 997-0298 TEL. (410) 997-0298 FAX.

FOUNDATION	DATE: 10/05/2020	FINAL LOCATION	DATE:
DRAWN BY: TMH	CHECKED BY: TMH	SCALE: 1" = 100'	
PROJECT NO.: 18-010	LOCATION DRAWING		

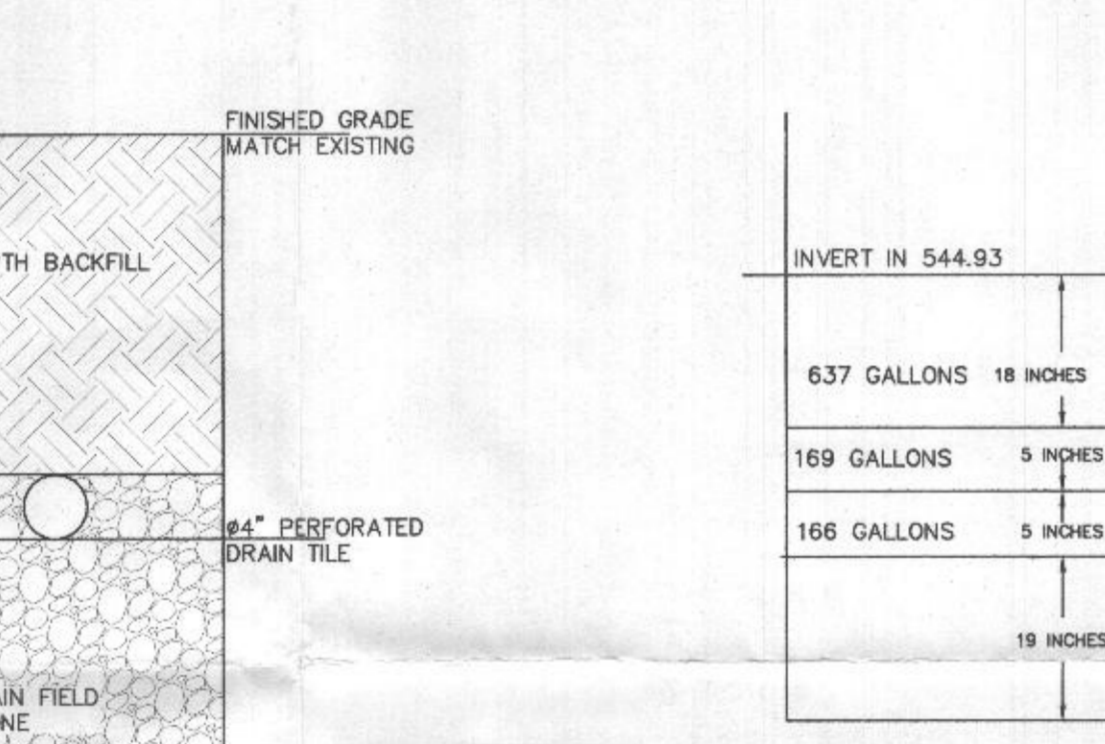


- GENERAL NOTES:**
- THE SUBJECT PROPERTY IS ZONED RC-DEO PER THE OCTOBER 6, 2013 COMPREHENSIVE ZONING PLAN.
 - PARCEL BACKGROUND:**
TAX MAP : 8
PARCEL : 237 LOT: 2
DEED REFERENCE : L 17425, F 88
ELECTION DISTRICT : FOURTH
ZONING : RC-DEO
AREA : 3.20 AC±
DPZ FILES: ECP-15-059, F-16-088
 - 2' TOPOGRAPHY FOR THE DEVELOPED AREAS IS BASED ON FIELD RUN SURVEY PERFORMED BY MILDENBERG, BOENDER & ASSOC., INC. ON OR ABOUT DECEMBER 2014.
 - PRIVATE WELL AND SEPTIC WILL BE UTILIZED.
 - THIS AREA DESIGNATES A PRIVATE SEWERAGE EASEMENT OF AT LEAST 10,000 SQ. FT. AS REQUIRED BY THE MARYLAND STATE DEPARTMENT OF ENVIRONMENT FOR INDIVIDUAL SEWERAGE DISPOSAL IMPROVEMENTS OF ANY NATURE IN THIS AREA ARE RESTRICTED UNTIL PUBLIC SEWERAGE IS AVAILABLE. THIS EASEMENT 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 SEWERAGE EASEMENT. RECORDED OF A MODIFIED EASEMENT SHALL NOT BE NECESSARY.
 - ANY CHANGES TO THE LOCATION OR DEPTHS TO ANY COMPONENTS MUST BE APPROVED BY THE ENGINEER AND THE HOWARD COUNTY HEALTH DEPARTMENT PRIOR TO INSTALLATION. A REVISED PLAN MAY BE REQUIRED.
 - THE MAXIMUM EARTH COVER OVER THE SEPTIC AND PUMP TANKS IS THREE (3) FEET. GREATER EARTH COVER WILL REQUIRE A HEAVY LOAD BEARING TANK.
 - THE MAXIMUM EARTH COVER OVER A HEAVY LOAD BEARING TANK IS FIVE (5) FEET. GREATER EARTH COVER IS NOT ALLOWED.
 - ANY WELLS OR SEPTIC SYSTEMS LOCATED WITHIN 100' OF THE PROPERTY BOUNDARIES AND 200' DOWN GRADIENT OF ANY WELL AND/OR SEPTIC SYSTEMS HAVE BEEN SHOWN.
 - ALL TRENCHES ARE FED BY GRAVITY FROM THE DISTRIBUTION BOX.

**SEPTIC TANK
SEWER SYSTEM ELEVATIONS**

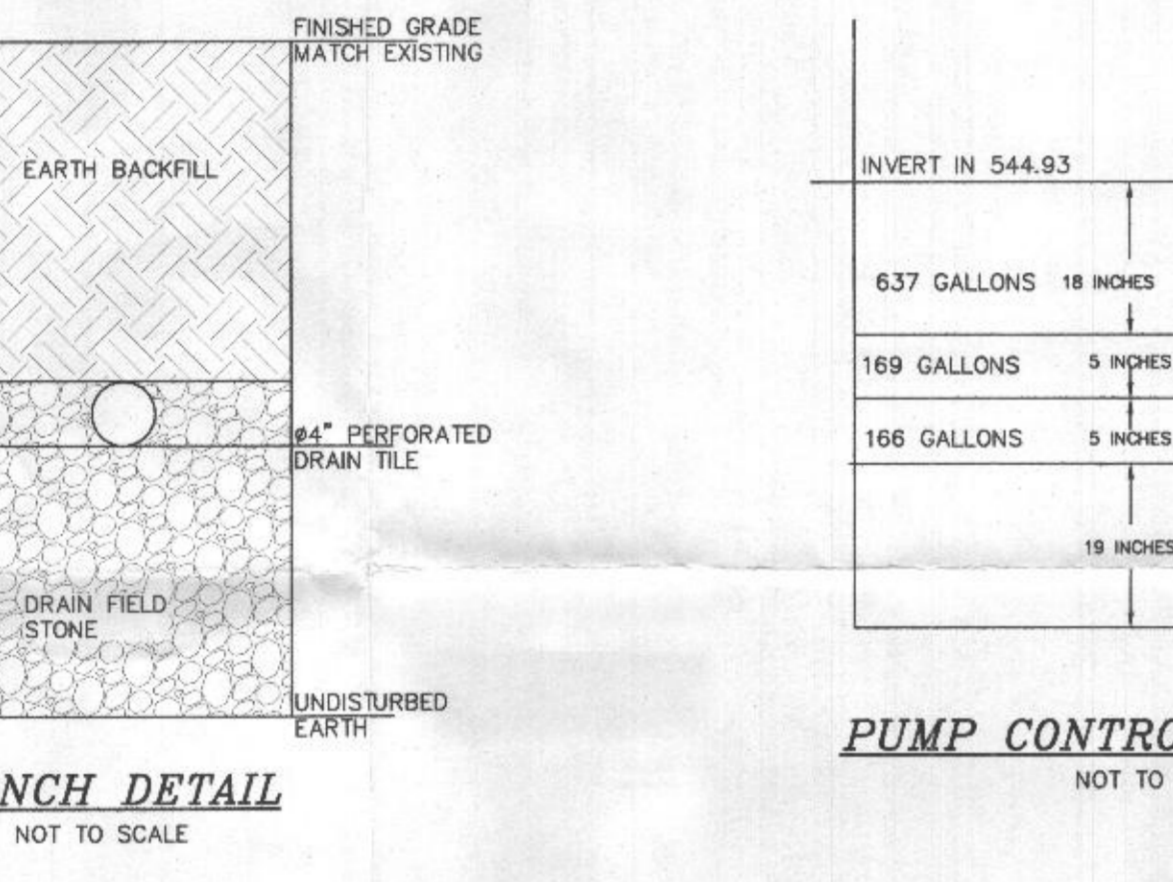
DESCRIPTION	ELEVATION
BASEMENT ELEVATION	548.33
INVERT OUT OF THE HOUSE	545.83
INVERT INTO SEPTIC TANK	545.23
INVERT OUT OF SEPTIC TANK	544.97
FINISHED GRADE AT SEPTIC TANK	549.43
TOP OF THE SEPTIC TANK	546.43
INVERT INTO PUMP TANK	544.93
INVERT OUT OF PUMP TANK	546.50
FINISHED GRADE AT PUMP TANK	551.00
TOP OF THE PUMP TANK	546.17
INVERT INTO DISTRIBUTION BOX	559.00

PUMP TANK



SEPTIC TRENCH ELEVATIONS

TRENCH	EX. GROUND ELEVATION	INVERT ELEVATION	BOTTOM OF TRENCH EL.
PRIMARY A	560.0	556.0	552.5
PRIMARY B	562.0	558.0	554.5
SECONDARY A	565.0	561.5	558.5
SECONDARY B	568.0	564.5	561.5
TERTIARY A	564.0	560.5	557.5
TERTIARY B	566.0	562.5	559.5
TERTIARY C	568.0	564.5	561.5

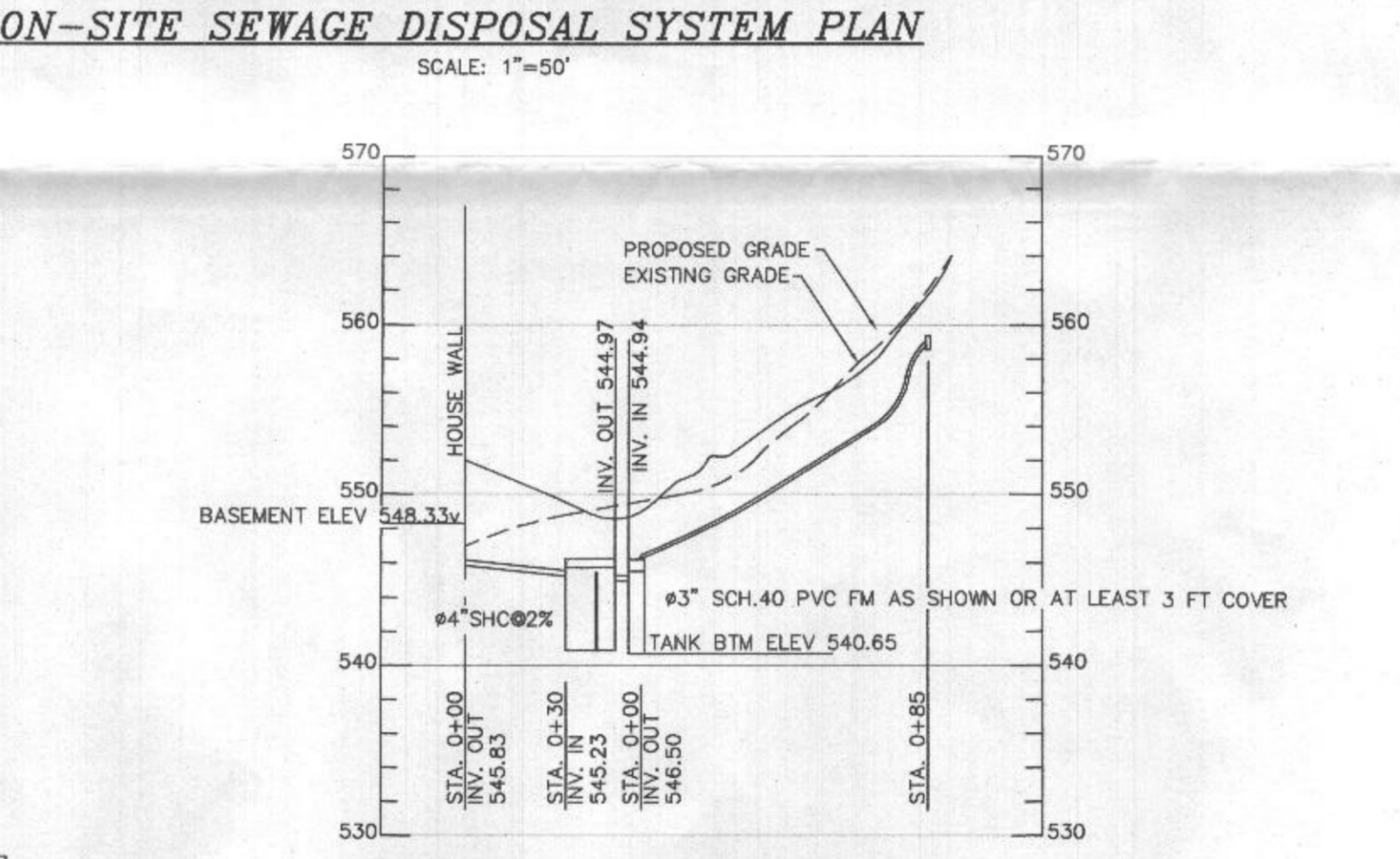
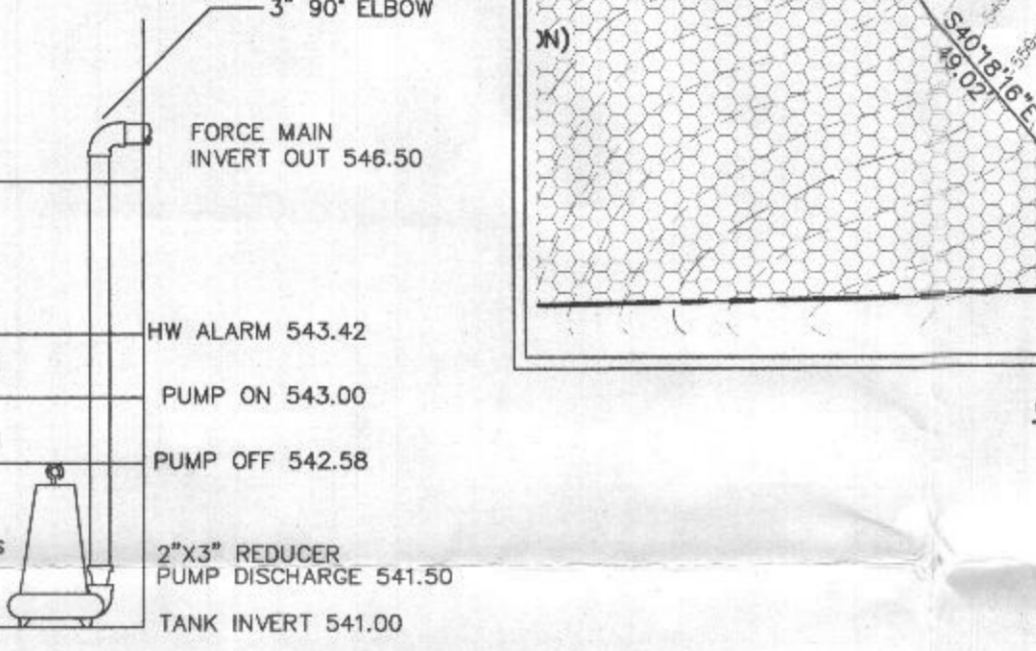


SOILS TABLE (WITHIN LOD)

SYMBOL	RATING	NAME	K FACTOR	MAP #
GgC	(B)	GLENELG LOAM, 8-15% SLOPES.	.24	3
GmC	(C)	GLENVILLE SILT LOAM, 8-15% SLOPES	.43	3
MaC	(B)	MANOR LOAM, 8-15% SLOPES	.28	3

SEPTIC TRENCH SIZING

SYSTEM	APPLICATION RATE (GPD / SF)	MAXIMUM FLOW RATE (GPD)	AREA OF REQUIRED TRENCH (SF)	TRENCH WIDTH (FT)	LENGTH OF REQUIRED TRENCH (LF)	EFFECTIVE DEPTH BEGINS (FT)	TRENCH BOTTOM DEPTH (FT)	TRENCH REDUCTION FACTOR**	ADJUSTED LENGTH OF REQUIRED TRENCH (LF)	MINIMUM TRENCH SPACING (FT)	NUMBER OF TRENCHES	PROVIDED TRENCH LENGTH (FT)
PRIMARY	0.6	600	1000	3	333.3	4.5	7.5	0.50	166.7	10.0'	2	84.0'
SECONDARY	0.8	600	750	3	250.0	3.5	6.5	0.50	125.0	10.0'	2	64.0'
TERTIARY	0.8	600	750	3	250.0	3.5	6.5	0.50	125.0	10.0'	3	42.0'



WELL CERTIFICATION

THE EXISTING WELL, TAG # HO-15-0365 HAS BEEN FIELD LOCATED AND IS ACCURATELY SHOWN.

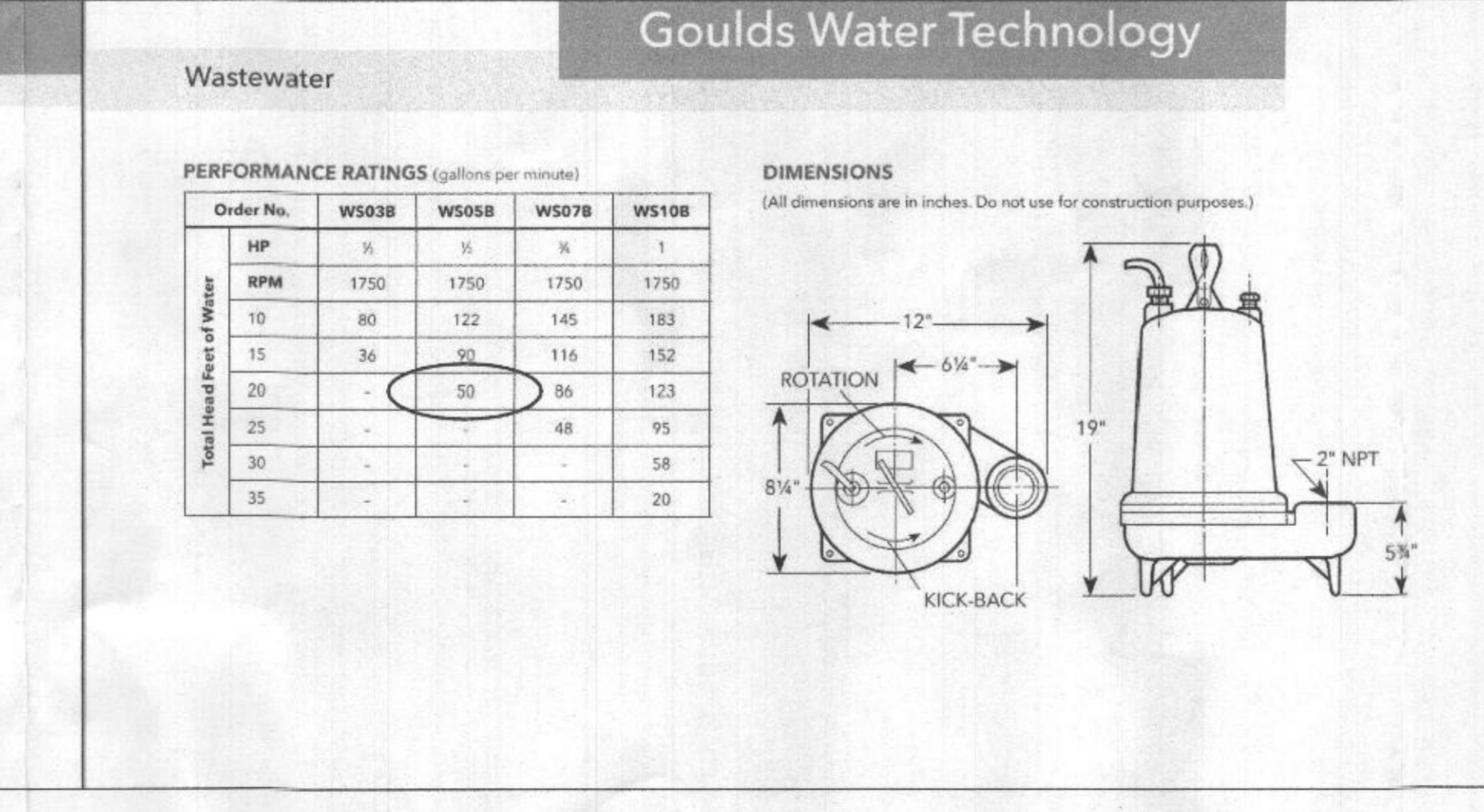
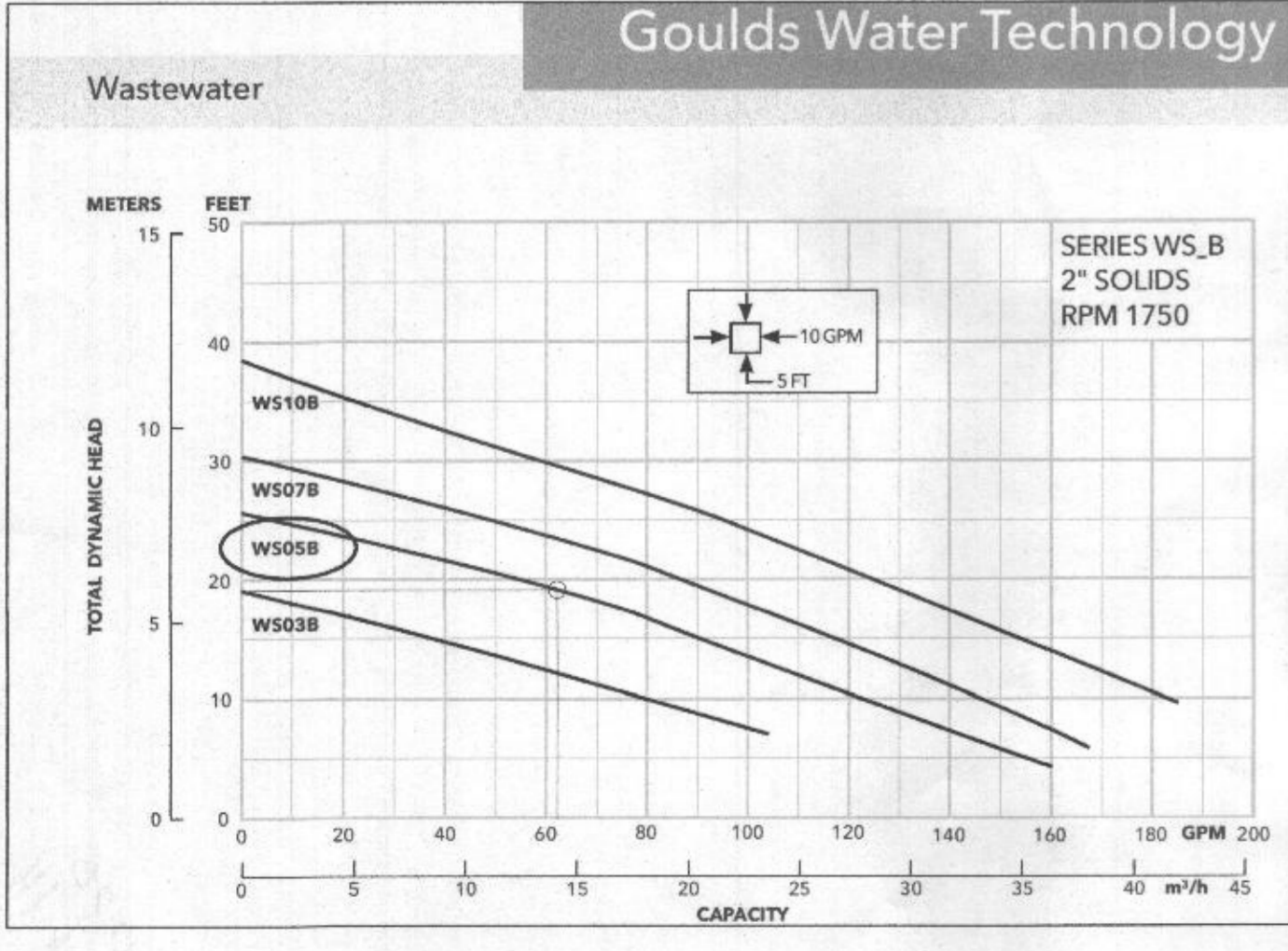
ON-SITE SEWAGE DISPOSAL SYSTEM:

RESIDENTIAL SYSTEM DESIGN:
4 BEDROOM HOUSE (LIVING AREA=3,580 SQ.FT.)
INCLUDES BSMT 1248 SF X 504' X 18' AND 2ND FLR 2956 SF
150 GALLONS X # OF BEDROOMS = VOLUME OF WASTEWATER /DAY
150 X 4 = 600 GPD

PRIMARY SYSTEM:
PERC RATE = 16-30 MINUTES/INCH
APPLICATION RATE = 0.8 GPD/SQ.FT.
DESIGN FLOW + APPLICATION RATE = SQ.FT. OF TRENCH REQUIRED
600 ÷ 0.6 = 1000 SQ.FT.
SQ.FT. REQUIRED ÷ WIDTH OF TRENCH = LENGTH OF TRENCH
1000 ÷ 3.0' = 333.3 FT
USE 36" OF GRAVEL BELOW DRAIN PIPE
333.3 X 0.5 = 166.67
USE TWO (2) REQUIRED LENGTH OF TRENCHES (83.3'), PROVIDE (84")
A MINIMUM OF 10' BETWEEN TRENCHES UTILIZING SIDEWALL
REDUCTION CREDIT.
MINIMUM TANK CAPACITY = 2000 GALLONS
USE MAYER BROS. PRODUCT OR EQUIVALENT.

