QUANTITIES

ITEM	ESTIMATED	AS-BUILT QUANTITIES	AS-BUILT TYPE	AS-BUILT SUPPLIER
1-1/4"L.P.S.; SDR-21 PVC	55 L.F.			
1-1/2"L.P.S.; SDR-21 PVC	415 L.F.			
1-1/2"x1-1/4" RED.	1 EACH			
1-1/4"x1-1/4" TEE	1 EACH			
1-1/2"x1-1/2" TEE	2 EACH			
DUPLEX GRINDER PUMP UNIT	3 EACH			
TRANSITION MANHOLE	1 EACH			
AIR RELEASE VALVE	1 EACH			
4"S; PVC SDR-35	61 L.F.			
IN-LINE FLUSHING CONNECTION	1 EACH			
TERMINAL FLUSHING CONNECTION	1 EACH			
CONTINUITY TEST STATION	3 EACH			
4" FORCE MAIN (INITIAL DRAINFIELD SYSTEM)	640 L.F.			
DRAINFIELD TRENCH: 3' WIDTH (INITIAL DRAINFIELD SYSTEM)	1,042 L.F.			
2" LATERAL; PVC (INITIAL DRAINFIELD SYSTEM)	996.5 L.F.			
3,000 GAL. SETTLING TANK	2 EACH			
6,000 GAL. DOSE TANK	1 EACH			
ELECTRICAL CONTROLS & TELEMETRY	1 L.S.			
CONTROL / MAINTENANCE BUILDING	1 L.S.			
NAME OF UTILITY CONTRACTOR:				
SURVEY & DRAFTING DIVISION AS-BUILT DATE:				
4,300 GAL Test Tank				

BENCHMARK INFORMATION

B.M.#1 – HOWARD COUNTY CONTROL STATION #10AA – HORIZONTAL – NAD '83)
(LOCATED ON MAYAPPLE TRAIL APPROXIMATELY 530' WEST OF CROWS FOOT ROAD, 2.4' FROM EDGE OF PAVING ON THE SOUTH SIDE OF THE ROAD.)
N 609,753.356
E 1,331,668.825
ELEVATION = 563.097' – VERTICAL – (NAVD '88)

B.M.#2 – HOWARD COUNTY CONTROL STATION #09CB – HORIZONTAL – (NAD '83)
(LOCATED ON WINDRIVER DRIVE, APPROXIMATELY 500' WEST OF RIVER ROAD 99.5' DIAGONALLY ACROSS THE STREET TO THE EAST FROM A BGE TRANSFORMER.)
N 612,571.114
E 1,326,795.332
ELEVATION = 558.523' – VERTICAL – (NAVD '88)

APPROVED: FOR PRIVATE WATER AND SHARED WASTEWATER TREATMENT/DISPOSAL FACILITY FOR LOTS 4-9.

Steven J. Kreig, LEHS — 10-2-24
MARYLAND DEPARTMENT OF THE ENVIRONMENT REPRESENTATIVE — DATE

OWNERS/DEVELOPER CERTIFICATION

"I/WE HEREBY CERTIFY THAT ANY CLEARING, GRADING, CONSTRUCTION, OR DEVELOPMENT WILL BE DONE PURSUANT TO THIS APPROVED EROSION AND SEDIMENT CONTROL PLAN, INCLUDING INSPECTING AND MAINTAINING CONTROLS, AND THAT THE RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF TRAINING AT A MARYLAND DEPARTMENT OF THE ENVIRONMENT (MDE) APPROVED TRAINING PROGRAM FOR THE CONTROL ON EROSION AND SEDIMENT PRIOR TO BEGINNING THE PROJECT. I CERTIFY RIGHT-OF-ENTRY FOR PERIODIC ON-SITE EVALUATION BY HOWARD COUNTY, THE HOWARD SOIL CONSERVATION DISTRICT AND/OR MDE."