SECONDARY SYSTEM:
PERC RATE = 8-15 MINUTES/INCH
APPLICATION RATE = 0.8 GPD/SQ.FT.
DESIGN FLOW + APPLICATION RATE = SQ.FT. OF TRENCH REQUIRED
600 ÷ 0.8 = 750 SQ.FT.
SQ.FT. REQUIRED ÷ WIDTH OF TRENCH = LENGTH OF TRENCH
750 ÷ 3.0' = 250.0 FT
USE 36" OF GRAVEL BELOW DRAIN PIPE
250.0 X 0.50 = 125.0 USE TWO (2) TRENCHES (63"),
A MINIMUM OF 10' BETWEEN TRENCHES UTILIZING SIDEWALL
REDUCTION CREDIT.

TERTIARY SYSTEM:
PERC RATE = 6-15 MINUTES/INCH
APPLICATION RATE = 0.8 GPD/SQ.FT.
DESIGN FLOW + APPLICATION RATE = SQ.FT. OF TRENCH REQUIRED
600 ÷ 0.8 = 750 SQ.FT.
SQ.FT. REQUIRED ÷ WIDTH OF TRENCH = LENGTH OF TRENCH
750 ÷ 3.0' = 250.0 FT
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250.0 X 0.50 = 125.0 USE THREE (3) TRENCHES (42"),
A MINIMUM OF 10' BETWEEN TRENCHES UTILIZING SIDEWALL
REDUCTION CREDIT.



APPROVED FOR PRIVATE WATER AND PRIVATE SEWERAGE SYSTEMS

COUNTY HEALTH OFFICER
HOWARD COUNTY HEALTH DEPARTMENT

DATE

HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME AND THAT I AM A DAILY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 34027, EXP DATE 01/16/2021

OWNER/DEVELOPER
BURKARD HOMES
1511 RITCHIE HIGHWAY #305
ARNOLD, MD 21045
240-375-1052

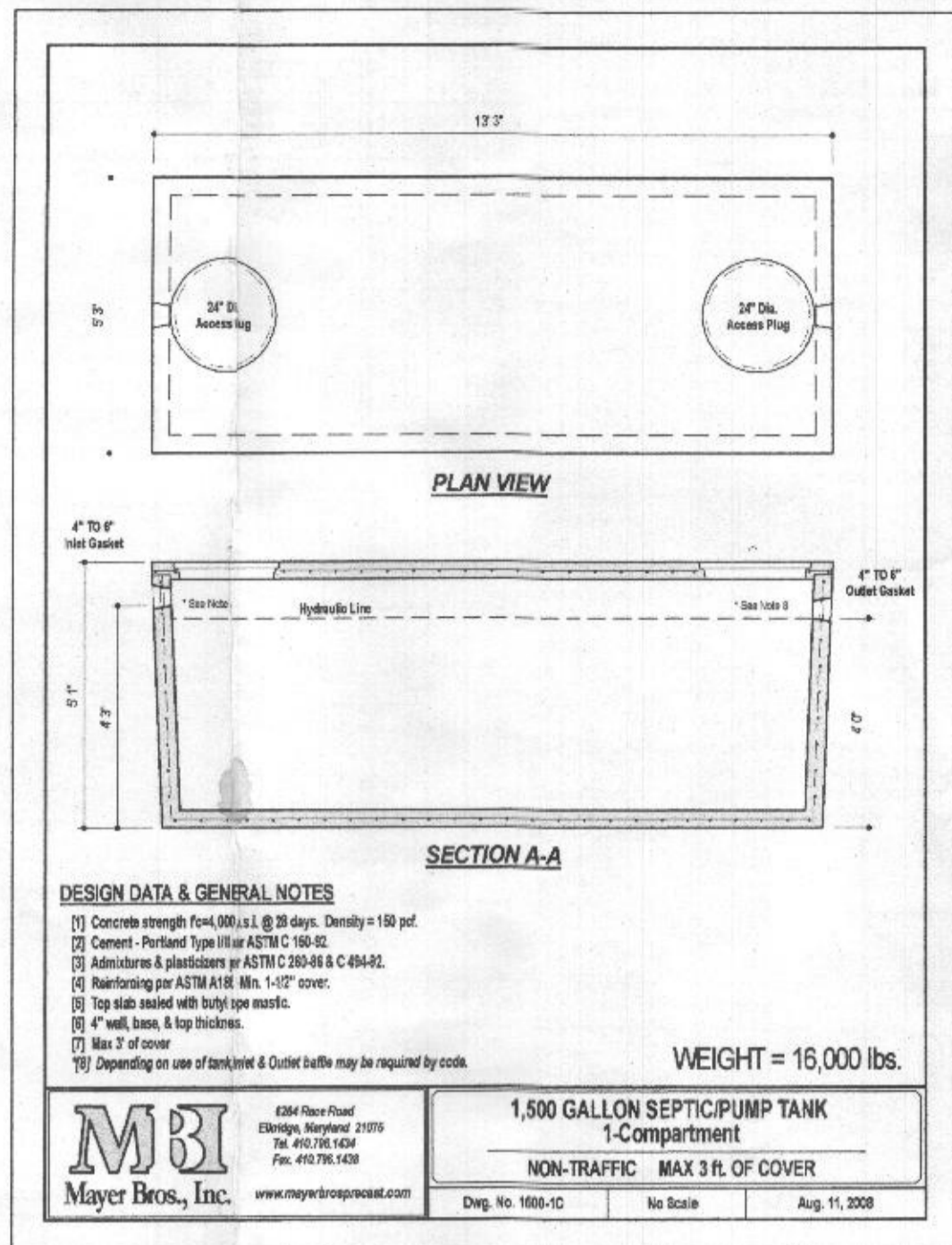
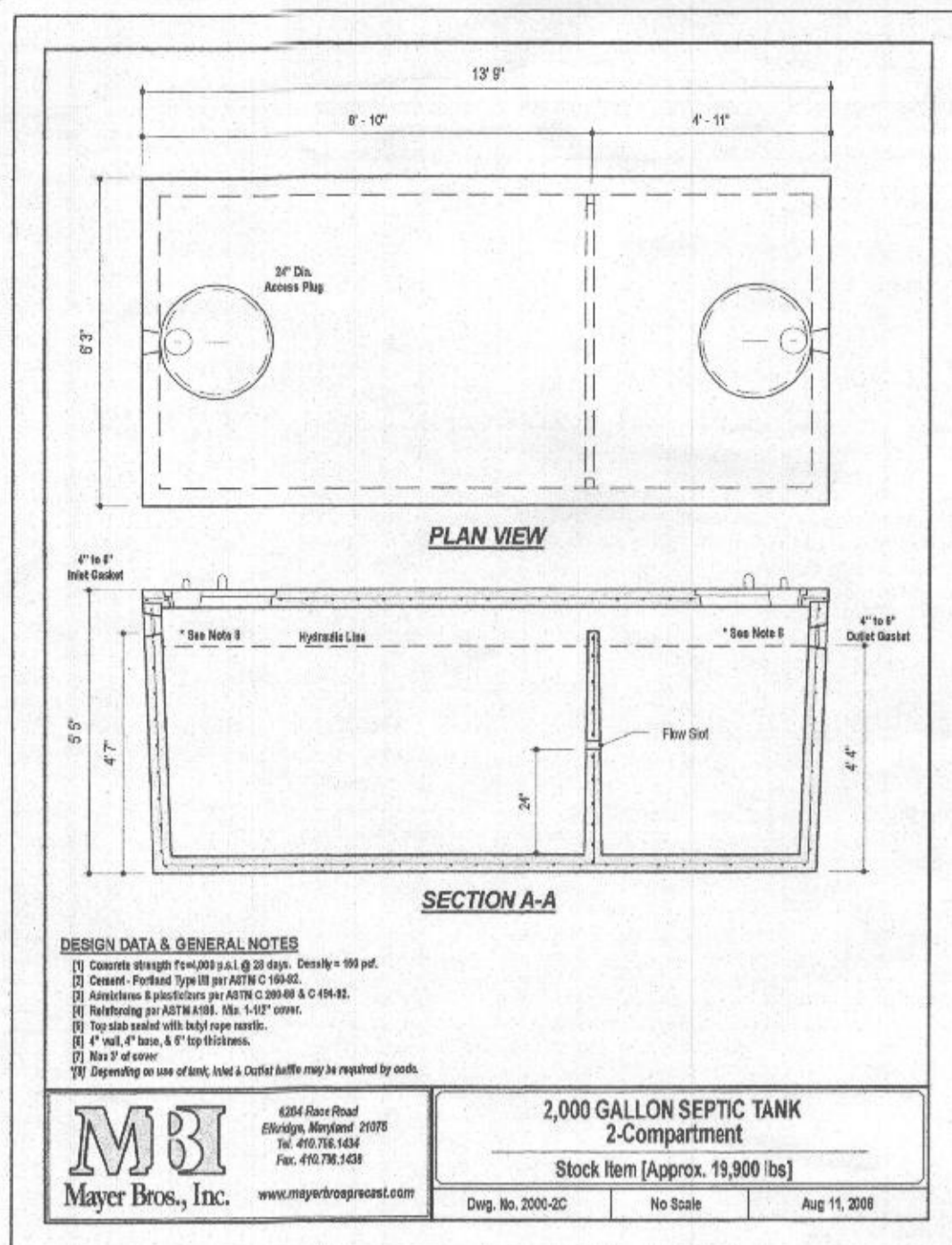
MICHAEL G. KRETSCH, P.E.
6/9/2020 DATE

Project: 18-010
date: JUN. 2020
Illustration: MKG
scale: 1" = 50 ft SAA
engineering: MKG
approval: MKG

description: ON-SITE SEWAGE DISPOSAL SYSTEM
revisions: [blank]

PERCIVAL PROPERTY LOT 2
14529 AMBREEN WAY
TAX MAP 08, GRID 05, PARCEL 237
FOURTH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

MILDENBERG, BOENDER & ASSOC., INC.
Engineers Planners Surveyors
7350-B Grace Drive, Columbia, MD 21044
(410) 997-0296 Tel. (410) 997-0296 Fax



DESIGN DATA & GENERAL NOTES

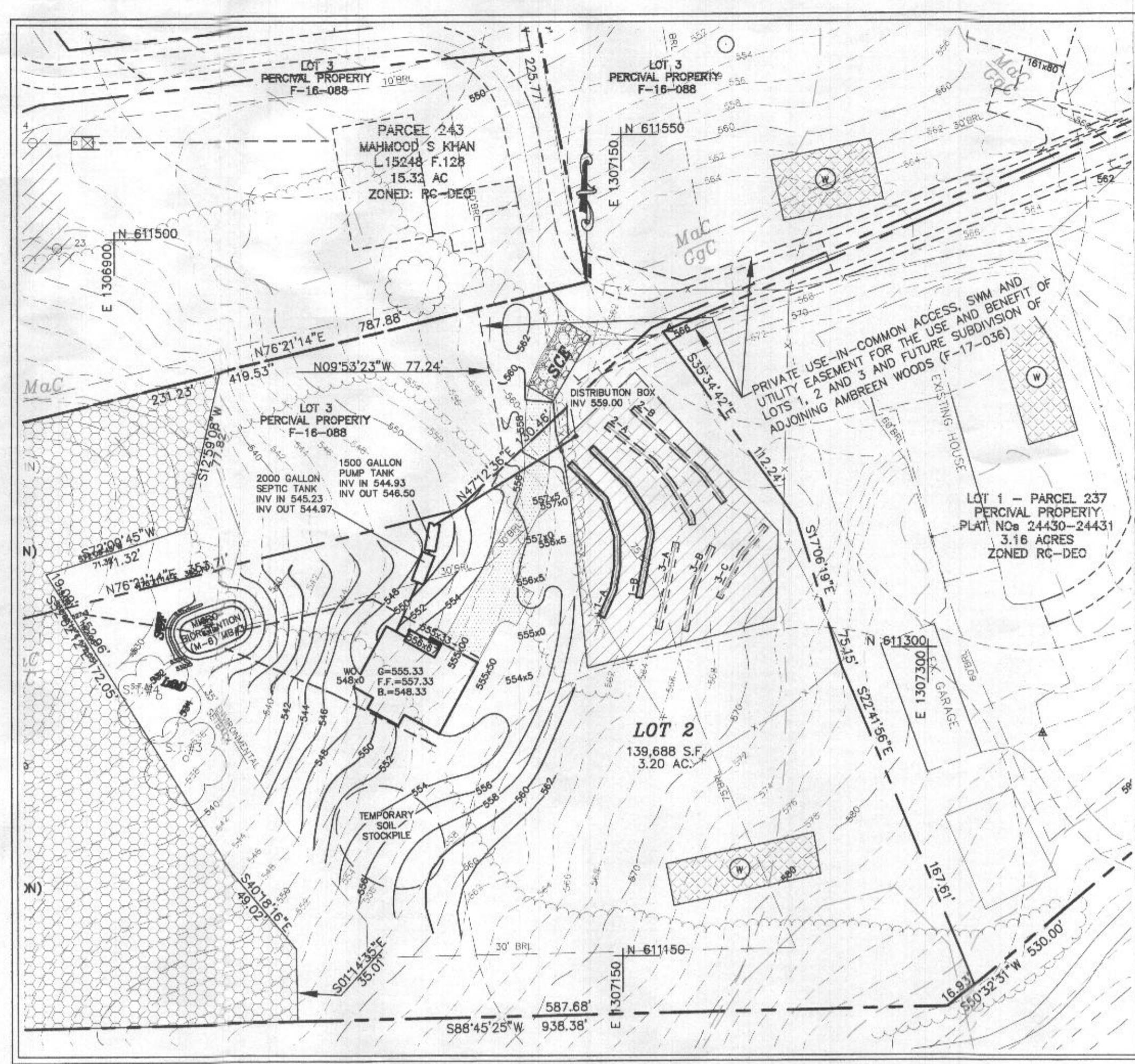
- Concrete strength 4000 psi @ 28 days. Density = 150 pcf.
- Cement - Portland Type III or ASTM C 150.
- Reinforcement & stirrups per ASTM A 618 & C 646.
- Manufacturing per ASTM A 118 Min. 1-1/2" cover.
- Top side sealed with butyl tape mastic.
- 4" wall, 1/2" top thickness.
- Max. 7' of cover.
- 8" x 8" manhole.
- 8" x 8" manhole.
- Depending on use of tank, a catch basin may be required by code.

2,000 GALLON SEPTIC TANK
2-Compartment
Stock Item (Approx. 19,900 lbs)
Mayer Bros., Inc. Dep. No. 2000-02 No Scale Aug. 11, 2008

DESIGN DATA & GENERAL NOTES

- Concrete strength 4000 psi @ 28 days. Density = 150 pcf.
- Cement - Portland Type III or ASTM C 150.
- Reinforcement & stirrups per ASTM A 618 & C 646.
- Manufacturing per ASTM A 118 Min. 1-1/2" cover.
- Top side sealed with butyl tape mastic.
- 4" wall, 1/2" top thickness.
- Max. 7' of cover.
- 8" x 8" manhole.
- 8" x 8" manhole.
- Depending on use of tank, a catch basin may be required by code.

1,500 GALLON SEPTIC/PUMP TANK
1-Compartment
NON-Traffic MAX 3 FL. OF COVER
Mayer Bros., Inc. Dep. No. 1000-02 No Scale Aug. 11, 2008



SEPTIC TANK SEWER SYSTEM ELEVATIONS

DESCRIPTION	ELEVATION
BASEMENT ELEVATION	548.33
INVERT OUT OF THE HOUSE	545.83
INVERT INTO SEPTIC TANK	545.23
INVERT OUT OF SEPTIC TANK	544.97
FINISHED GRADE AT SEPTIC TANK	549.43
TOP OF THE SEPTIC TANK	546.43
INVERT INTO PUMP TANK	544.93
INVERT OUT OF PUMP TANK	546.50
FINISHED GRADE AT PUMP TANK	551.00
TOP OF THE PUMP TANK	546.17
INVERT INTO DISTRIBUTION BOX	559.00

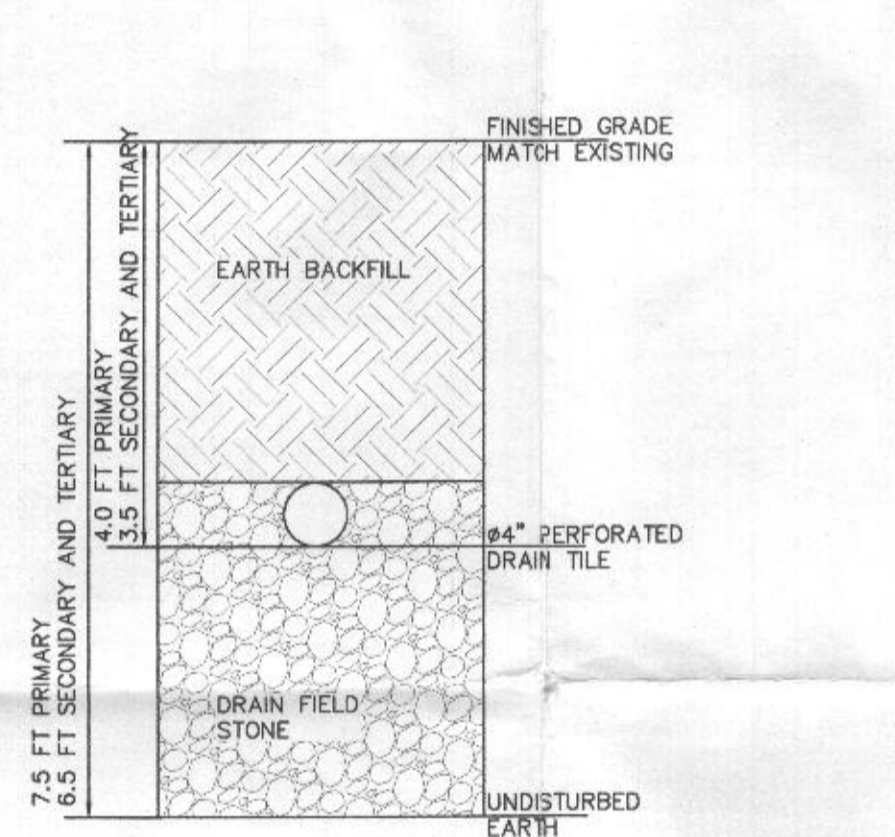
SEPTIC TRENCH ELEVATIONS

TRENCH	EX. GROUND ELEVATION	INVERT ELEVATION	BOTTOM OF TRENCH EL.
PRIMARY A	560.0	556.0	552.5
PRIMARY B	562.0	558.0	554.5
SECONDARY A	565.0	561.5	558.5
SECONDARY B	568.0	564.5	561.5
TERTIARY A	564.0	560.5	557.5
TERTIARY B	566.0	562.5	559.5
TERTIARY C	568.0	564.5	561.5

SOILS TABLE (WITHIN LOD)

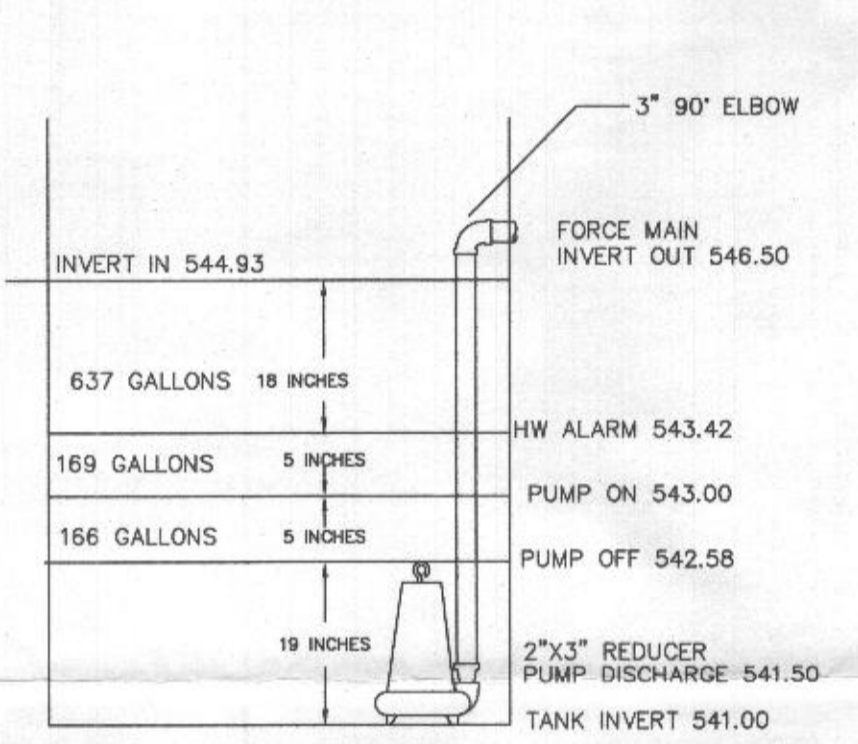
SYMBOL	RATING	NAME	K FACTOR	MAP #
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GmC	(C)	GLENVILLE SILT LOAM, 8-15% SLOPES	.43	3
McC	(B)	MANOR LOAM, 8-15% SLOPES	.28	3

PUMP TANK



TRENCH DETAIL
NOT TO SCALE

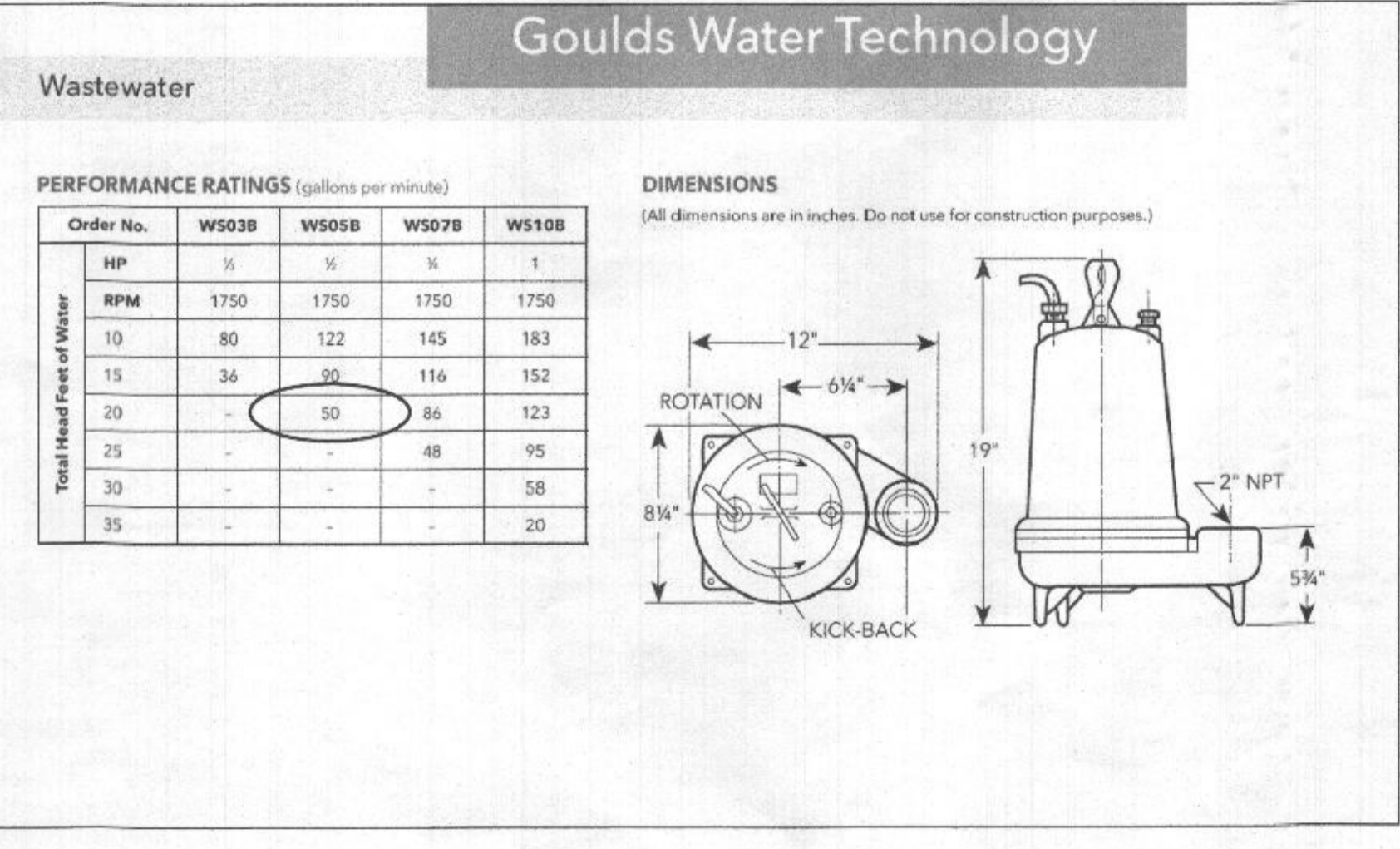
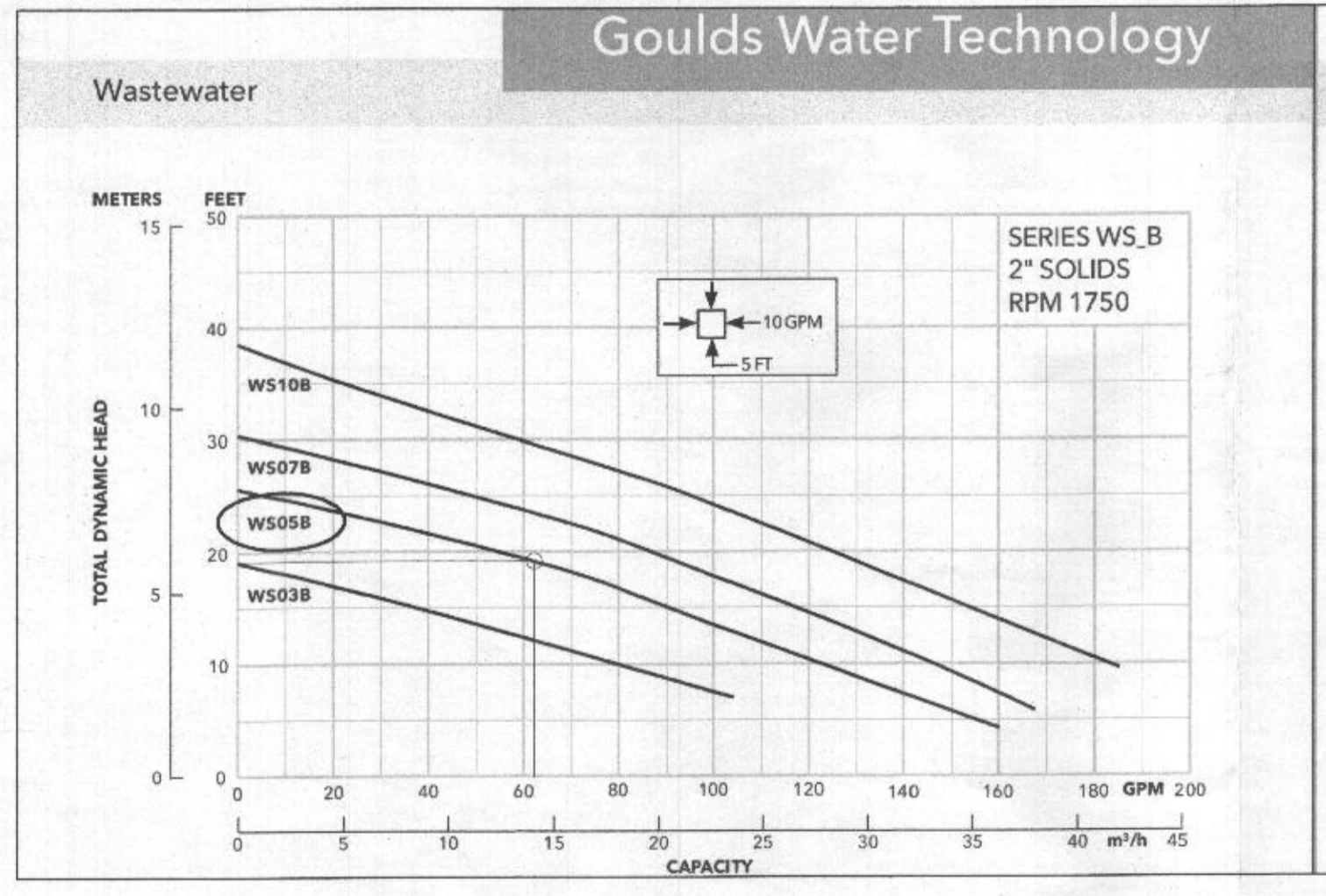
PUMP CONTROL ELEVATIONS



PUMP CONTROL ELEVATIONS
NOT TO SCALE

SEPTIC TRENCH SIZING

SYSTEM	APPLICATION RATE (GPD / SF)	MAXIMUM FLOW RATE (GPD)	AREA OF REQUIRED TRENCH (SF)	TRENCH WIDTH (FT)	LENGTH OF REQUIRED TRENCH (LF)	EFFECTIVE DEPTH (FT)	TRENCH BOTTOM DEPTH (FT)	TRENCH REDUCTION FACTOR**	ADJUSTED LENGTH OF REQUIRED TRENCH (LF)	MINIMUM TRENCH SPACING (FT)	NUMBER OF TRENCHES	PROVIDED TRENCH LENGTH (FT)
PRIMARY	0.6	600	1000	3	333.3	4.5	7.5	0.50	166.7	10.0'	2	84.0'
SECONDARY	0.8	600	750	3	250.0	3.5	6.5	0.50	125.0	10.0'	2	64.0'
TERTIARY	0.8	600	750	3	250.0	3.5	6.5	0.50	125.0	10.0'	3	42.0'

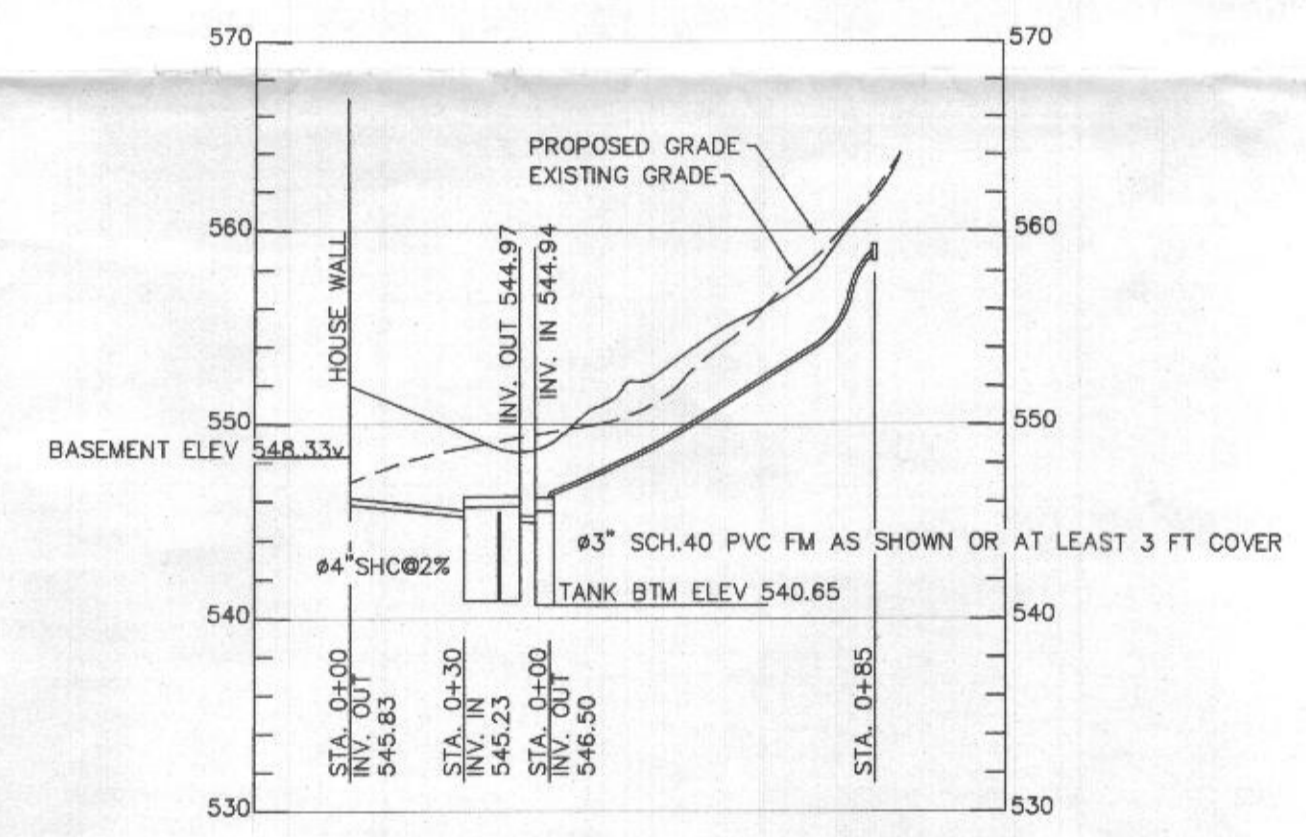


APPROVED FOR PRIVATE WATER AND PRIVATE SEWERAGE SYSTEMS
COUNTY HEALTH OFFICER
HOWARD COUNTY HEALTH DEPARTMENT

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. 34027, EXP DATE 01/16/2021
OWNER/DEVELOPER
BURKARD HOMES
1511 RITCHIE HIGHWAY #305
ARNOLD, MD 21045
240-375-1052

ON-SITE SEWAGE DISPOSAL SYSTEM PLAN

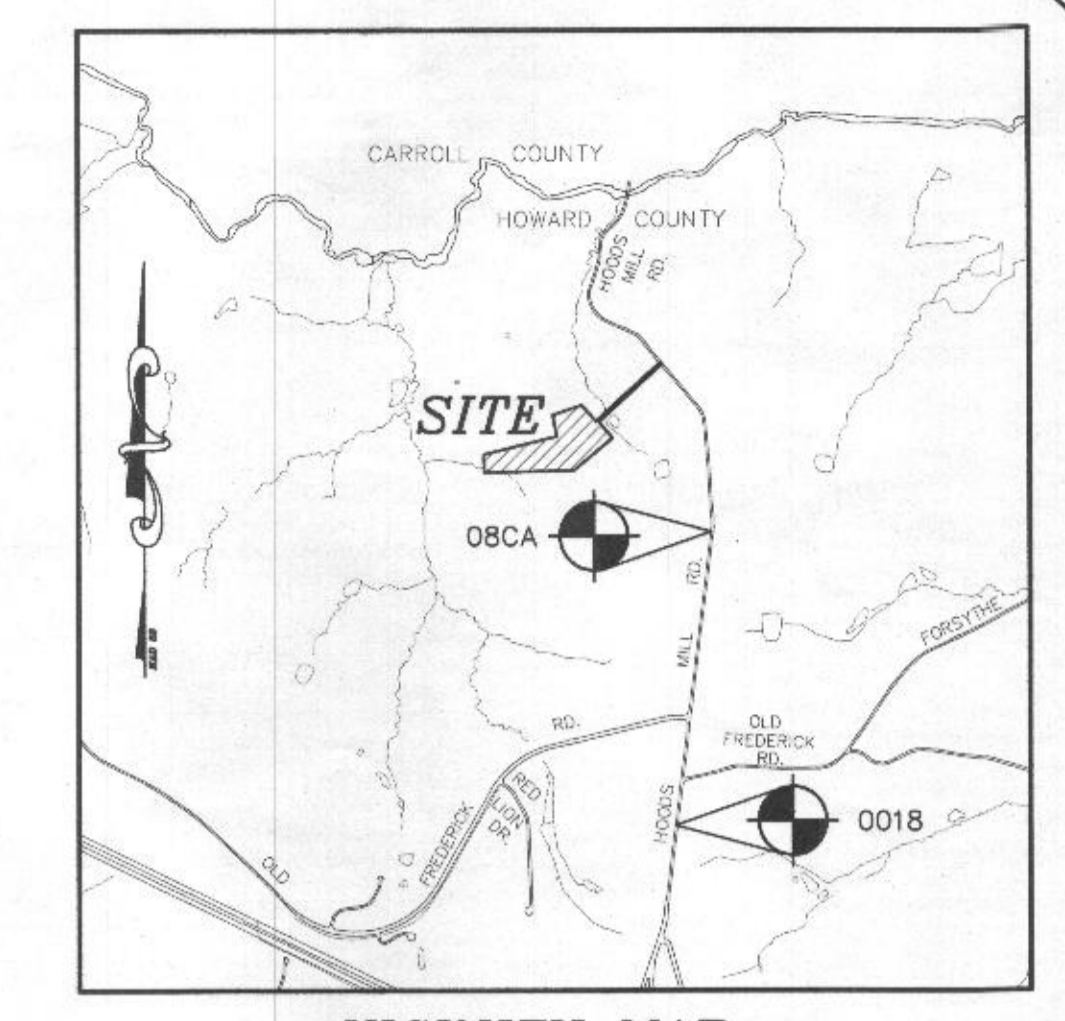
SCALE: 1"=50'



SEPTIC TANK AND F.M. PROFILE
1" = 50 FT HORIZONTAL, 1" = 10 FT VERTICAL

ON-SITE SEWAGE DISPOSAL SYSTEM PUMP DESIGN

SEWAGE DISPOSAL AREA INVERT ELEVATION	PRIMARY
DISTANCE FROM DISTRIBUTION BOX	558.0 FT
ASSUME 1% SLOPE OR STEEPER	10.0 FT
DISTRIBUTION BOX INVERT OUT	559.0 FT
DISTRIBUTION BOX INVERT IN	559.0 FT
DISTANCE TO PUMP TANK	85.0 FT
PUMP TANK INVERT OUT ELEVATION	546.5 FT
PUMP OUTLET TO INVERT OUT	5.0 FT
STATIC HEAD	17.5 FT
FORCE MAIN 3 IN DIAMETER SCH 40 PVC	3.068 IN
AREA	0.05134 SQ FT
NO INTERMEDIATE LOW POINTS; MIN VELOCITY =	2 FPS
FLOW RATE = 0.10268 CFS =	46 GPM
FOR CALCULATING DYNAMIC HEAD, USE	50 GPM
HEAD LOSS IN FEET/100 FT OF PIPE =	0.670 FT
0.2083(100/C)^1.852 * Q^1.852 / D^4.8655 (HAZEN WILLIAMS EQN.)	0.569 FT
C = ROUGHNESS COEFFICIENT = 140	
Q = FLOW IN GPM = 48	
D = DIAMETER IN INCHES = 3.068	
HEAD LOSS IN FEET/100 FT OF PIPE =	0.670 FT
HEAD LOSS IN FEET FOR ACTUAL LENGTH	0.569 FT
FITTINGS LOSS: USE EQUIVALENT PIPE LENGTH	
90° ELBOW	11.1 FT EQUIVALENT
2"x3" REDUCER	2.0 FT EQUIVALENT
TOTAL DYNAMIC HEAD =	18.17 FT
USE GOULD WS-05B OR EQUIVALENT 1/2 HP PUMP	
FM HOLDS 48 GALLONS OF SEWAGE ALLOW FOR RUN BACK	
600 GPD, PUMP RUNS 6X DAILY, 100 GALLONS PLUS RUNBACK	
USE 5 INCHES, 166 GALLONS +/-	
RUN TIME = 166 GALLONS/62 GPM = (MINUTES/RUN) 2 MIN. 40 SEC.	



VICINITY MAP
SCALE: 1"=2000'
ADC MAP: 10 GRID: B-4

GENERAL NOTES:

- THE SUBJECT PROPERTY IS ZONED RC-DEO PER THE OCTOBER 6, 2013 COMPREHENSIVE ZONING PLAN.
- PARCEL BACKGROUND:**
TAX MAP : 8
PARCEL : 237 LOT: 2
DEED REFERENCE: L 17425, F 88
ELECTION DISTRICT : FOURTH
ZONING : RC-DEO
AREA : 3.20 AC-
DPZ FILES: ECP-15-059, F-16-088
- TOPOGRAPHY FOR THE DEVELOPED AREAS IS BASED ON FIELD RUN SURVEY PERFORMED BY MILDENBERG, BOENDER & ASSOC., INC. ON OR ABOUT DECEMBER 2014.
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- ALL TRENCHES ARE FED BY GRAVITY FROM THE DISTRIBUTION BOX.

WELL CERTIFICATION

THE EXISTING WELL, TAG # HO-15-0365 HAS BEEN FIELD LOCATED AND IS ACCURATELY SHOWN.

ON-SITE SEWAGE DISPOSAL SYSTEM:

RESIDENTIAL SYSTEM DESIGN:
4 BEDROOM HOUSE (LIVING AREA=3,580 SQ.FT.)
INCLUDES BSMT 1248 SF X 30' + 1ST AND 2ND FLR 2956 SF
150 GALLONS X # OF BEDROOMS = VOLUME OF WASTEWATER /DAY
150 X 4 = 600 GPD

PRIMARY SYSTEM:
PERC RATE = 16-30 MINUTES/INCH
APPLICATION RATE = 0.6 GPD/SQ.FT.
DESIGN FLOW + APPLICATION RATE = SQ.FT. OF TRENCH REQUIRED
600 + 0.6 = 1000 SQ.FT.
SQ.FT. REQUIRED + WIDTH OF TRENCH = LENGTH OF TRENCH
1000 + 3.0' = 333.3 FT
USE 36" OF GRAVEL BELOW DRAIN PIPE
333.3 X 0.5 = 166.67
USE TWO (2) REQUIRED LENGTH OF TRENCHES (83.3'), PROVIDE (84')
A MINIMUM OF 10' BETWEEN TRENCHES UTILIZING SIDEWALL REDUCTION CREDIT.
MINIMUM TANK CAPACITY = 2000 GALLONS
USE MAYER BROS. PRODUCT OR EQUIVALENT.