J. V. K. — 9-19-24
OWNER'S/ DEVELOPER'S SIGNATURE — DATE

Jason Van Kirk, V.P. of ESDCII Inc., Its Manager
PRINTED NAME & TITLE

DESIGN CERTIFICATION

"I HEREBY CERTIFY THAT THIS PLAN HAS BEEN DESIGNED IN ACCORDANCE WITH CURRENT MARYLAND EROSION AND SEDIMENT CONTROL LAWS, REGULATIONS, AND STANDARDS, THAT IT REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE, AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT."

Sept 17, 2024
DESIGNER'S SIGNATURE — DATE

Paul G. Cavanaugh and REGISTRATION NO. 27020
PRINTED NAME — P.E., R.L.S., OR R.L.A. (CIRCLE ONE)

SEDIMENT CONTROL MEASURES FOR THIS CONTRACT WILL BE IMPLEMENTED IN ACCORDANCE WITH SECTION 308 OF THE HOWARD COUNTY DESIGN MANUAL – VOLUME IV: STANDARD SPECIFICATIONS AND DETAILS FOR CONSTRUCTION AND AS SHOWN ON THE ASSOCIATED 'F' PLAN; F-24-006.

J. V. K. — 9-19-24
SIGNATURE OF DEVELOPER — DATE

F-24-006

THIS DEVELOPMENT IS APPROVED FOR EROSION AND SEDIMENT CONTROL BY HOWARD SOIL CONSERVATION DISTRICT.

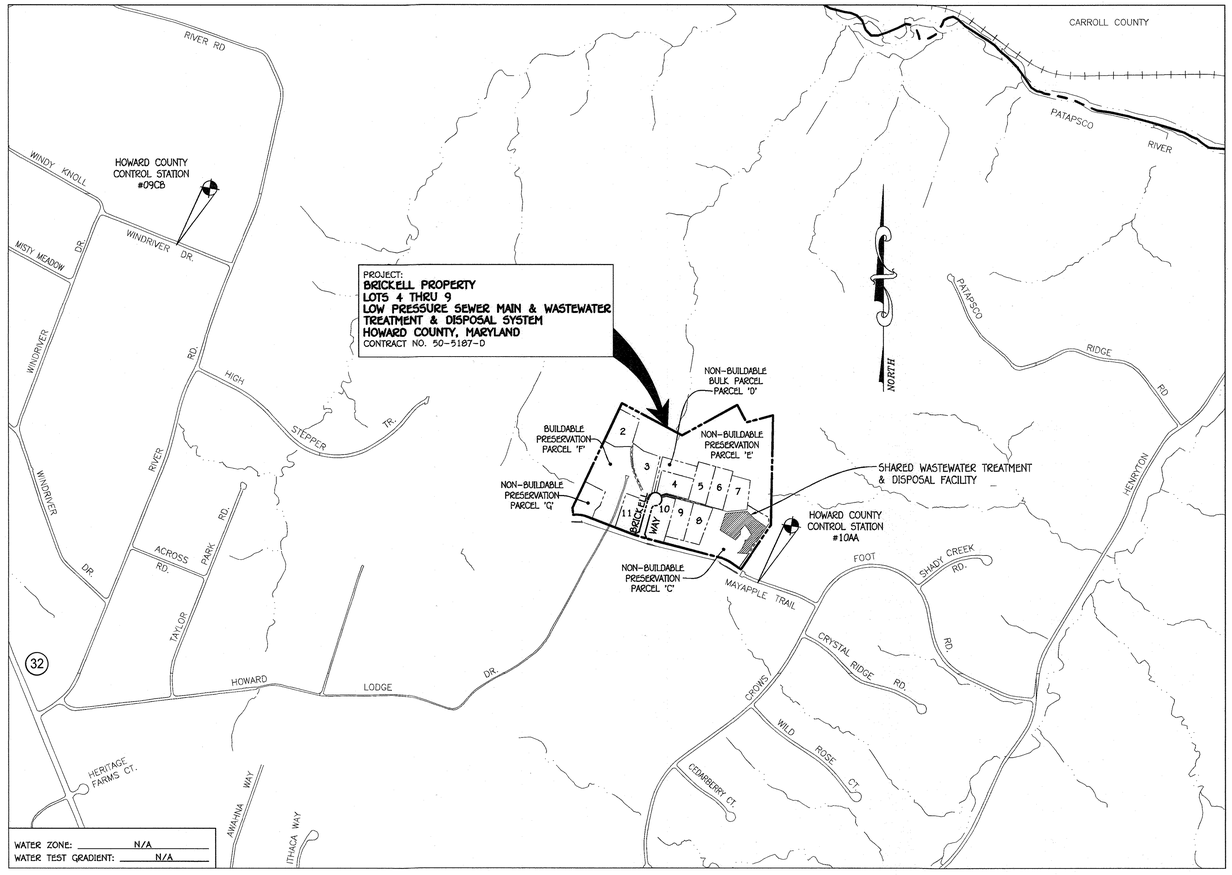
Alexander Beatchie — 10/09/24
HOWARD SOIL CONSERVATION DISTRICT — DATE