SECONDARY SYSTEM:
PERC RATE = 8-15 MINUTES/INCH
APPLICATION RATE = 0.8 GPD/SQ.FT.
DESIGN FLOW + APPLICATION RATE = SQ.FT. OF TRENCH REQUIRED
600 + 0.8 = 750 SQ.FT.
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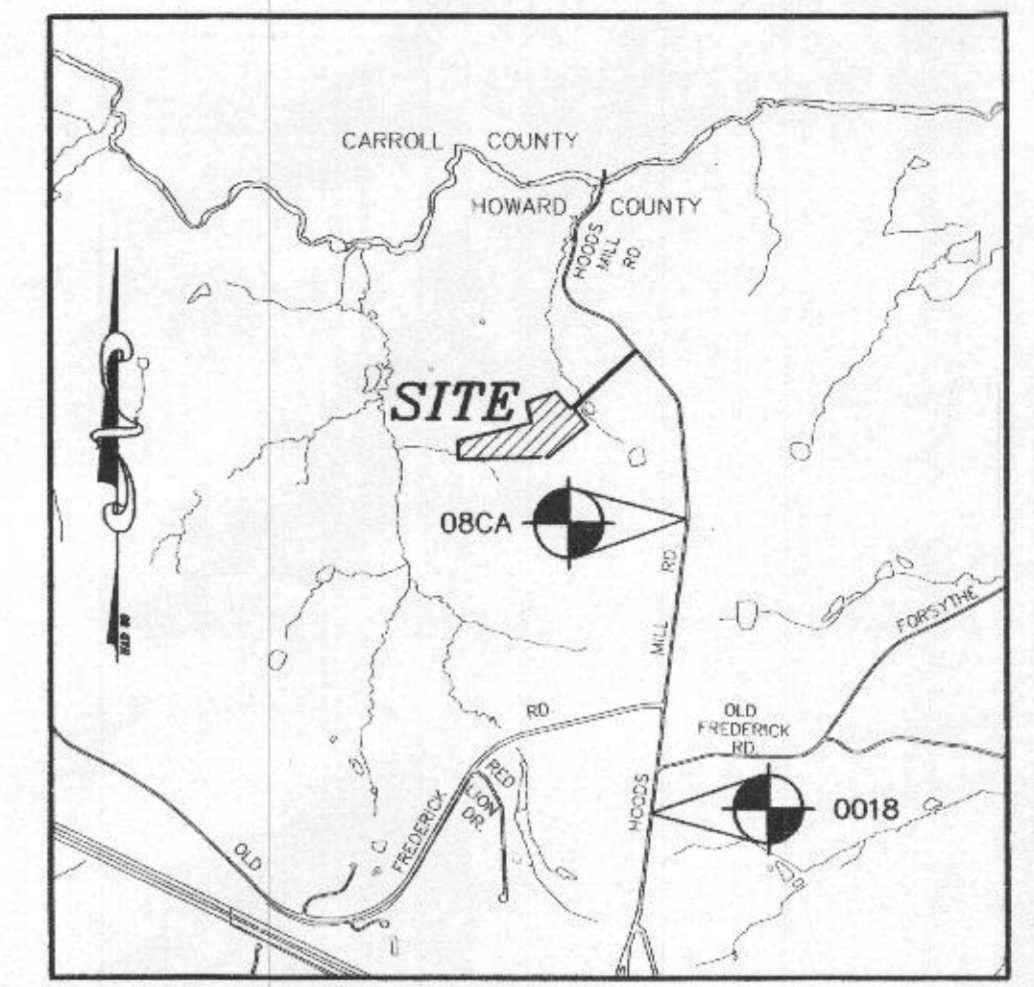
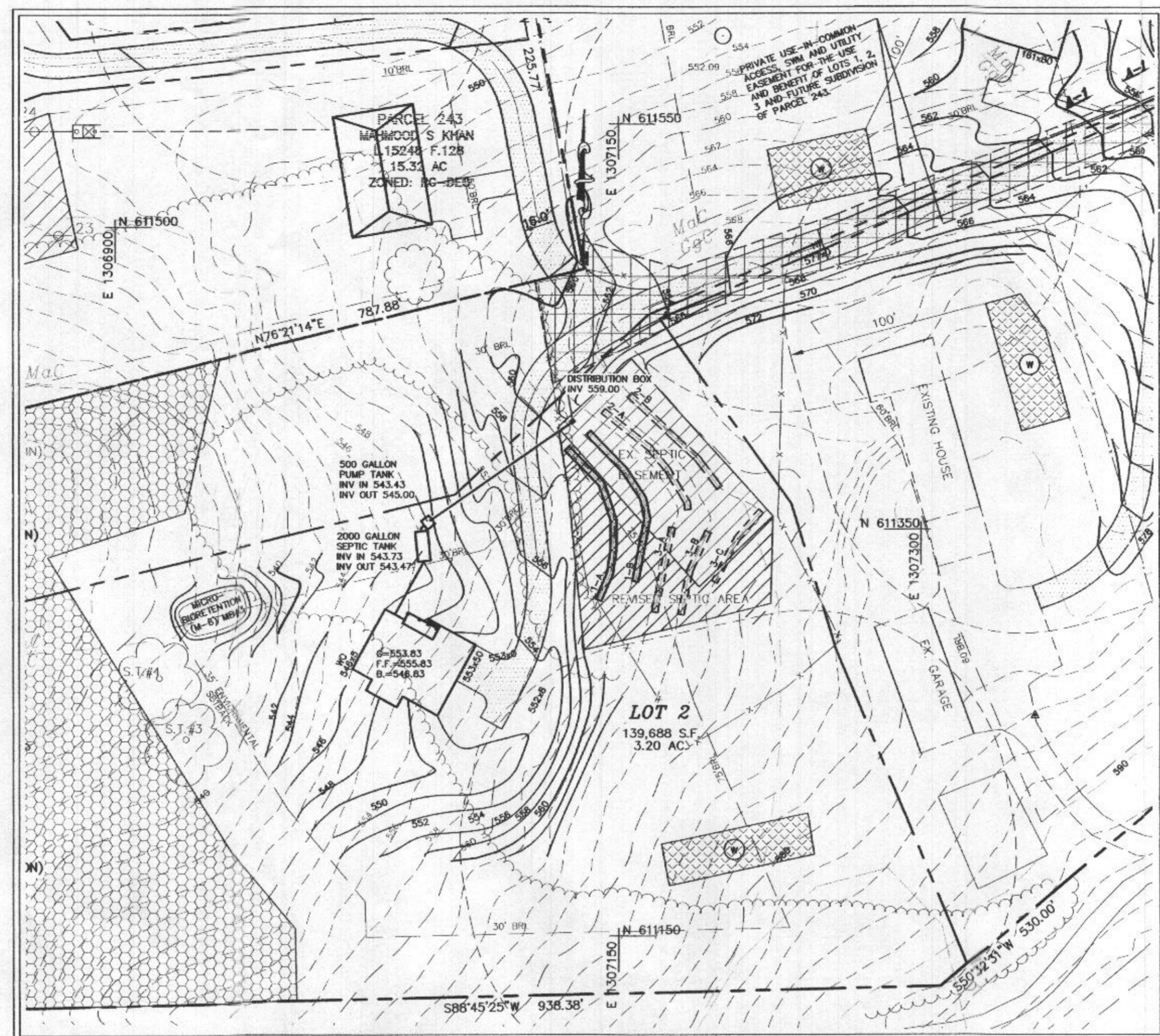
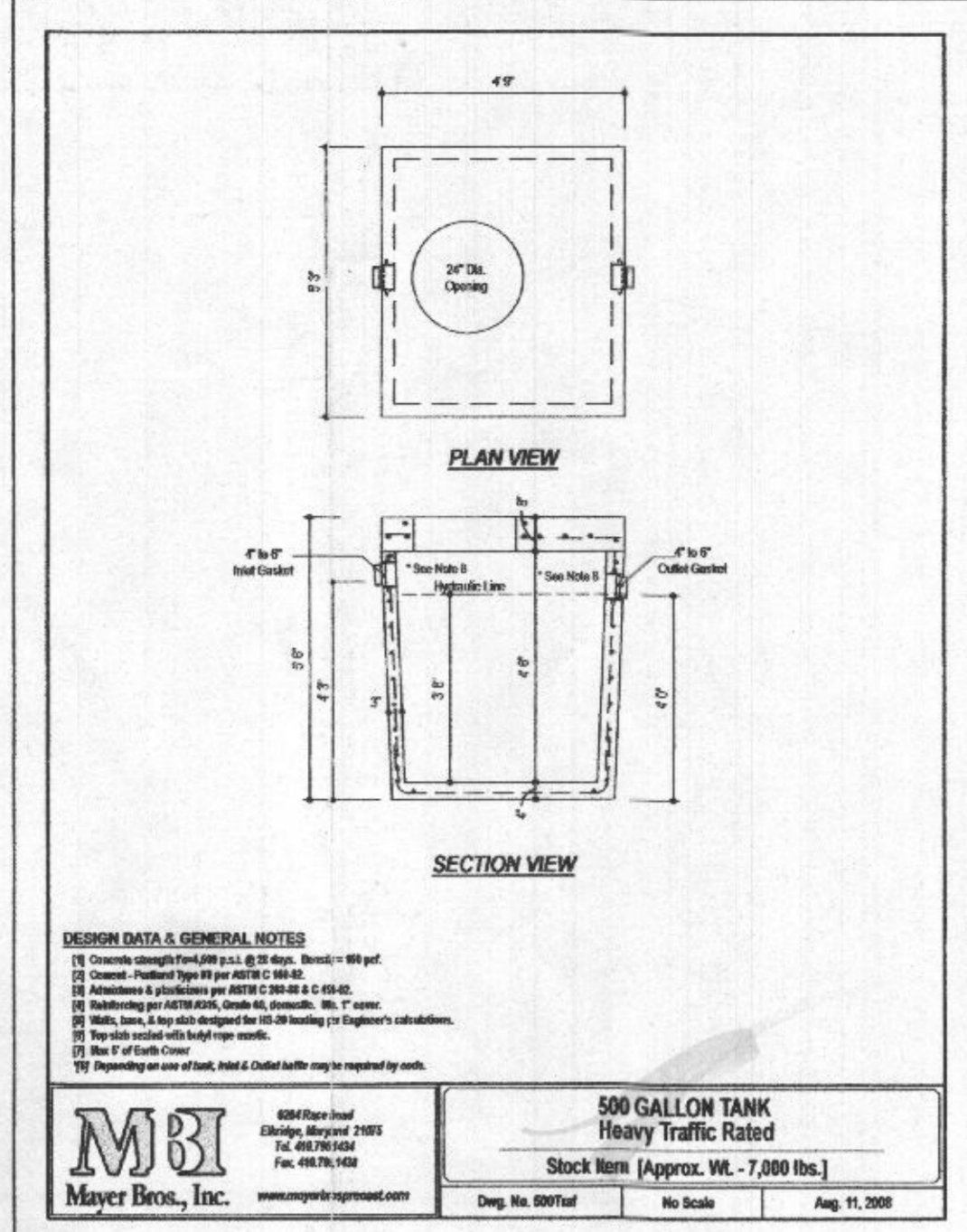
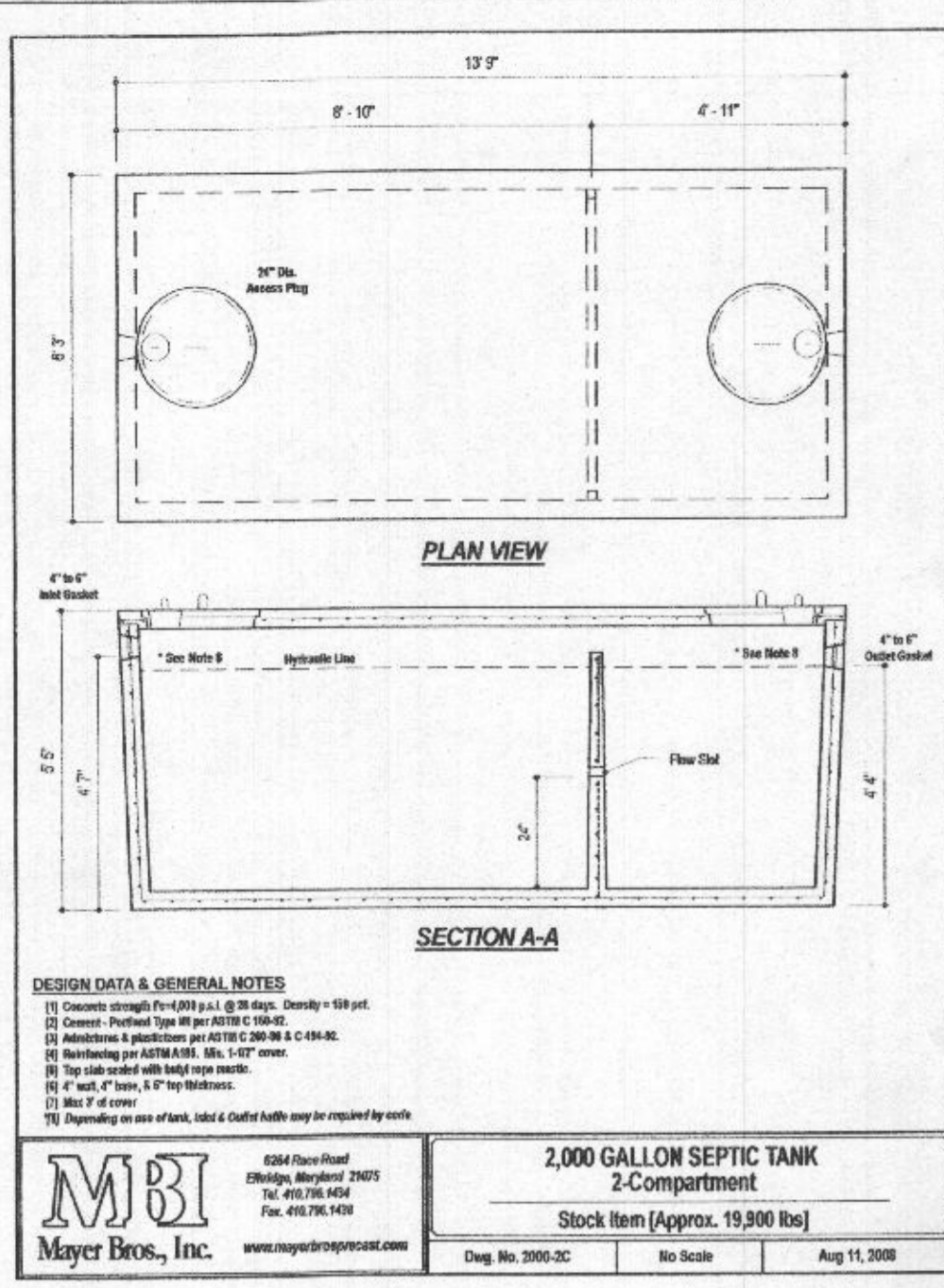
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250.0 X 0.50 = 125.0 USE THREE (3) TRENCHES (42')
A MINIMUM OF 10' BETWEEN TRENCHES UTILIZING SIDEWALL REDUCTION CREDIT.

project	18-010	date	JUN. 2020
illustration	MKG	engineering	MKG
scale	1" = 50 ft	approval	

description	revisions
no.	date

PERCIVAL PROPERTY LOT 2
14529 AMBREEN WAY
TAX MAP 08, GRID 05, PARCEL 237
FOURTH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND
ON-SITE SEWAGE DISPOSAL SYSTEM

MILDENBERG, BOENDER & ASSOC., INC.
Engineers Planners Surveyors
7950-B Grace Drive, Columbia, MD 21044
(410) 997-0286 Tel. (410) 997-0288 Fax.



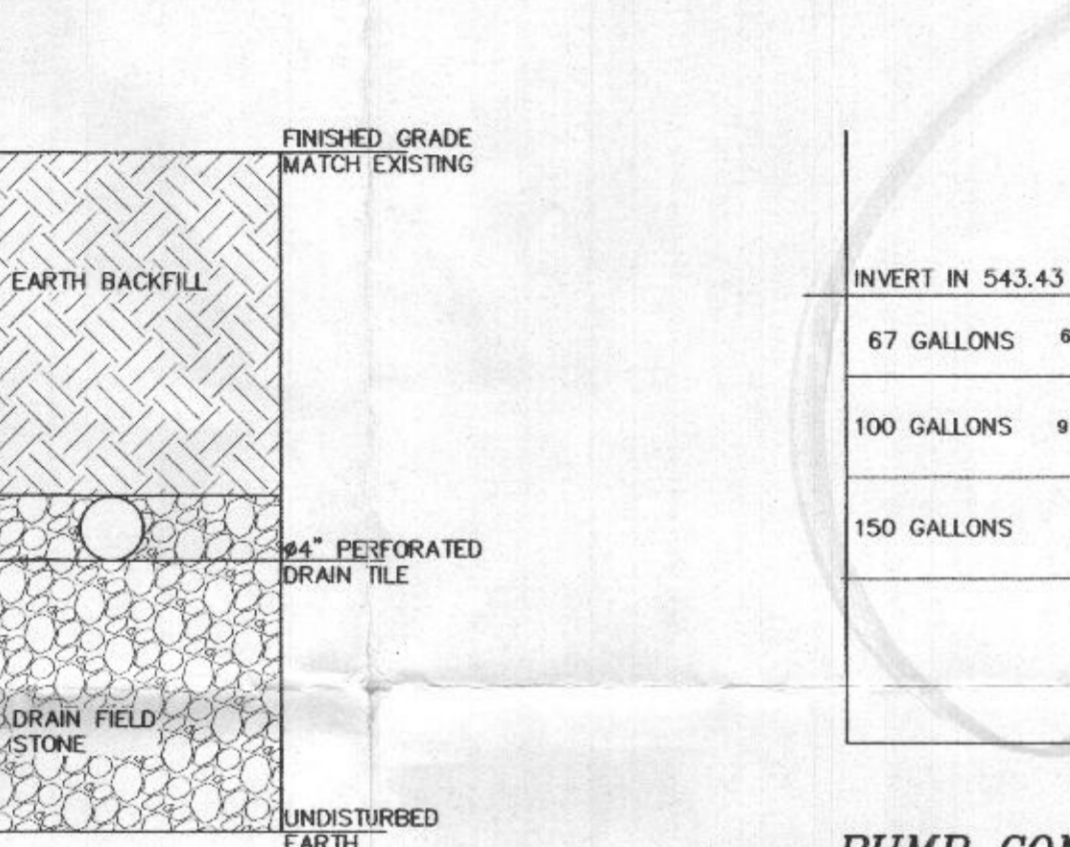
GENERAL NOTES:

- THE SUBJECT PROPERTY IS ZONED RC-DEO PER THE OCTOBER 6, 2013 COMPREHENSIVE ZONING PLAN.
- PARCEL BACKGROUND:
TAX MAP: B
PARCEL: 237 LOT: 2
DEED REFERENCE: L 17425, F 88
ELECTION DISTRICT: FOURTH
ZONING: RC-DEO
AREA: 3.20 AC±
DPZ FILES: ECP-15-059, F-16-088
- 2' TOPOGRAPHY FOR THE DEVELOPED AREAS IS BASED ON FIELD RUN SURVEY PERFORMED BY MILDENBERG, BOENDER & ASSOC., INC. ON OR ABOUT DECEMBER 2014.
- PRIVATE WELL AND SEPTIC WILL BE UTILIZED.
- THIS AREA DESIGNATES A PRIVATE SEWERAGE EASEMENT OF AT LEAST 10,000 SQ. FT. AS REQUIRED BY THE MARYLAND STATE DEPARTMENT OF ENVIRONMENT FOR INDIVIDUAL SEWERAGE DISPOSAL IMPROVEMENTS OF ANY NATURE IN THIS AREA ARE RESTRICTED UNTIL PUBLIC SEWERAGE IS AVAILABLE. THIS EASEMENT 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 SEWERAGE EASEMENT. RECORDATION OF A MODIFIED EASEMENT SHALL NOT BE NECESSARY.
- ANY CHANGES TO THE LOCATION OR DEPTHS TO ANY COMPONENTS MUST BE APPROVED BY THE ENGINEER AND THE HOWARD COUNTY HEALTH DEPARTMENT PRIOR TO INSTALLATION. A REVISED PLAN MAY BE REQUIRED.
- THE MAXIMUM EARTH COVER OVER THE TANK IS THREE (3) FEET. GREATER EARTH COVER WILL REQUIRE A HEAVY-LOAD BEARING TANK.
- ANY WELLS OR SEPTIC SYSTEMS LOCATED WITHIN 100' OF THE PROPERTY BOUNDARIES AND 200' DOWN GRADIENT OF ANY WELL AND/OR SEPTIC SYSTEMS HAVE BEEN SHOWN.
- LOD= 55,130 SQ.FT.

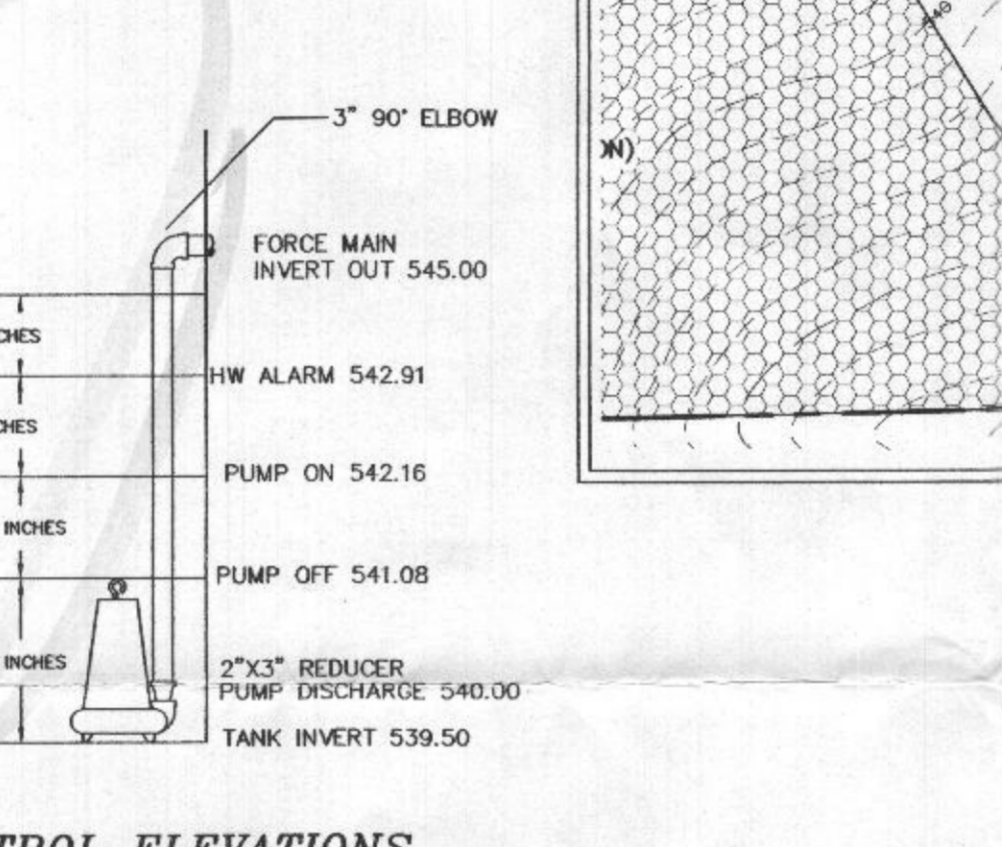
SEWER SYSTEM ELEVATIONS

DESCRIPTION	ELEVATION
BASEMENT ELEVATION	546.83
INVERT OUT OF THE HOUSE	544.33
INVERT INTO SEPTIC TANK	543.73
INVERT OUT OF SEPTIC TANK	543.47
FINISHED GRADE AT SEPTIC TANK	547.93
TOP OF THE SEPTIC TANK	544.93
INVERT INTO PUMP TANK	543.43
INVERT OUT OF PUMP TANK	545.00
FINISHED GRADE AT PUMP TANK	549.50
TOP OF THE PUMP TANK	544.67
INVERT INTO DISTRIBUTION BOX	559.00

PUMP TANK



PUMP CONTROL ELEVATIONS



SEPTIC TRENCH ELEVATIONS

TRENCH	EX. GROUND ELEVATION	INVERT ELEVATION	BOTTOM OF TRENCH EL.
PRIMARY A	560.0	556.0	552.5
PRIMARY B	562.0	558.0	554.5
SECONDARY A	565.0	561.5	558.5
SECONDARY B	568.0	564.5	561.5
TERTIARY A	564.0	560.5	557.5
TERTIARY B	566.0	562.5	559.5
TERTIARY C	568.0	564.5	561.5

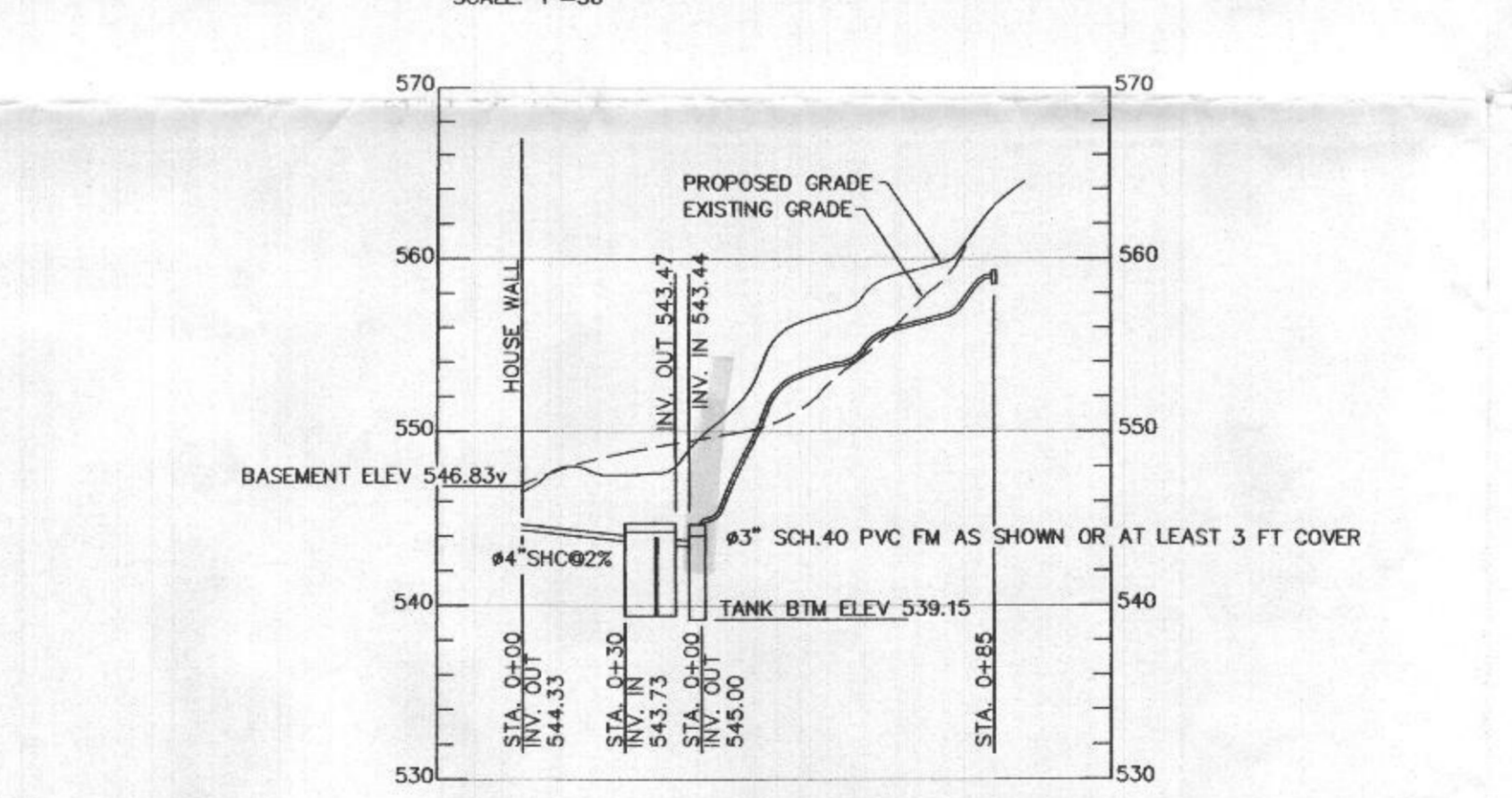
SEPTIC TRENCH SIZING

SYSTEM	APPLICATION RATE (GPD / SF)	MAXIMUM FLOW RATE (GPD)	AREA OF REQUIRED TRENCH (SF)	TRENCH WIDTH (FT)	LENGTH OF REQUIRED TRENCH (LF)	EFFECTIVE DEPTH TRENCH BEGINS (FT)	TRENCH BOTTOM DEPTH (FT)	TRENCH REDUCTION FACTOR**	ADJUSTED LENGTH OF REQUIRED TRENCH (LF)	MINIMUM TRENCH SPACING (FT)	NUMBER OF TRENCHES	PROVIDED TRENCH LENGTH (FT)
PRIMARY	0.6	600	1000	3	333.3	4.5	7.5	0.50	166.7	10.0'	2	84.0'
SECONDARY	0.8	600	750	3	250.0	3.5	6.5	0.50	125.0	10.0'	2	64.0'
TERTIARY	0.8	600	750	3	250.0	3.5	6.5	0.50	125.0	10.0'	3	42.0'

SOILS TABLE (WITHIN LOD)

SYMBOL	RATING	NAME	K FACTOR	MAP #
GgC	(B)	GLENELC LOAM, 8-15% SLOPES.	.24	3
GmC	(C)	GLENVILLE SILT LOAM, 8-15% SLOPES.	.43	3
MaC	(B)	MANOR LOAM, 8-15% SLOPES.	.28	3

SEPTIC TANK AND F.M. PROFILE



ON-SITE SEWAGE DISPOSAL SYSTEM PUMP DESIGN

SEWAGE DISPOSAL AREA INVERT ELEVATION	558.0 FT	PRIMARY
DISTANCE FROM DISTRIBUTION BOX	10.0 FT	
ASSUME 1% SLOPE OR STEEPER		
DISTRIBUTION BOX INVERT OUT	559.0 FT	
DISTANCE TO PUMP TANK	85.0 FT	
PUMP TANK INVERT OUT ELEVATION	545.0 FT	
PUMP OUTLET TO INVERT OUT	5.0 FT	
STATIC HEAD	19.0 FT	
FORCE MAIN 3 IN DIAMETER SCH 40 PVC	3.068 IN	
AREA	0.05134 SQ FT	
NO INTERMEDIATE LOW POINTS, MIN VELOCITY =	2 FPS	
FLOW RATE = 0.10268 CFS, =	46 GPM	
FOR CALCULATING DYNAMIC HEAD, USE	50 GPM	
HEAD LOSS IN FEET/100 FT OF PIPE = 0.208(100/C) ^{1.852} Q ^{1.852} /D ^{4.8655} (HAZEN WILLIAMS EQN.)		
C = ROUGHNESS COEFFICIENT = 140		
Q = FLOW IN GPM = 48		
D = DIAMETER IN INCHES = 3.068		
HEAD LOSS IN FEET/100 FT OF PIPE =	0.670 FT	
HEAD LOSS IN FEET FOR ACTUAL LENGTH	0.569 FT	
FITTINGS LOSS: USE EQUIVALENT PIPE LENGTH		
90° ELBOW	11.1 FT EQUIVALENT	.074 FT
2" X 3" REDUCER	2.0 FT EQUIVALENT	.013 FT
TOTAL DYNAMIC HEAD =	19.67 FT	
USE GOULD WS-05B OR EQUIVALENT 1/2 HP PUMP		
FM HOLDS 48 GALLONS OF SEWAGE. ALLOW FOR RUN BACK.		
600 GPD, PUMP RUNS 6X DAILY, 100 GALLONS PLUS RUNBACK		
USE 10 INCHES, 150 GALLONS +/-		
RUN TIME = 150 GALLONS/50 GPD = (MINUTES/RUN) 3 MIN. 0 SEC.		

WELL CERTIFICATION

THE EXISTING WELL, TAG # HO-15-0365 HAS BEEN FIELD LOCATED AND IS ACCURATELY SHOWN.

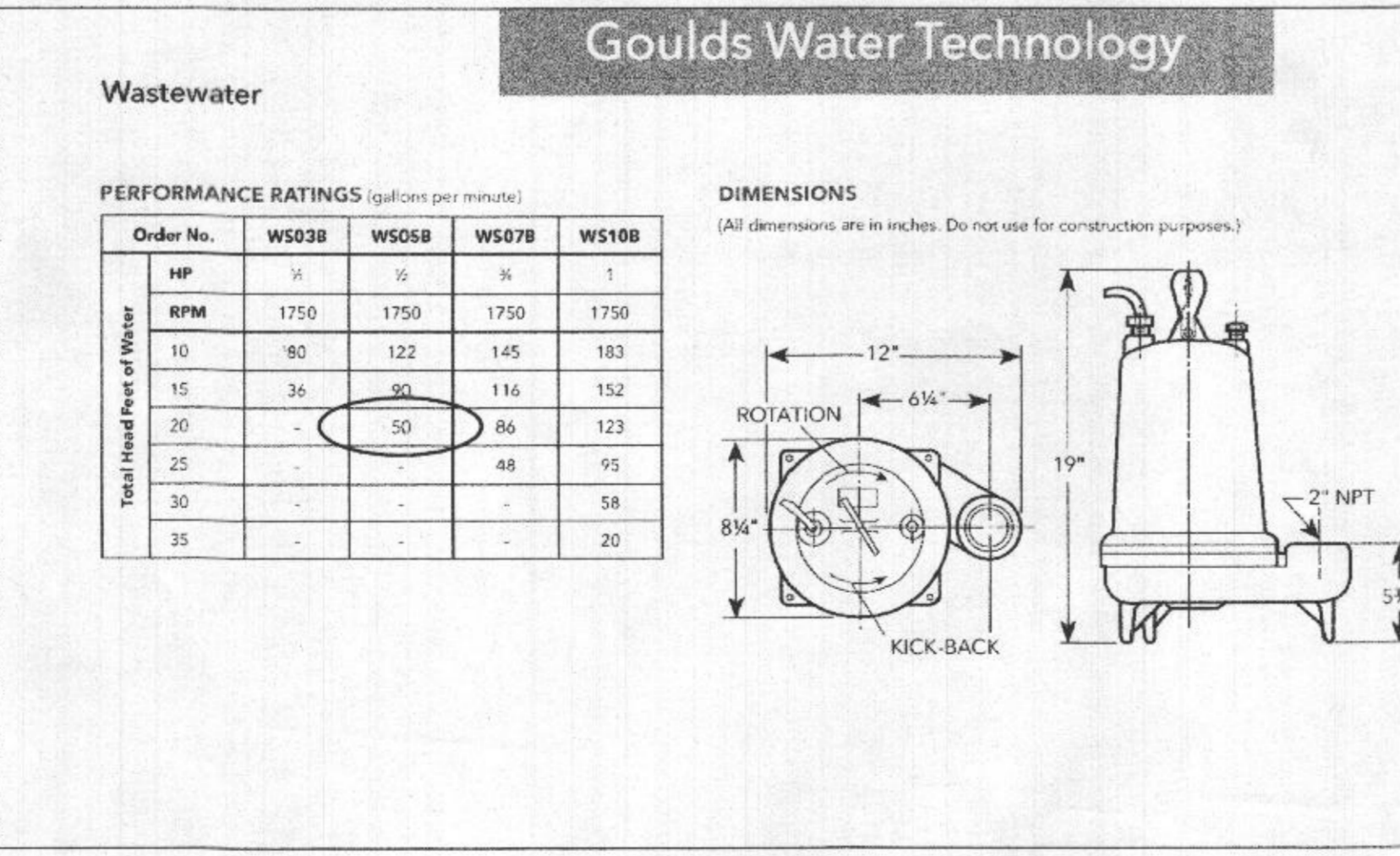
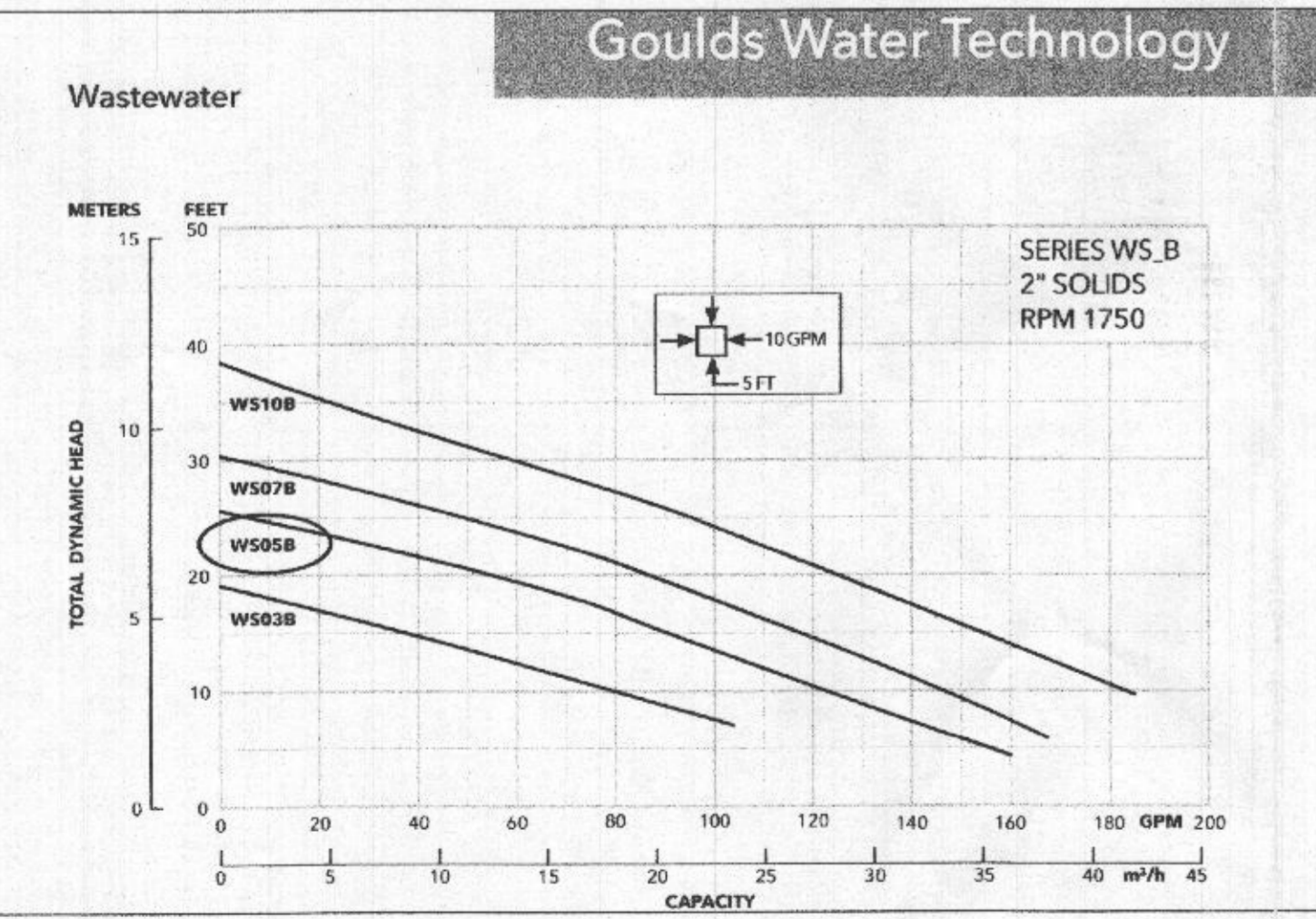
ON-SITE SEWAGE DISPOSAL SYSTEM:

RESIDENTIAL SYSTEM DESIGN:
4 BEDROOM HOUSE (LIVING AREA=3,580 SQ.FT.)
INCLUDES BSMT 1248 SF X 505' + 1ST AND 2ND FLR 2956 SF
150 GALLONS X # OF BEDROOMS = VOLUME OF WASTEWATER /DAY
150 X 4 = 600 GPD

PRIMARY SYSTEM:
PERC RATE = 16-30 MINUTES/INCH
APPLICATION RATE = 0.6 GPD/SQ.FT.
DESIGN FLOW + APPLICATION RATE = SQ.FT. OF TRENCH REQUIRED
600 + 0.6 = 1000 SQ.FT.
SQ.FT. REQUIRED ÷ WIDTH OF TRENCH = LENGTH OF TRENCH
1000 ÷ 3.0' = 333.3 FT
USE 36" OF GRAVEL BELOW DRAIN PIPE
333.3 X 0.5 = 166.67
USE TWO (2) REQUIRED LENGTH OF TRENCHES (83.3'), PROVIDE (84')
A MINIMUM OF 10' BETWEEN TRENCHES UTILIZING SIDEWALL
REDUCTION CREDIT.
MINIMUM TANK CAPACITY = 2000 GALLONS
USE MAYER BROS. PRODUCT OR EQUIVALENT.

SECONDARY SYSTEM:
PERC RATE = 6-15 MINUTES/INCH
APPLICATION RATE = 0.8 GPD/SQ.FT.
DESIGN FLOW + APPLICATION RATE = SQ.FT. OF TRENCH REQUIRED
600 + 0.8 = 750 SQ.FT.
SQ.FT. REQUIRED ÷ WIDTH OF TRENCH = LENGTH OF TRENCH
750 ÷ 3.0' = 250.0 FT
USE 36" OF GRAVEL BELOW DRAIN PIPE
250.0 X 0.50 = 125.0 USE TWO (2) TRENCHES (63').
A MINIMUM OF 10' BETWEEN TRENCHES UTILIZING SIDEWALL
REDUCTION CREDIT.

TERTIARY SYSTEM:
PERC RATE = 6-15 MINUTES/INCH
APPLICATION RATE = 0.8 GPD/SQ.FT.
DESIGN FLOW + APPLICATION RATE = SQ.FT. OF TRENCH REQUIRED
600 + 0.8 = 750 SQ.FT.
SQ.FT. REQUIRED ÷ WIDTH OF TRENCH = LENGTH OF TRENCH
750 ÷ 3.0' = 250.0 FT
USE 36" OF GRAVEL BELOW DRAIN PIPE
250.0 X 0.50 = 125.0 USE THREE (3) TRENCHES (42').
A MINIMUM OF 10' BETWEEN TRENCHES UTILIZING SIDEWALL
REDUCTION CREDIT.



APPROVED FOR PRIVATE WATER AND PRIVATE SEWERAGE SYSTEMS

COUNTY HEALTH OFFICER
HOWARD COUNTY HEALTH DEPARTMENT

DATE:

OWNER/DEVELOPER

BURKARD HOMES
1511 RITCHIE HIGHWAY #305
ARNDOLD, MD 21045
240-375-1052

MICHAEL G. KRETSCH, P.E.