OWNERS/DEVELOPER SHARED SEPTIC CERTIFICATION

THE SHARED SEWERAGE SYSTEM WILL BE AVAILABLE TO LOTS 4-9. PLANS FOR THE FACILITY INCLUDING ANY NECESSARY POINT OF DISCHARGE HAVE BEEN APPROVED BY THE DEPARTMENT OF THE ENVIRONMENT.

J. V. K. — 9-19-24
OWNER'S/ DEVELOPER'S SIGNATURE — DATE

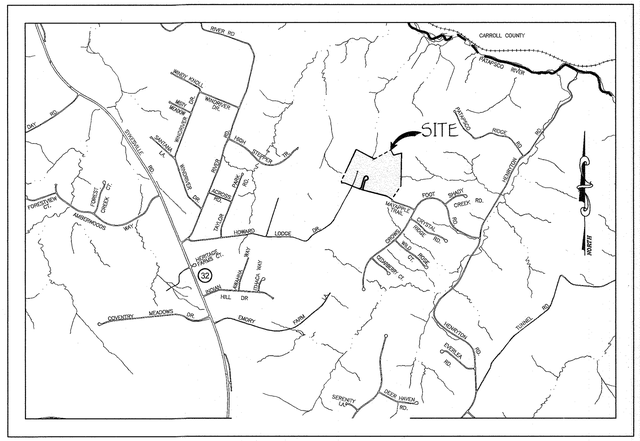
LEGEND	
SYMBOL	DESCRIPTION
--------	EX. WATER MAIN
— — —	EX. SEWER MAIN
○	EX. SEWER MANHOLE
	EX. SEWER, WATER & UTILITY EASEMENT
	EX. FIRE HYDRANT
	EX. VALVE
	PROP. WATER MAIN
	PROP. SEWER MAIN
●	PROP. SEWER MANHOLE
— — —	PROP. PUBLIC SEWER & UTILITY EASEMENT
-------→	PROP. WHC
——→	PROP. SHC
	PROP. FIRE HYDRANT
	PROP. VALVE



LOCATION MAP

SCALE: 1" = 600'

TYPE OF BUILDING:	RESIDENTIAL: SINGLE FAMILY DETACHED
NUMBER OF LOTS:	SIX (6)
NO. OF WATER HOUSE CONNECTIONS:	N/A: PRIVATE ON-SITE WELLS
NO. OF SEWER HOUSE CONNECTIONS:	6
SEWER SHED:	N/A
TREATMENT PLANT:	SHARED WASTEWATER TREATMENT/DISPOSAL SYSTEM



VICINITY MAP

SCALE: 1"= 2000'

GENERAL NOTES

PART A
1. APPROXIMATE LOCATIONS OF EXISTING MAINS ARE SHOWN. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PROTECT EXISTING MAINS AND SERVICES AND MAINTAIN UNINTERRUPTED SERVICE. ANY DAMAGE INCURRED SHALL BE REPAIRED IMMEDIATELY TO THE SATISFACTION OF THE ENGINEER AT THE CONTRACTOR'S EXPENSE.
2. TOPOGRAPHIC FIELD SURVEYS WERE PERFORMED ON OR ABOUT JULY, 2018 BY FISHER, COLLINS & CARTER, INC.
3. HORIZONTAL AND VERTICAL SURVEY CONTROLS:
THE COORDINATES SHOWN ON THE DRAWINGS ARE BASED ON MARYLAND STATE REFERENCE SYSTEM NAD '83/91' AS PROJECTED BY HOWARD COUNTY GEODETIC CONTROL STATIONS NO. 10AA & NO. 09CB.
ALL VERTICAL CONTROLS ARE BASED ON NAVD '88. VERTICAL CONTROLS PROVIDED ON THE DRAWINGS.
4. ALL PIPE ELEVATIONS SHOWN ARE INVERT ELEVATIONS UNLESS OTHERWISE NOTED ON THE PLANS.
5. CLEAR ALL UTILITIES BY A MINIMUM OF 12 INCHES. CLEAR ALL POLES BY 5'-0" MINIMUM OR TUNNEL AS REQUIRED UNLESS OTHERWISE NOTED. THE OWNER HAS CONTACTED THE UTILITY COMPANIES AND HAS MADE ARRANGEMENTS FOR BRACING OF POLES AS SHOWN ON THE DRAWINGS. IN THE EVENT THE CONTRACTOR'S WORK REQUIRES BRACING OF ADDITIONAL POLES, ANY COST INCURRED BY THE OWNER FOR THE BRACING OF THE ADDITIONAL POLES OR DAMAGES SHALL BE DEDUCTED FROM MONIES OWED THE CONTRACTOR. THE CONTRACTOR SHALL COORDINATE WITH THE UTILITY COMPANIES TO SCHEDULE THE BRACING OF THE POLES.
6. FOR DETAILS NOT SHOWN ON THE DRAWINGS, AND FOR MATERIALS AND CONSTRUCTION METHODS, USE HOWARD COUNTY DESIGN MANUAL, VOLUME IV, STANDARD SPECIFICATIONS AND DETAILS FOR CONSTRUCTION (LATEST EDITION). THE CONTRACTOR SHALL HAVE A COPY OF VOLUME IV ON THE JOB SITE.
7. WHERE TEST PITS HAVE BEEN MADE ON EXISTING UTILITIES, THEY ARE NOTED BY THE SYMBOL ⊕. AT THE LOCATIONS OF THE TEST PITS, A NOTE OR NOTES CONTAINING THE RESULTS OF THE TEST PIT OR PITS IS INCLUDED ON THE DRAWINGS. EXISTING UTILITIES IN THE VICINITY OF THE PROPOSED WORK FOR WHICH TEST PITS HAVE NOT BEEN DUG SHALL BE LOCATED BY THE CONTRACTOR TWO WEEKS IN ADVANCE OF CONSTRUCTION OPERATIONS AT HIS OWN EXPENSE.
8. THE CONTRACTOR SHALL NOTIFY THE FOLLOWING UTILITY COMPANIES OR AGENCIES AT LEAST FIVE WORKING DAYS BEFORE STARTING WORK SHOWN ON THESE PLANS:

AT&T	1-800-252-1133
BGE (CONTRACTOR SERVICES)	410-637-8713
BGE (EMERGENCY)	410-685-0123
BUREAU OF UTILITIES	410-313-4900
COLONIAL PIPELINE CO	410-795-1390
HOWARD COUNTY HEALTH DEPARTMENT	410-313-1771
MISS UTILITY	1-800-257-7777
STATE HIGHWAY ADMINISTRATION	410-531-5533
VERIZON	1-800-743-0033 / 410-224-9210
HOWARD COUNTY HEALTH DEPARTMENT	410-313-1771