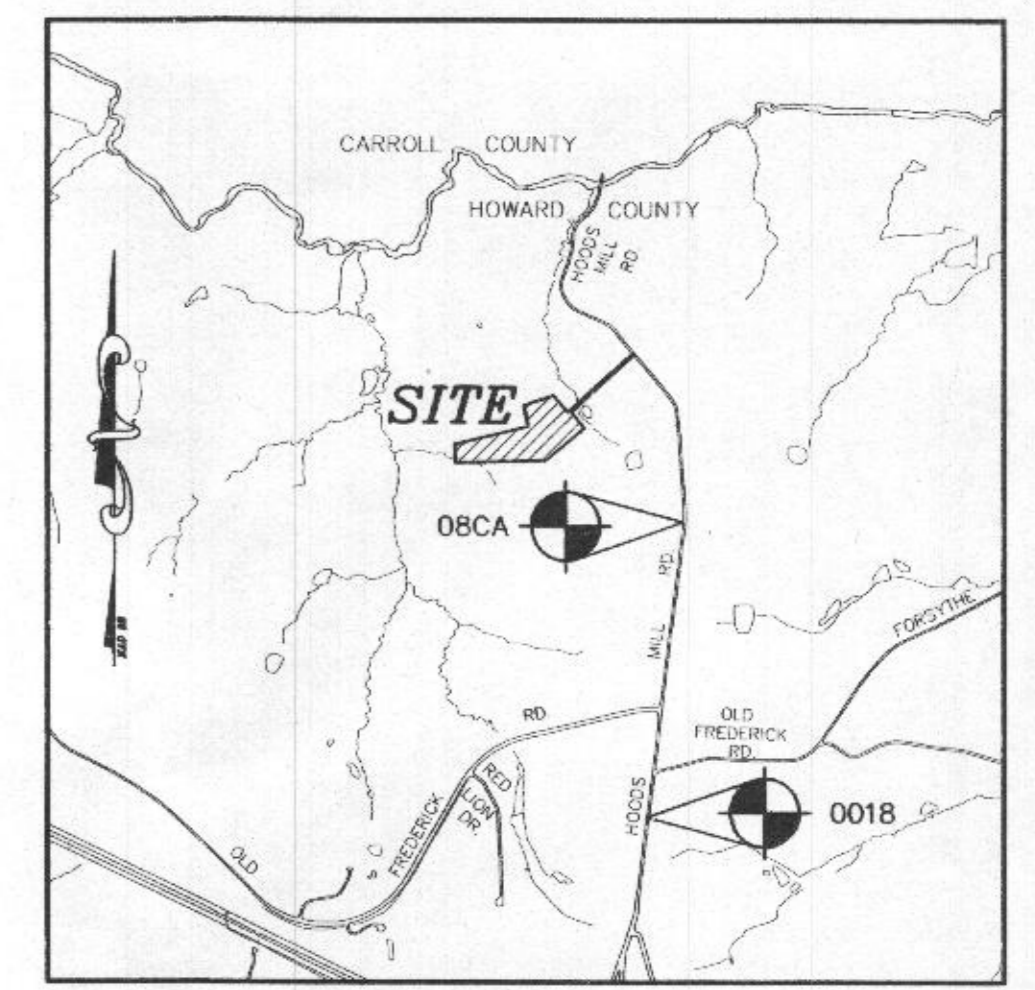
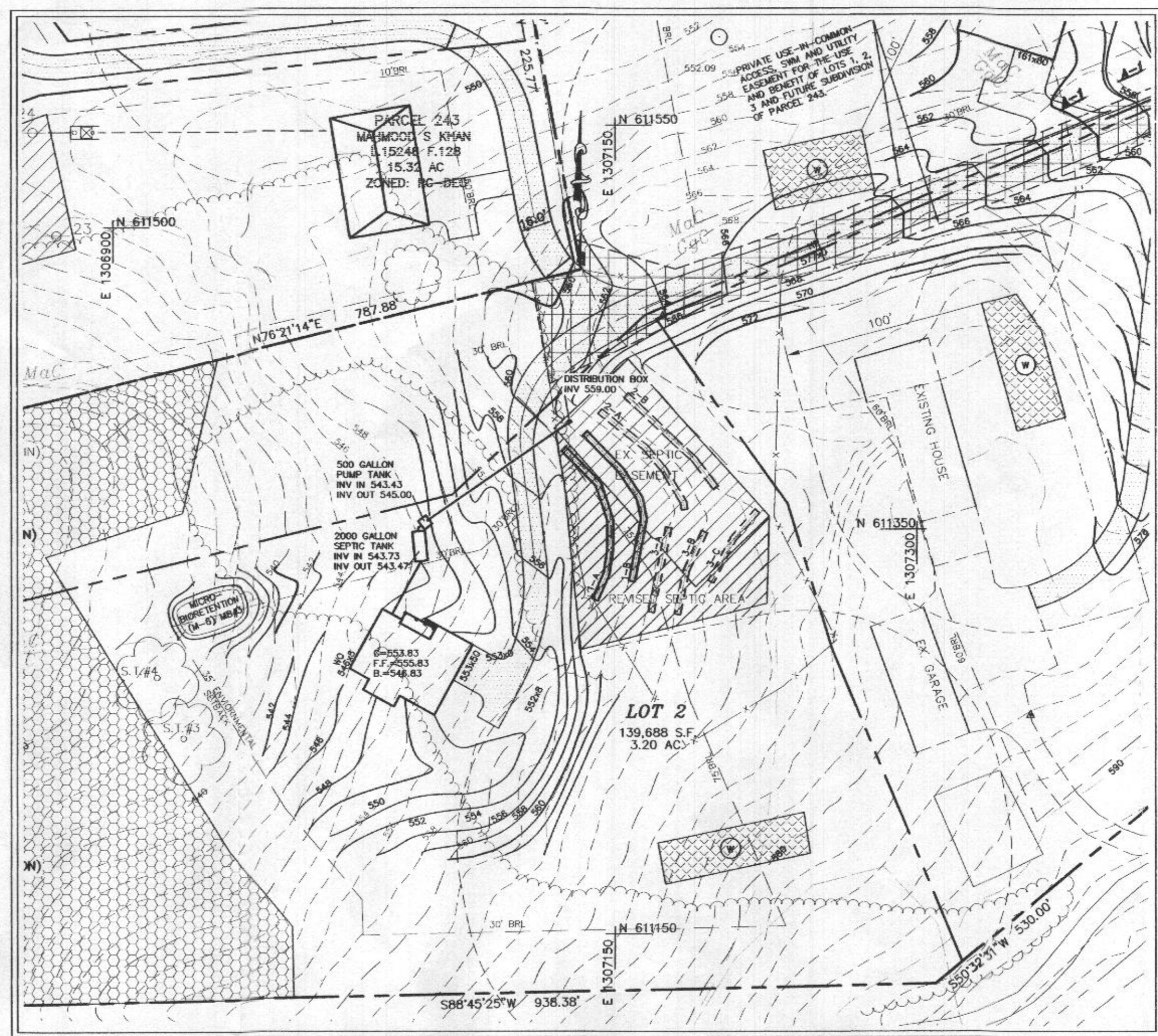
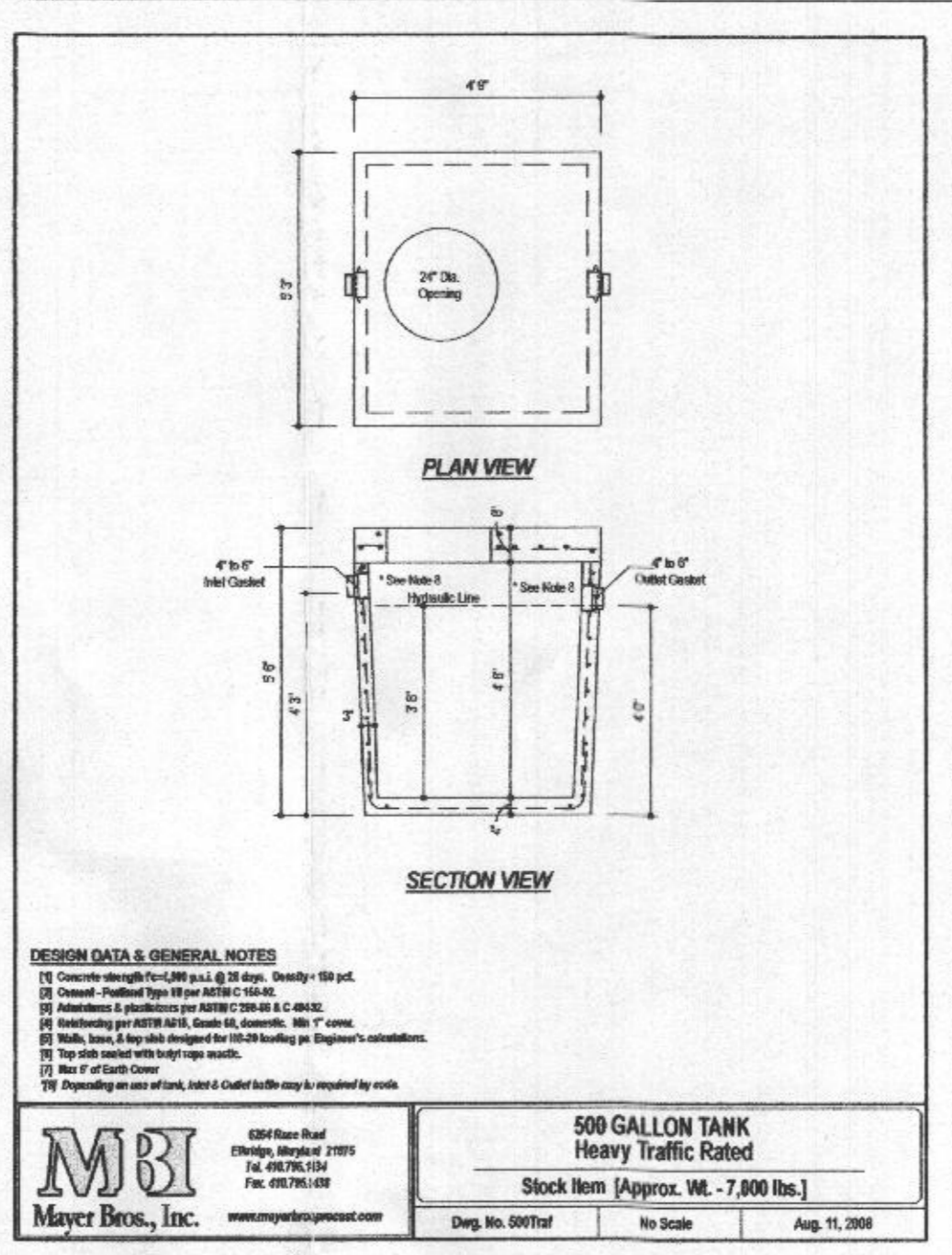
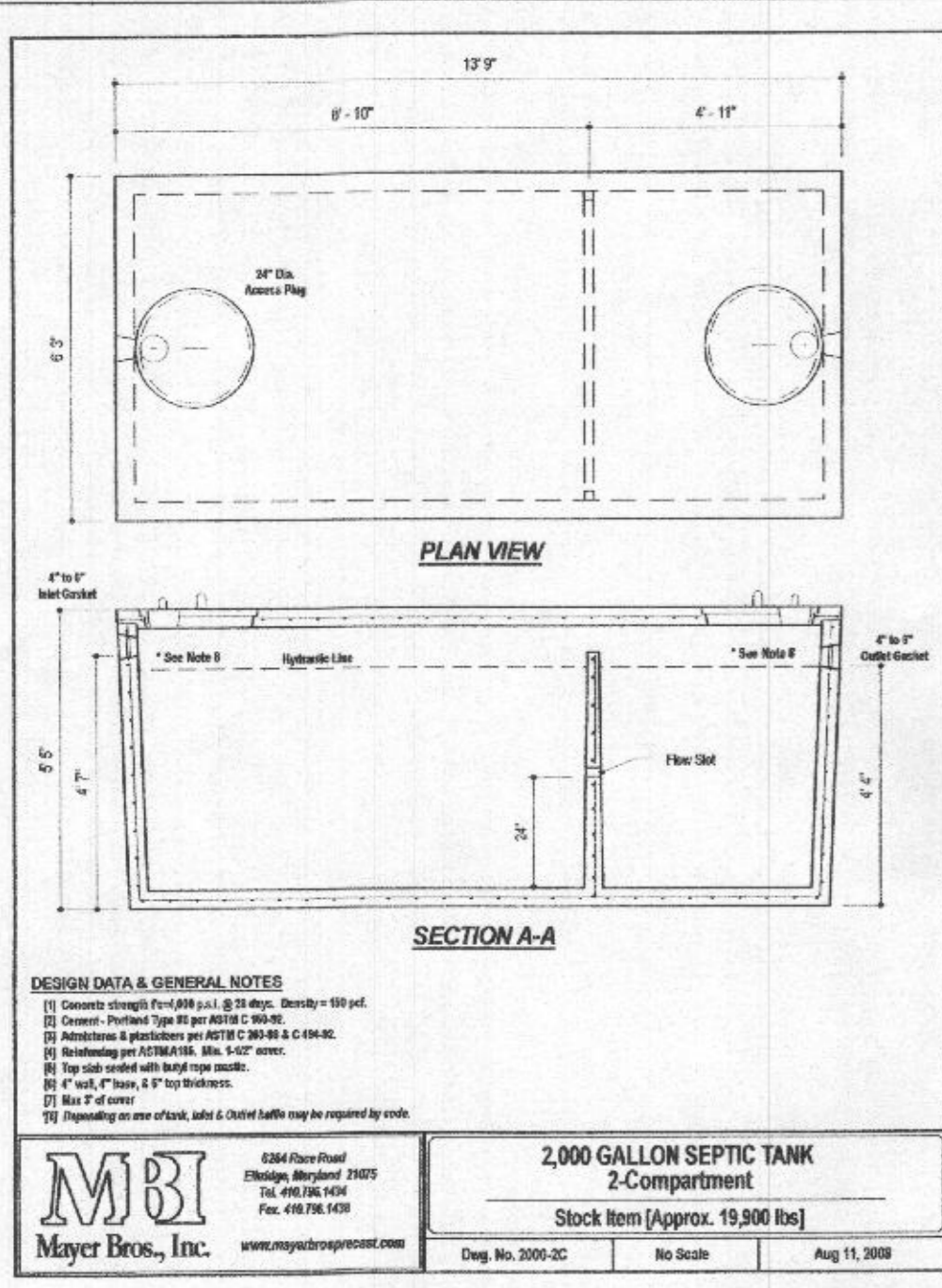
DATE:

project: 18-010
date: MAR 2020
illustration: MGK
engineering: MGK
approval: AS SHOWN RH

description: MAP 2020
revision: 001E

PERCIVAL PROPERTY
LOT 2
TAX MAP 08, GRID 05, PARCEL 237
HOWARD COUNTY, MARYLAND
FOURTH ELECTION DISTRICT
ON-SITE SEWAGE DISPOSAL SYSTEM

MILDENBERG, BOENDER & ASSOC., INC.
Engineers Planners Surveyors
7050-B Cross Drive, Columbia, MD 21044
(410) 997-0296 Fax
(410) 997-0296 Tel.

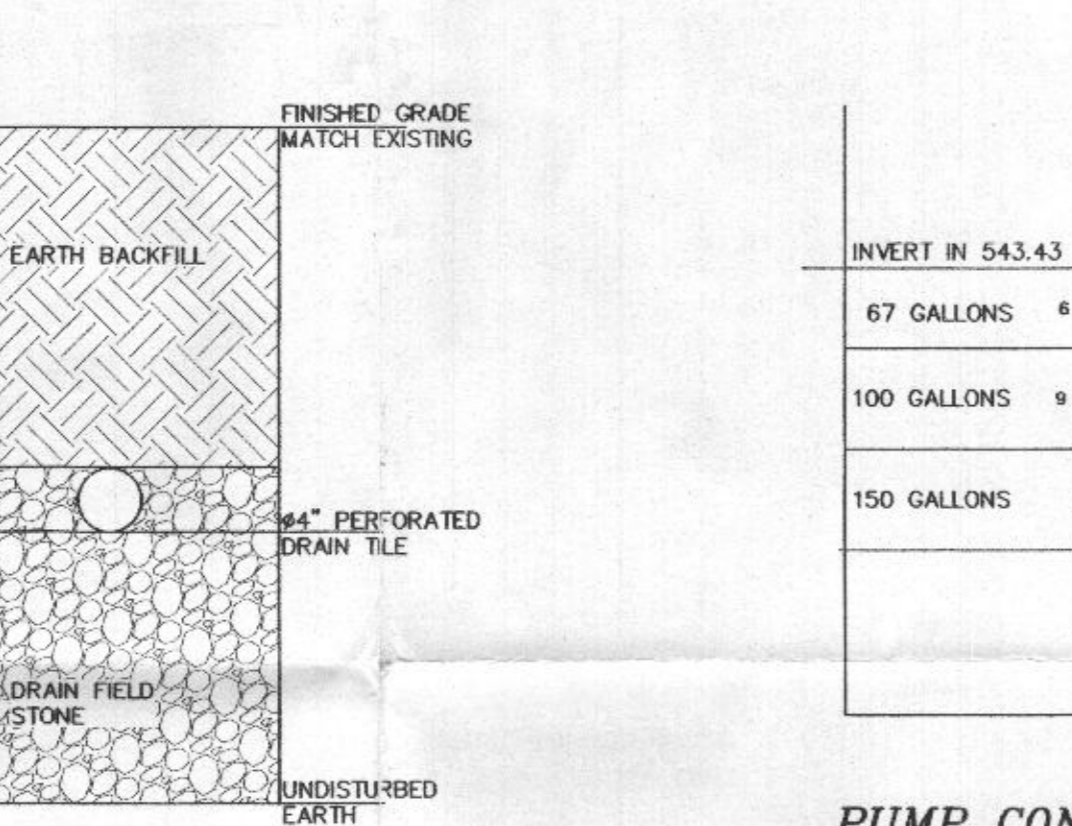


- GENERAL NOTES:**
1. THE SUBJECT PROPERTY IS ZONED RC-DEO PER THE OCTOBER 6, 2013 COMPREHENSIVE ZONING PLAN.
 2. **PARCEL BACKGROUND:**
TAX MAP: 8
PARCEL: 237 LOT: 2
DEED REFERENCE: L 17425, F 88
ELECTION DISTRICT: FOURTH
ZONING: RC-DEO
AREA: 3.20 AC±
DPZ FILES: ECP-15-059, F-16-088
 3. 2' TOPOGRAPHY FOR THE DEVELOPED AREAS IS BASED ON FIELD RUN SURVEY PERFORMED BY MILDENBERG, BOENDER & ASSOC., INC. ON OR ABOUT DECEMBER 2014.
 4. PRIVATE WELL AND SEPTIC WILL BE UTILIZED.
 5. THIS AREA DESIGNATES A PRIVATE SEWERAGE EASEMENT OF AT LEAST 10,000 SQ. FT. AS REQUIRED BY THE MARYLAND STATE DEPARTMENT OF ENVIRONMENT FOR INDIVIDUAL SEWERAGE DISPOSAL IMPROVEMENTS OF ANY NATURE IN THIS AREA ARE RESTRICTED UNTIL PUBLIC SEWERAGE IS AVAILABLE. THIS EASEMENT 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 SEWERAGE EASEMENT. RECORDED OF A MODIFIED EASEMENT SHALL NOT BE NECESSARY.
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 7. THE MAXIMUM EARTH COVER OVER THE TANK IS THREE (3) FEET. GREATER EARTH COVER WILL REQUIRE A HEAVY LOAD BEARING TANK.
 8. ANY WELLS OR SEPTIC SYSTEMS LOCATED WITHIN 100' OF THE PROPERTY BOUNDARIES AND 200' DOWN GRADIENT OF ANY WELL AND/OR SEPTIC SYSTEMS HAVE BEEN SHOWN.
 9. L00= 55,130 SQ.FT.

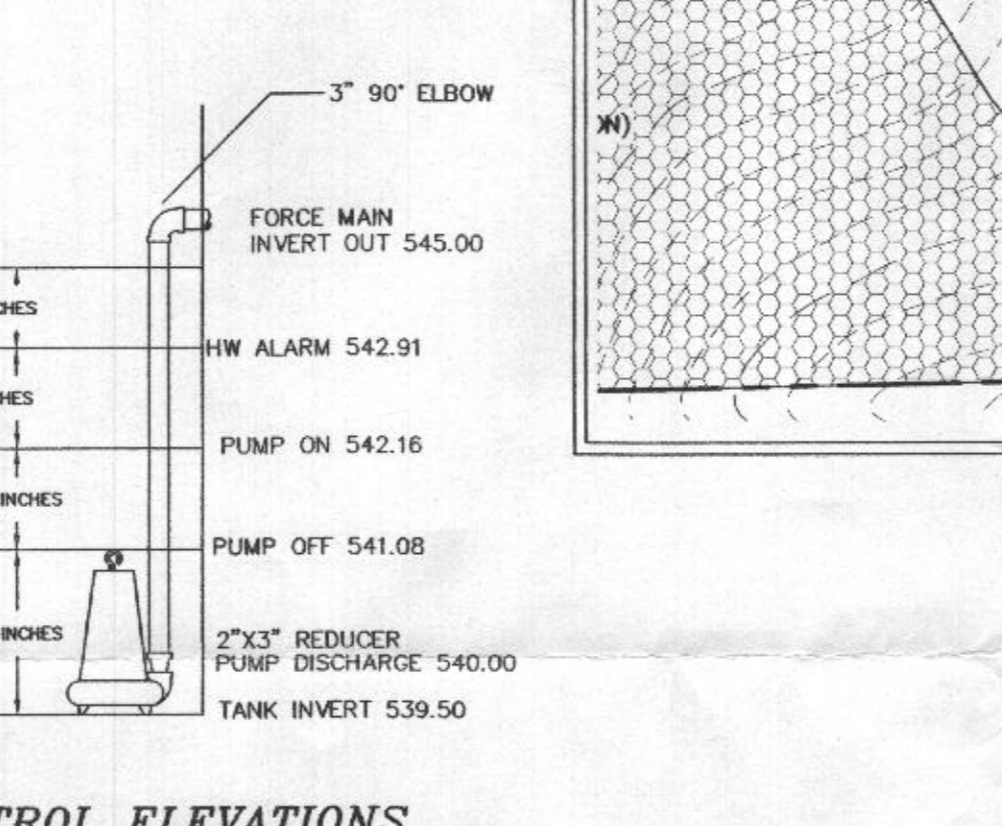
SEWER SYSTEM ELEVATIONS

DESCRIPTION	ELEVATION
BASEMENT ELEVATION	546.83
INVERT OUT OF THE HOUSE	544.33
INVERT INTO SEPTIC TANK	543.73
INVERT OUT OF SEPTIC TANK	543.47
FINISHED GRADE AT SEPTIC TANK	547.93
TOP OF THE SEPTIC TANK	544.93
INVERT INTO PUMP TANK	543.43
INVERT OUT OF PUMP TANK	545.00
FINISHED GRADE AT PUMP TANK	549.50
TOP OF THE PUMP TANK	544.67
INVERT INTO DISTRIBUTION BOX	559.00

PUMP TANK



PUMP CONTROL ELEVATIONS



SEPTIC TRENCH ELEVATIONS

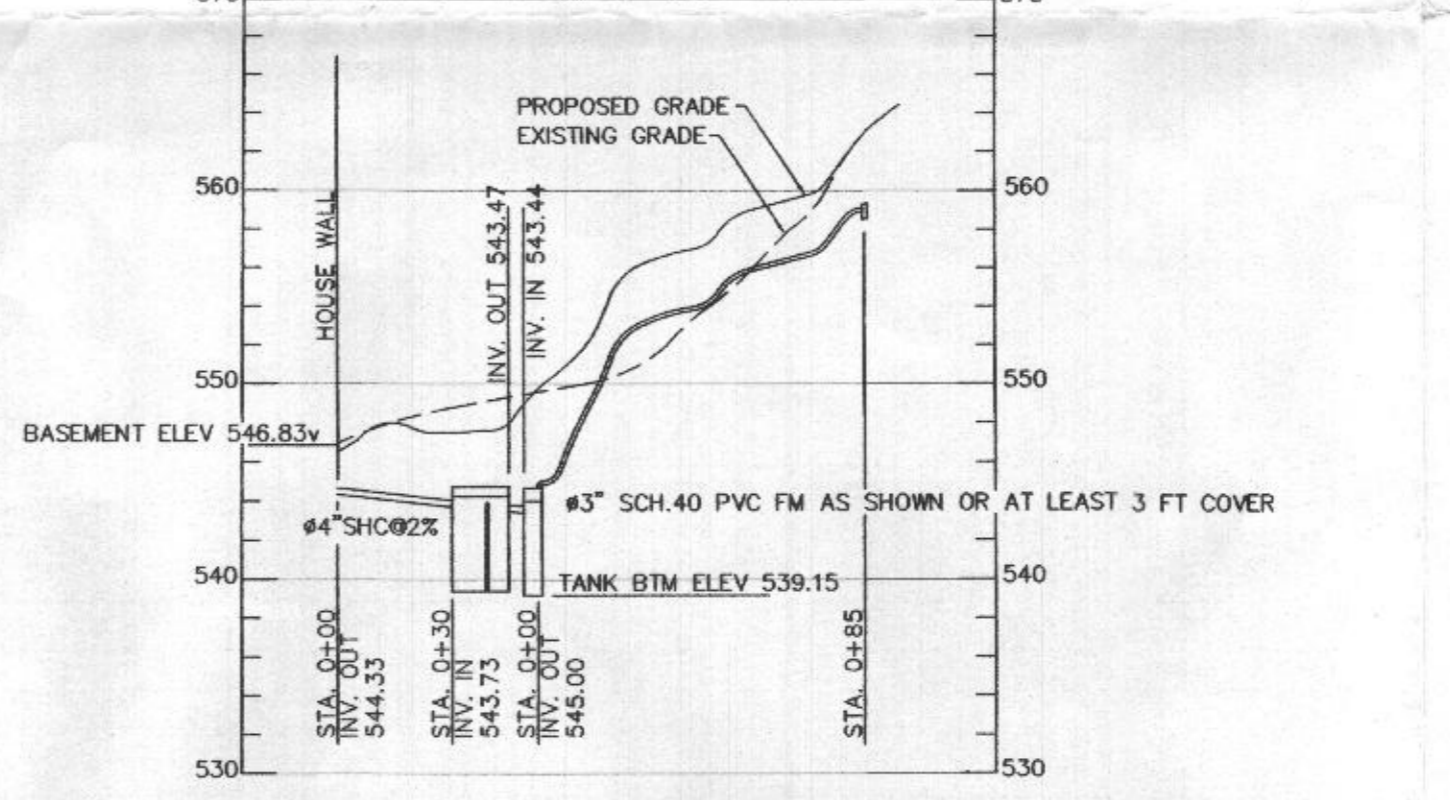
TRENCH	EX. GROUND ELEVATION	INVERT ELEVATION	BOTTOM OF TRENCH EL.
PRIMARY A	560.0	556.0	552.5
PRIMARY B	562.0	558.0	554.5
SECONDARY A	565.0	561.5	558.5
SECONDARY B	568.0	564.5	561.5
TERTIARY A	564.0	560.5	557.5
TERTIARY B	566.0	562.5	559.5
TERTIARY C	568.0	564.5	561.5

SEPTIC TRENCH SIZING

SYSTEM	APPLICATION RATE (GPD / SF)	MAXIMUM FLOW RATE (GPD)	AREA OF REQUIRED TRENCH (SF)	TRENCH LENGTH (FT)	EFFECTIVE TRENCH DEPTH BEGINS (FT)	TRENCH DEPTH (FT)	TRENCH REDUCTION FACTOR**	ADJUSTED LENGTH OF REQUIRED TRENCH (LF)	MINIMUM TRENCH SPACING (FT)	NUMBER OF TRENCHES	PROVIDED TRENCH LENGTH (FT)	
PRIMARY	0.6	600	1000	3	333.3	4.5	7.5	0.50	166.7	10.0'	2	84.0'
SECONDARY	0.8	800	1333	3	250.0	3.5	6.5	0.50	125.0	10.0'	2	64.0'
TERTIARY	0.8	800	1333	3	250.0	3.5	6.5	0.50	125.0	10.0'	3	42.0'

SOILS TABLE (WITHIN LOD)

SYMBOL	RATING	NAME	K FACTOR	MAP #
GgC	(B)	GLENELG LOAM, 8-15% SLOPES.	.24	3
GmC	(C)	GLENVILLE SILT LOAM, 8-15% SLOPES	.43	3
McC	(B)	MANOR LOAM, 8-15% SLOPES	.28	3



ON-SITE SEWAGE DISPOSAL SYSTEM PUMP DESIGN

SEWAGE DISPOSAL AREA INVERT ELEVATION	PRIMARY
558.0	558.0 FT
DISTANCE FROM DISTRIBUTION BOX	10.0 FT
ASSUME 1% SLOPE OR STEEPER	
DISTRIBUTION BOX INVERT OUT	559.0 FT
DISTRIBUTION BOX INVERT IN	559.0 FT
DISTANCE TO PUMP TANK	85.0 FT
PUMP TANK INVERT OUT ELEVATION	545.0 FT
PUMP OUTLET TO INVERT OUT	5.0 FT

STATIC HEAD	19.0 FT
FORCE MAIN 3 IN DIAMETER SCH 40 PVC	3.068 IN
AREA 0.05134 SQ FT	
NO INTERMEDIATE LOW POINTS; MIN VELOCITY = 2 FPS	
FLOW RATE = 0.10268 CFS, = 46 GPM	
FOR CALCULATING DYNAMIC HEAD, USE 50 GPM	