9 TREES AND SHRUBS ARE TO BE PROTECTED FROM DAMAGE TO THE MAXIMUM EXTENT. TREES AND SHRUBS LOCATED WITHIN THE CONSTRUCTION STRIP ARE NOT TO BE REMOVED OR DAMAGED BY THE CONTRACTOR.
10. CONTRACTOR SHALL REMOVE TREES, STUMPS AND ROOTS ALONG THE LINE OF EXCAVATION. PAYMENT FOR SUCH REMOVAL SHALL BE INCLUDED IN THE UNIT PRICE BID FOR THE CONSTRUCTION OF THE MAIN.
11. THE CONTRACTOR SHALL NOTIFY THE BUREAU OF HIGHWAYS, HOWARD COUNTY, AT (410)-313-7450 AT LEAST FIVE WORKING DAYS BEFORE OPEN CUTTING OR BORING/JACKING OF ANY COUNTY ROAD FOR LAYING WATER/SEWER MAINS OR HOUSE CONNECTIONS. THE APPROVAL OF THESE DRAWINGS WILL CONSTITUTE COMPLIANCE WITH DPW REQUIREMENTS PER SECTION 18.114(a) OF THE HOWARD COUNTY CODE.

PART B: WATER MAIN GENERAL NOTES
1. WATER SERVICE TO ALL BUILDABLE LOTS SHALL BE PROVIDED BY INDIVIDUAL PRIVATE ON-SITE WELLS.

PART C: SEWER MAIN GENERAL NOTES
1. LOW PRESSURE SEWER MAINS SHALL BE SDR-21 PVC.
2. TRACER WIRE SHALL BE PROVIDED OVER ALL LOW PRESSURE SEWER MAINS. TRACER WIRE SHALL BE OVERLAPPING, INSULATED #6 AND FIRMLY CONNECTED AND ENCAPSULATED.
3. PRIOR TO THE WASTEWATER TREATMENT SYSTEM BEING PLACED IN SERVICE, THE DEVELOPER SHALL ARRANGE TO HAVE A QUALIFIED AND HOWARD COUNTY (BUREAU OF UTILITIES) APPROVED FIRM SAMPLE THE MONITORING WELLS AND FORWARD THE RESULTS TO THE BUREAU OF UTILITIES.
4. AT THE IN-SERVICE INSPECTION OF THE LOW PRESSURE SEWER MAIN COLLECTION SYSTEM, THE CONTRACTOR SHALL PROVIDE ONE (1) SPARE GRINDER PUMP TO THE BUREAU OF UTILITIES.
5. ALL PRESSURE SEWER LINES UNDER DRIVEWAYS SHALL BE SLEEVED IN 4" SCHEDULE 40 PVC.

NOTES:

1. TOTAL NUMBER OF DWELLINGS CONNECTED TO THE SYSTEM: 6
NUMBER OF BEDROOMS PER DWELLING: 5
TOTAL NUMBER OF BEDROOMS: 6 DWELLINGS X 5 BEDROOMS PER DWELLING = 30 BEDROOMS
DAILY DESIGN FLOW = 150 GPD PER BEDROOM
TOTAL DAILY DESIGN FLOW = 150 GPD PER BEDROOM X 30 BEDROOMS = 4,500 GALLONS PER DAY
2. EASEMENT AGREEMENTS FOR THE PRIVATE SEWAGE EASEMENTS AND WELL EASEMENTS MUST BE RECORDED IN LAND RECORDS FOR THE PROPERTIES IN QUESTION PRIOR TO HOWARD COUNTY DEPARTMENT OF HEALTH DEPARTMENT APPROVAL OF BUILDING PERMITS FOR THE AFFECTED PARCELS OR A SEPTIC PERMIT FOR INSTALLATION OF THE SHARED TREATMENT SYSTEM.
3. ▨ THIS AREA DESIGNATES A PRIVATE SEWAGE AREA OF AT LEAST 10,000 SQUARE FEET FOR EACH LOT ON THE SHARED SYSTEM 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. RECORDATION OF A MODIFIED SEWAGE AREA SHALL NOT BE NECESSARY.