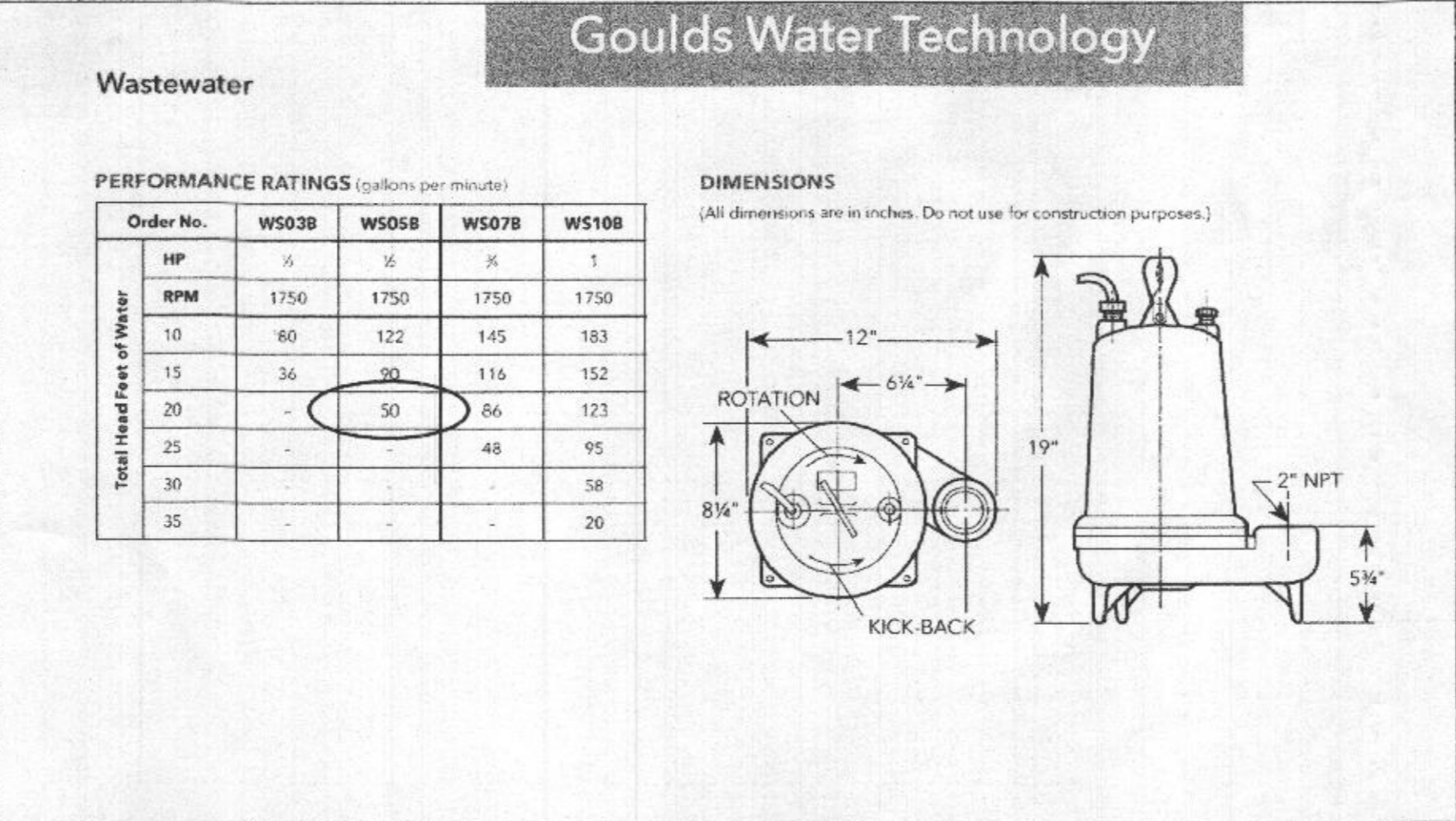
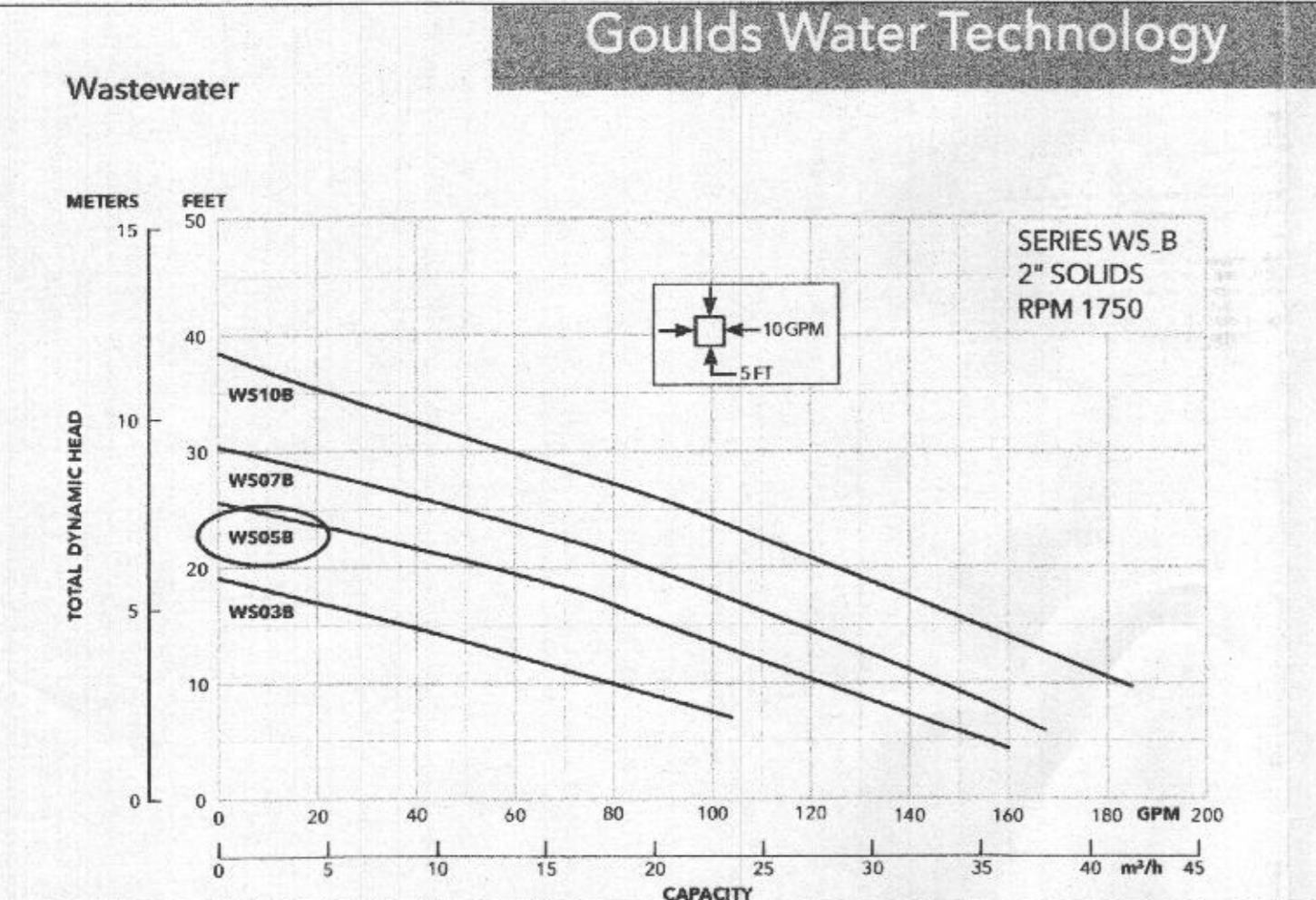
HEAD LOSS IN FEET/100 FT OF PIPE =	0.670 FT
0.208(100/C)*1.852*Q^1.852/D^4.8655 (HAZEN WILLIAMS EQN.)	
C = ROUGHNESS COEFFICIENT = 140	
Q = FLOW IN GPM = 46	
D = DIAMETER IN INCHES = 3.068	

HEAD LOSS IN FEET/100 FT OF PIPE =	0.569 FT
HEAD LOSS IN FEET FOR ACTUAL LENGTH	

FITTINGS LOSS: USE EQUIVALENT PIPE LENGTH	0.074 FT
90° ELBOW 11.1 FT EQUIVALENT	
2"x3" REDUCER 2.0 FT EQUIVALENT	

TOTAL DYNAMIC HEAD =	19.67 FT
USE GOULD WS-05B OR EQUIVALENT 1/2 HP PUMP	

FM HOLDS 48 GALLONS OF SEWAGE. ALLOW FOR RUN BACK.
600 GPD, PUMP RUNS 6X DAILY, 100 GALLONS PLUS RUNBACK
USE 10 INCHES, 150 GALLONS +/-
RUN TIME = 150 GALLONS/50 GPD = (MINUTES/RUN) 3 MIN. 0 SEC.



APPROVED FOR PRIVATE WATER AND PRIVATE SEWERAGE SYSTEMS
COUNTY HEALTH OFFICER
HOWARD COUNTY HEALTH DEPARTMENT

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. 34027, EXP DATE 01/6/2021
MICHAEL C. KRETSCH, P.E.

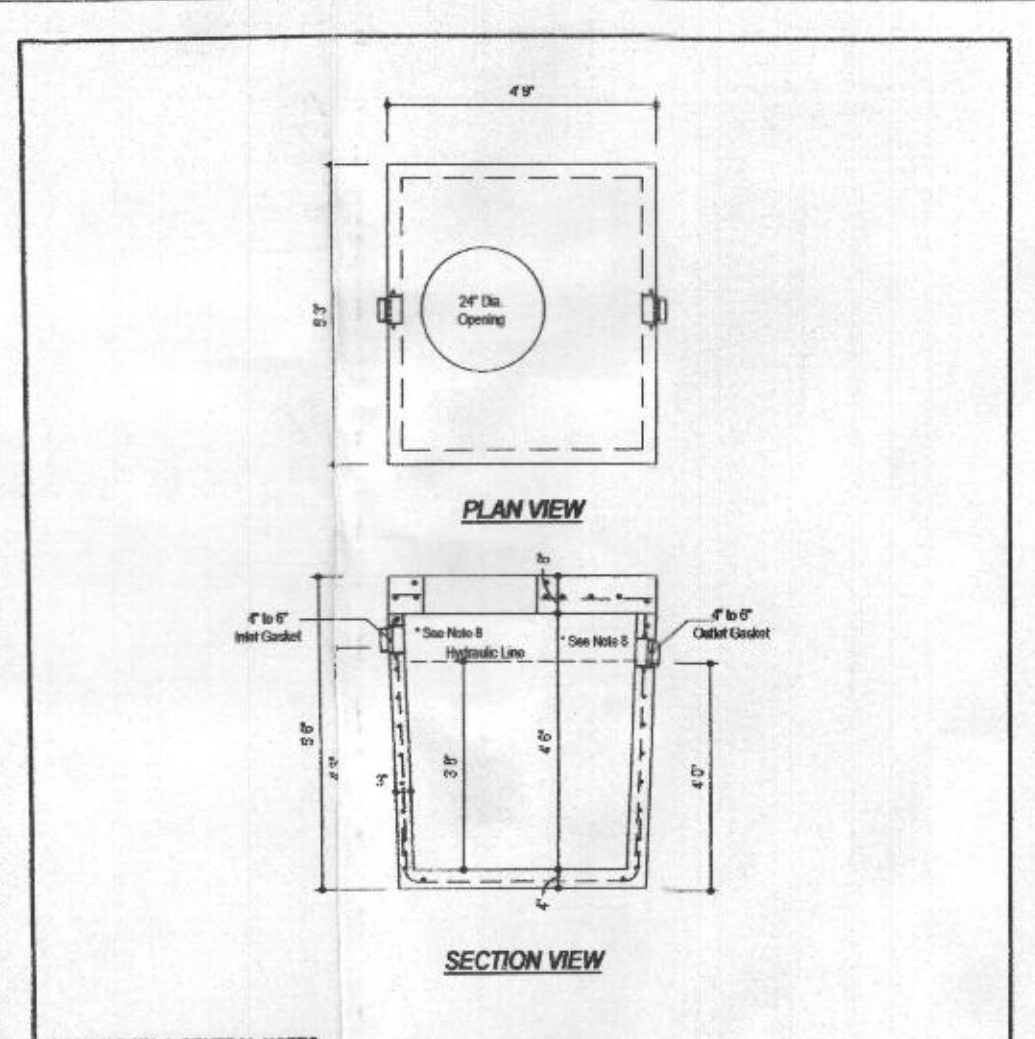
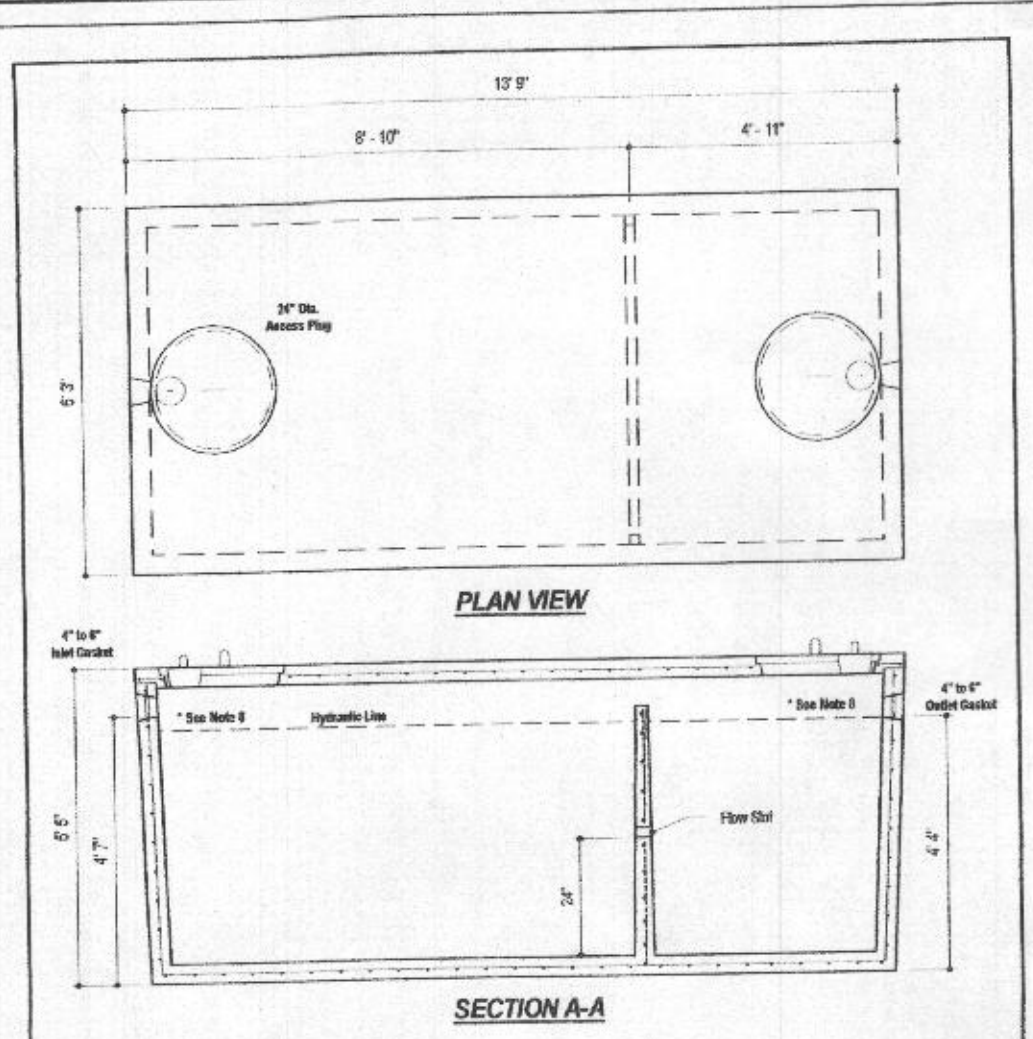
OWNER/DEVELOPER
BURKARD HOMES
1511 RITCHIE HIGHWAY #305
ARNOOLD, MD 21045
240-375-1052

project: 18-010
MAR. 2020
MAR. 2020
MAR. 2020

description: AS SHOWN
revision: R1H

PERCIVAL PROPERTY
LOT 2
TAX MAP 08, GRID 05, PARCEL 237
HOWARD COUNTY, MARYLAND
FOURTH ELECTION DISTRICT
ON-SITE SEWAGE DISPOSAL SYSTEM

MILDENBERG & ASSOC., INC.
Engineers Planners Surveyors
7350-B Grace Drive, Columbia, MD 21044
(410) 997-0298 Tel. (410) 997-0298 Fax.



DESIGN DATA & GENERAL NOTES

1. Concrete strength per ACI 308.2, 28 days, Density = 150 pcf.
2. Concrete cover depth 2" for all reinforcement.
3. Reinforcement 3/8" diameter per ACI 308.2 & 308.4C.
4. Maximum 3/8" diameter per ACI 308.2 & 308.4C.
5. All bars, ties, & wire mesh designed for 60,000 psi concrete.
6. Top soil must be suitable for backfill.
7. All work to be done in accordance with the drawings.
8. All work to be done in accordance with the drawings.
9. All work to be done in accordance with the drawings.
10. All work to be done in accordance with the drawings.

2,000 GALLON SEPTIC TANK
2-Compartment
Stock Item (Approx. 19,900 lbs)
Dep. No. 300-333 No Scale Aug 11, 2008

DESIGN DATA & GENERAL NOTES

1. Concrete strength per ACI 308.2, 28 days, Density = 150 pcf.
2. Concrete cover depth 2" for all reinforcement.
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500 GALLON TANK
Heavy Traffic Rated
Stock Item (Approx. Wt. - 7,000 lbs.)
Dep. No. 300-333 No Scale Aug 11, 2008

SEPTIC TANK SEWER SYSTEM ELEVATIONS

DESCRIPTION	ELEVATION
BASEMENT ELEVATION	546.83
INVERT OUT OF THE HOUSE	544.33
INVERT INTO SEPTIC TANK	543.73
INVERT OUT OF SEPTIC TANK	543.47
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TOP OF THE SEPTIC TANK	544.93
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INVERT OUT OF PUMP TANK	545.00
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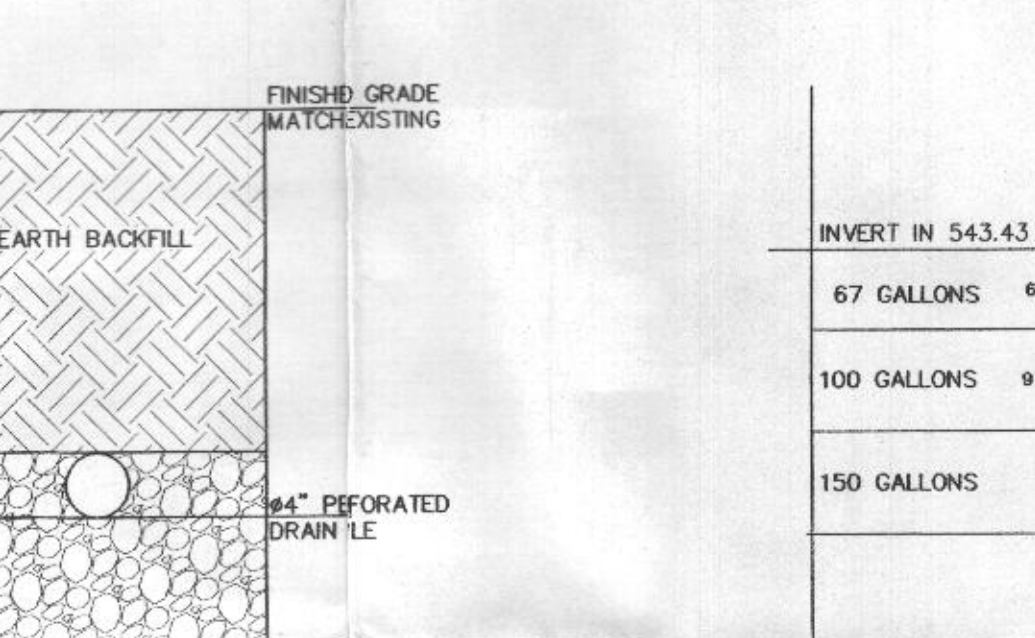
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SOILS TABLE (WITHIN LOD)

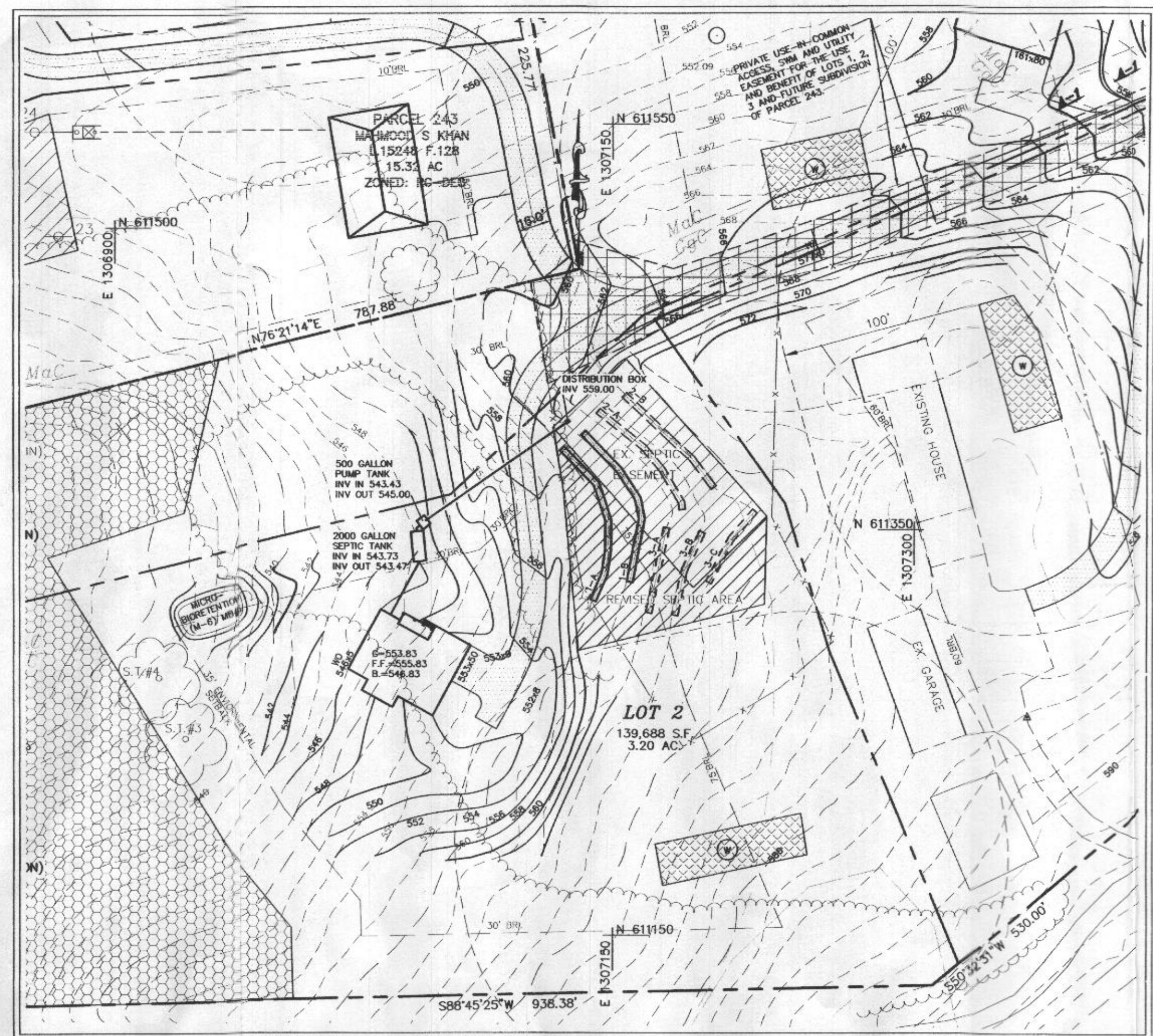
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PUMP TANK

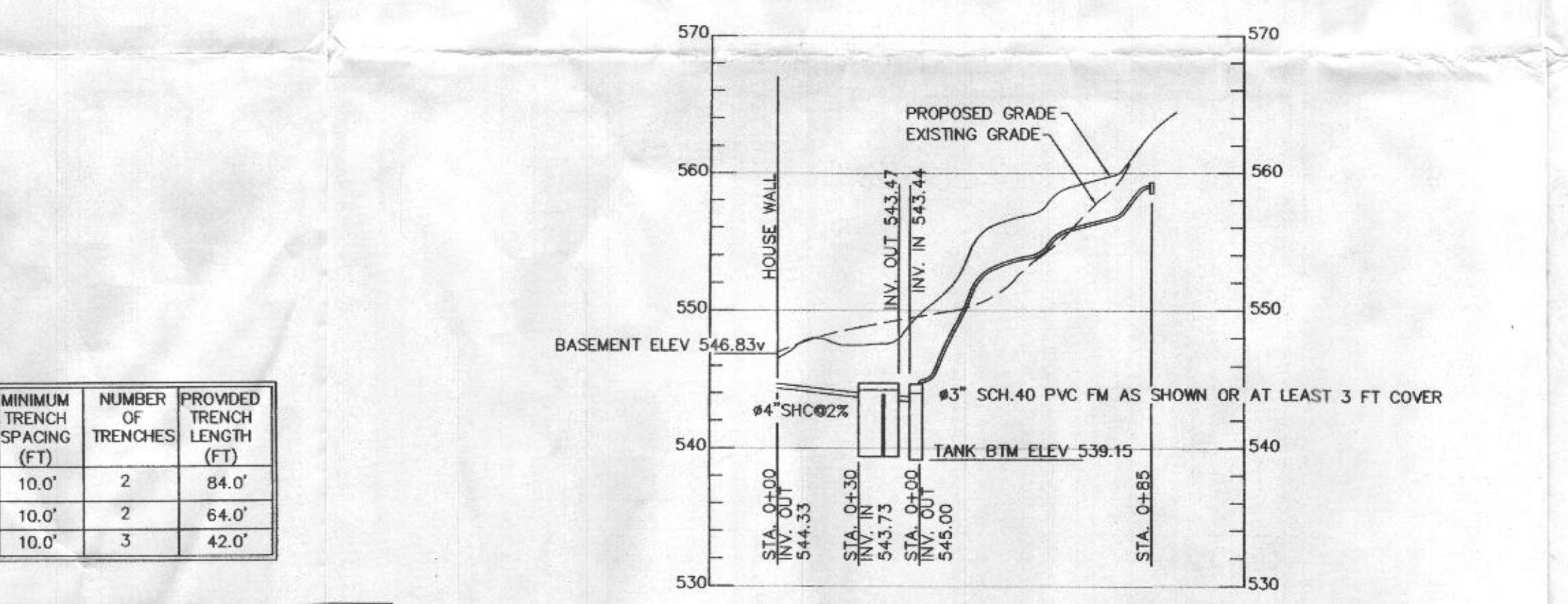


SEPTIC TRENCH SIZING

SYST.	APPLICATION RATE (GPD / SF)	MAXIMUM FLOW RATE (GPD)	AREA OF REQUIRED TRENCH (SF)	TRENCH WIDTH (FT)	LENGTH OF REQUIRED TRENCH (LF)	EFFECTIVE DEPTH BEGINS (FT)	TRENCH DEPTH (FT)	TRENCH REDUCTION FACTOR**	ADJUSTED LENGTH OF REQUIRED TRENCH (LF)	MINIMUM TRENCH SPACING (FT)	NUMBER OF TRENCHES	PROVIDED TRENCH LENGTH (FT)
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ON-SITE SEWAGE DISPOSAL SYSTEM PLAN
SCALE: 1"=50'



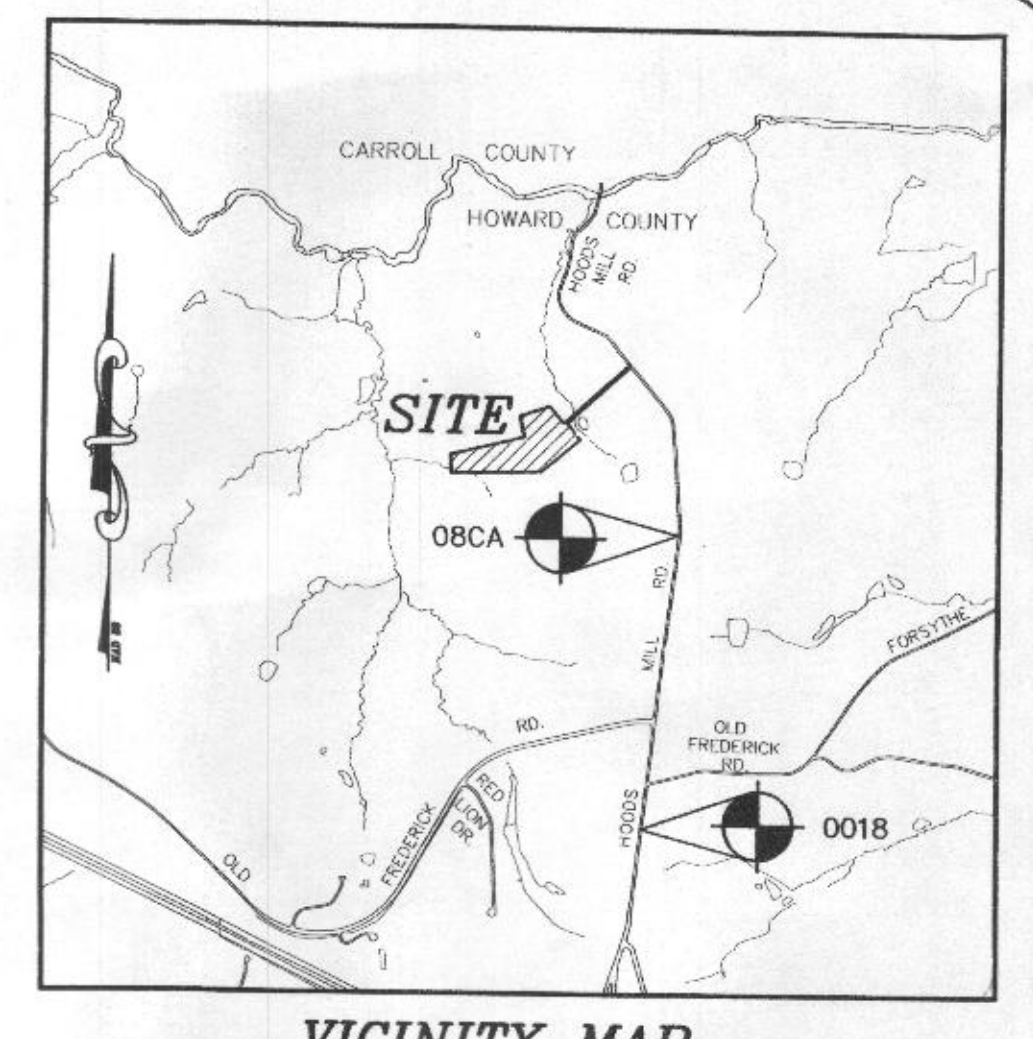
SEPTIC TANK AND F.M. PROFILE
1" = 50 FT HORIZONTAL, 1" = 10 FT VERTICAL

ON-SITE SEWAGE DISPOSAL SYSTEM PUMP DESIGN

SEWAGE DISPOSAL AREA INVERT ELEVATION	PRIMARY
DISTANCE FROM DISTRIBUTION BOX	558.0 FT
DISTRIBUTION BOX INVERT OUT	10.0 FT
DISTRIBUTION BOX INVERT IN	559.0 FT
DISTANCE TO PUMP TANK	559.0 FT
PUMP TANK INVERT OUT ELEVATION	85.0 FT
PUMP OUTLET TO INVERT OUT	545.0 FT
PUMP INVERT IN	5.0 FT

STATIC HEAD	19.0 FT
FORCE MAIN 3 IN DIAMETER SCH 40 PVC	3.068 IN
AREA NO INTERMEDIATE LOW POINTS; MIN VELOCITY =	0.05134 SQ FT
FLOW RATE = 0.10268 CFS, USE	2 FPS
FOR CALCULATING DYNAMIC HEAD, USE	46 GPM
	50 GPM
HEAD LOSS IN FEET/100 FT OF PIPE =	0.2083(100/C) ^{1.852} Q ^{1.852} /D ^{4.8655} (HAZEN WILLIAMS EQN.)
C = ROUGHNESS COEFFICIENT = 140	
Q = FLOW IN GPM = 46	
D = DIAMETER IN INCHES = 3.068	
HEAD LOSS IN FEET/100 FT OF PIPE =	0.670 FT
HEAD LOSS IN FEET FOR ACTUAL LENGTH	0.569 FT
FITTINGS LOSS: USE EQUIVALENT PIPE LENGTH	
90° ELBOW 11.1 FT EQUIVALENT	.074 FT
2"X3" REDUCER 2.0 FT EQUIVALENT	.013 FT
TOTAL DYNAMIC HEAD =	19.67 FT
USE GOULD WS-05B OR EQUIVALENT 1/2 HP PUMP	

FM HOLDS 48 GALLONS OF SEWAGE. ALLOW FOR RUN BACK.
600 GPD, PUMP RUNS 6X DAILY, 100 GALLONS PLUS RUNBACK
USE 10 INCHES, 150 GALLONS +/-
RUN TIME = 150 GALLONS/50 GPD = (MINUTES/RUN) 3 MIN. 0 SEC.



VICINITY MAP
SCALE: 1"=2000'
ADC MAP: 10 GRID: B-4

GENERAL NOTES:

1. THE SUBJECT PROPERTY IS ZONED RC-DEO PER THE OCTOBER 6, 2013 COMPREHENSIVE ZONING PLAN.
2. PARCEL BACKGROUND:
TAX MAP: 8
PARCEL: 237 LOT: 2
DEED REFERENCE: L 17425, F 88
ELECTION DISTRICT: FOURTH
ZONING: RC-DEO
AREA: 3.20 AC±
DPZ FILES: ECP-15-059, F-16-088
3. 2' TOPOGRAPHY FOR THE DEVELOPED AREAS IS BASED ON FIELD RUN SURVEY PERFORMED BY MILDENBERG, BOENDER & ASSOC., INC. ON OR ABOUT DECEMBER 2014.
4. PRIVATE WELL AND SEPTIC WILL BE UTILIZED.
5. THIS AREA DESIGNATES A PRIVATE SEWERAGE EASEMENT OF AT LEAST 10,000 SQ. FT. AS REQUIRED BY THE MARYLAND STATE DEPARTMENT OF ENVIRONMENT FOR INDIVIDUAL SEWERAGE DISPOSAL IMPROVEMENTS OF ANY NATURE IN THIS AREA ARE RESTRICTED UNTIL PUBLIC SEWERAGE IS AVAILABLE. THIS EASEMENT 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 SEWERAGE EASEMENT. RECORDATION OF A MODIFIED EASEMENT SHALL NOT BE NECESSARY.
6. ANY CHANGES TO THE LOCATION OR DEPTHS TO ANY COMPONENTS MUST BE APPROVED BY THE ENGINEER AND THE HOWARD COUNTY HEALTH DEPARTMENT PRIOR TO INSTALLATION. A REVISED PLAN MAY BE REQUIRED.
7. THE MAXIMUM EARTH COVER OVER THE TANK IS THREE (3) FEET. GREATER EARTH COVER WILL REQUIRE A HEAVY LOAD BEARING TANK.
8. ANY WELLS OR SEPTIC SYSTEMS LOCATED WITHIN 100' OF THE PROPERTY BOUNDARIES AND 200' DOWN GRADIENT OF ANY WELL AND/OR SEPTIC SYSTEMS HAVE BEEN SHOWN.
9. LOD= 55,130 SQ.FT.

WELL CERTIFICATION

THE EXISTING WELL, TAG # HQ-15-0365 HAS BEEN FIELD LOCATED AND IS ACCURATELY SHOWN.

ON-SITE SEWAGE DISPOSAL SYSTEM:

RESIDENTIAL SYSTEM DESIGN:
4 BEDROOM HOUSE (LIVING AREA=3,580 SQ.FT.)
INCLUDES BSMT 1248 SF X 50% + 1ST AND 2ND FLR 2956 SF
150 GALLONS X # OF BEDROOMS = VOLUME OF WASTEWATER /DAY
150 X 4 = 600 GPD

PRIMARY SYSTEM:

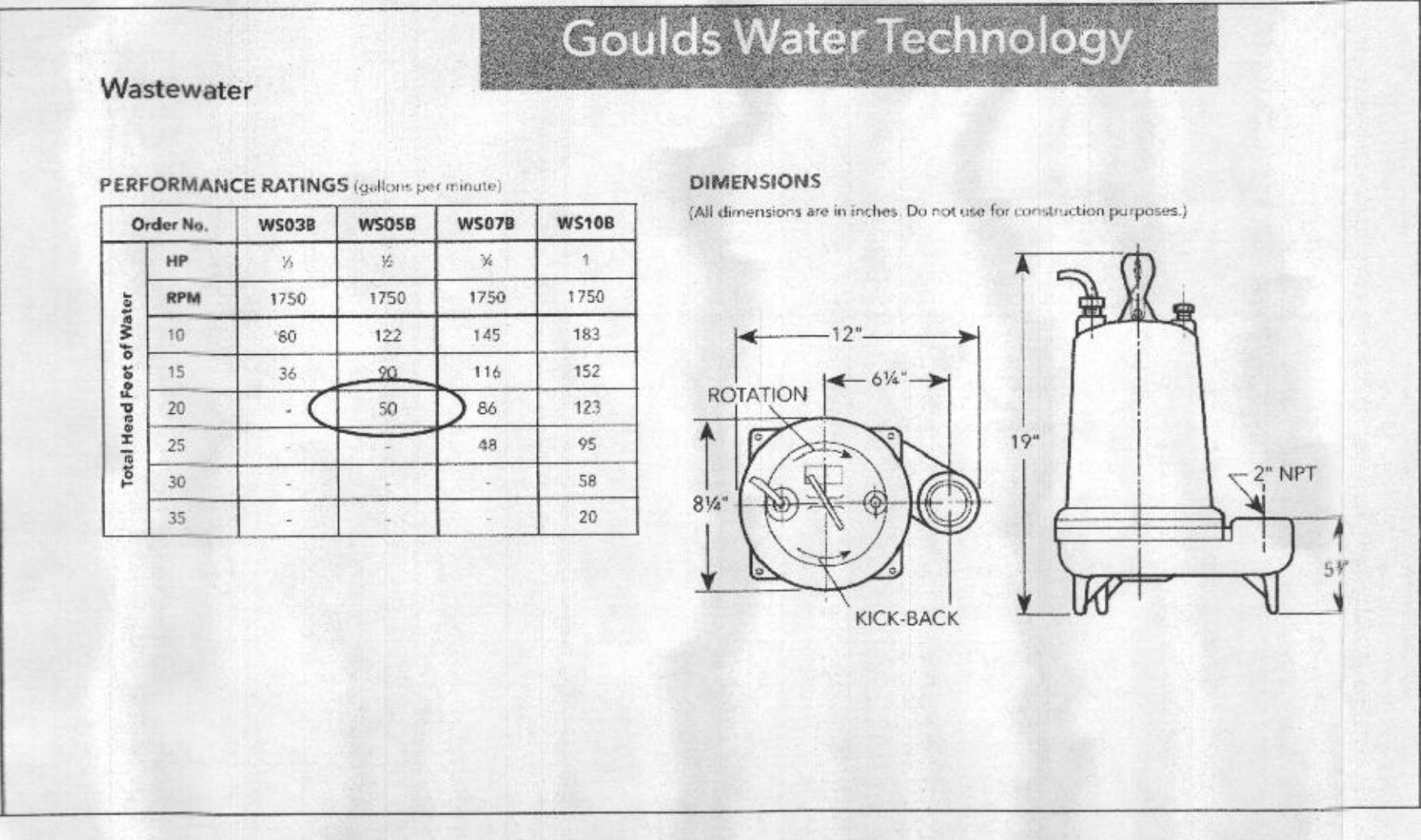
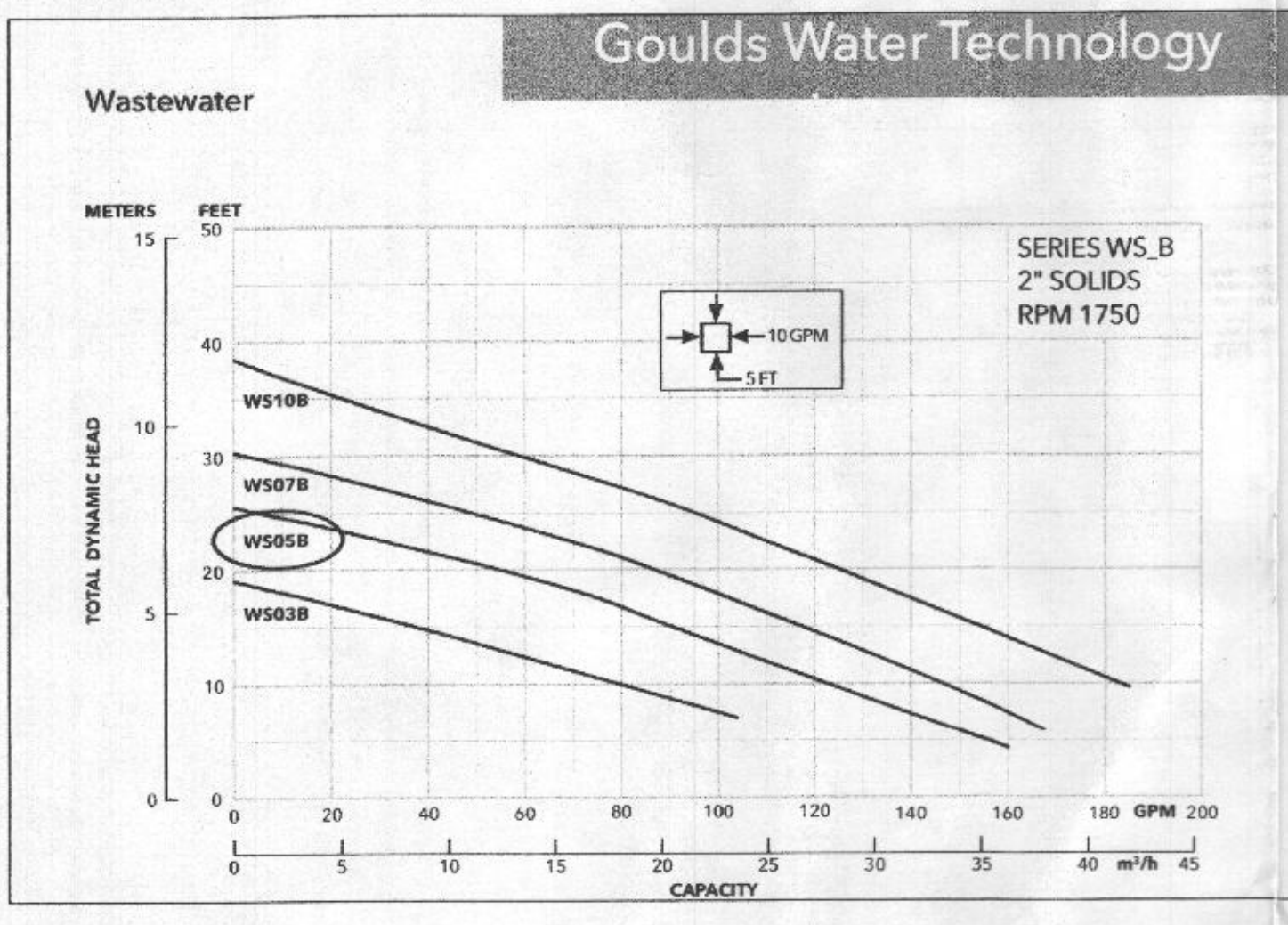
PERC RATE = 16-30 MINUTES/INCH
APPLICATION RATE = 0.6 GPD/SQ.FT.
DESIGN FLOW + APPLICATION RATE = SQ.FT. OF TRENCH REQUIRED
600 + 0.6 = 1000 SQ.FT.
SQ.FT. REQUIRED + WIDTH OF TRENCH = LENGTH OF TRENCH
1000 + 3.0' = 333.3 FT
USE 36" OF GRAVEL BELOW DRAIN PIPE
333.3 X 0.5 = 166.67
USE TWO (2) REQUIRED LENGTH OF TRENCHES (83.3'). PROVIDE (84') A MINIMUM OF 10' BETWEEN TRENCHES UTILIZING SIDEWALL REDUCTION CREDIT.
MINIMUM TANK CAPACITY = 2000 GALLONS
USE MAYER BROS. PRODUCT OR EQUIVALENT.

SECONDARY SYSTEM:

PERC RATE = 6-15 MINUTES/INCH
APPLICATION RATE = 0.8 GPD/SQ.FT.
DESIGN FLOW + APPLICATION RATE = SQ.FT. OF TRENCH REQUIRED
600 + 0.8 = 750 SQ.FT.
SQ.FT. REQUIRED + WIDTH OF TRENCH = LENGTH OF TRENCH
750 + 3.0' = 250.0 FT
USE 36" OF GRAVEL BELOW DRAIN PIPE
250.0 X 0.50 = 125.0 USE TWO (2) TRENCHES (63'). A MINIMUM OF 10' BETWEEN TRENCHES UTILIZING SIDEWALL REDUCTION CREDIT.

TERTIARY SYSTEM:

PERC RATE = 6-15 MINUTES/INCH
APPLICATION RATE = 0.8 GPD/SQ.FT.
DESIGN FLOW + APPLICATION RATE = SQ.FT. OF TRENCH REQUIRED
600 + 0.8 = 750 SQ.FT.
SQ.FT. REQUIRED + WIDTH OF TRENCH = LENGTH OF TRENCH
750 + 3.0' = 250.0 FT
USE 36" OF GRAVEL BELOW DRAIN PIPE
250.0 X 0.50 = 125.0 USE THREE (3) TRENCHES (42'). A MINIMUM OF 10' BETWEEN TRENCHES UTILIZING SIDEWALL REDUCTION CREDIT.



APPROVED FOR PRIVATE WATER AND PRIVATE SEWERAGE SYSTEMS

COUNTY HEALTH OFFICER
HOWARD COUNTY HEALTH DEPARTMENT

DATE

OWNER/DEVELOPER

BURKARD HOMES
1511 RITCHIE HIGHWAY #305
ARNOLD, MD 21045
246-375-1052

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. 34027, EXP. DATE 01/16/2021

MICHAEL G. KRETSCH, P.E.

DATE:

PROJECT DATE: MAR. 2020
18-010
Illustration: MKG
MKG
MKG
AS SHOWN
RHH

DESCRIPTION: rev/s on 9
MAR 2020
2014

PERCIVAL PROPERTY
LOT 2
TAX MAP 08, GRU 05, PARCEL 237
HOWARD COUNTY, MARYLAND
FOURTH ELECTION DISTRICT
ON-SITE SEWAGE DISPOSAL SYSTEM

MILDENBERG, BOENDER & ASSOC., INC.
Engineers Planners Surveyors
7850-B Orce Drive, Columbia, MD 21044
(410) 997-0296 Tel. (410) 997-0298 Fax.