WAIVER NOTE: 1. DMV2-24-012 WAS APPROVED ON MARCH 8, 2024 FOR A PUBLIC LPSS FROM LOTS 4-9 TO THE PUBLIC SHARED SEWAGE DISPOSAL AREA.

CONTRACT NO. 50-5187-D
BRICKELL PROPERTY
LOTS 4 THRU 9
LOW PRESSURE SEWER MAIN & WASTEWATER TREATMENT & DISPOSAL SYSTEM
HOWARD COUNTY, MARYLAND

OWNER/DEVELOPER
ESC MEADOW SPRINGS, L.C.
5074 DORSEY HALL DRIVE, SUITE 205
ELLICOTT CITY, MD 21042
PHONE:- 410-720-3021

0' 50' 100' 200'
SCALE: 1" = 50'

CONTRACT NO. 50-5187-D
BRICKELL PROPERTY
LOTS 4 THRU 9
LOW PRESSURE SEWER MAIN & WASTEWATER TREATMENT & DISPOSAL SYSTEM
HOWARD COUNTY, MARYLAND

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND
CHIEF, BUREAU OF UTILITIES — 9/23/24 — DATE

DEPARTMENT OF PLANNING AND ZONING
HOWARD COUNTY, MARYLAND
CHIEF, DEVELOPMENT ENGINEERING DIVISION — 10.16.24 — DATE

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. 27020 EXPIRATION DATE IS 1/25/26.

FISHER, COLLINS & CARTER, INC.
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
CENTENNIAL SQUARE OFFICE PARK – 10272 BALTIMORE NATIONAL PIKE
ELLICOTT CITY, MARYLAND 21042
(410) 461 – 2855

STATE OF MARYLAND — #27020 — PAUL G. CAVANAUGH — PROFESSIONAL ENGINEER

DESIGNED BY :	L.A.G.
DRAWN BY :	T.L.
CHECKED BY :	P.G.C.
DATE :	JULY, 2024

BY	NO.	REVISION	DATE

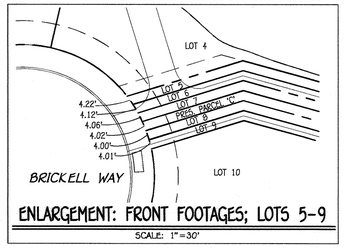
LOW PRESSURE SEWER MAIN & WASTEWATER TREATMENT & DISPOSAL SYSTEM
TITLE SHEET

600' SCALE MAP NO. 9, 10 GRID NO. 1, 6
F.C.C. WORK ORDER NO. 17040
FILE NAME : SEWER MAIN EXTENSIONS PLAN

BRICKELL PROPERTY
LOTS 4 THRU 9
LOW PRESSURE SEWER MAIN
& WASTEWATER TREATMENT & DISPOSAL SYSTEM
CONTRACT NO. 50-5187-D
THIRD ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

SHEET 1 OF 7



ENLARGEMENT: FRONT FOOTAGES; LOTS 5-9

SCALE: 1"=30'

OWNERS/DEVELOPER SHARED SEPTIC CERTIFICATION

THE SHARED SEWERAGE SYSTEM WILL BE AVAILABLE TO LOTS 4-9. PLANS FOR THE FACILITY INCLUDING ANY NECESSARY POINT OF DISCHARGE HAVE BEEN APPROVED BY THE DEPARTMENT OF THE ENVIRONMENT.

OWNER(S)/ DEVELOPER'S SIGNATURE — DATE: 9-19-24

PLAN

SCALE: 1" = 50'

0' 50' 100' 200'

SCALE: 1" = 50'

CONTRACT NO. 50-5187-D
BRICKELL PROPERTY
LOTS 4 THRU 9
LOW PRESSURE SEWER MAIN & WASTEWATER TREATMENT & DISPOSAL SYSTEM
HOWARD COUNTY, MARYLAND

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

CHIEF, BUREAU OF UTILITIES — DATE: 9/26/24

DEPARTMENT OF PLANNING AND ZONING
HOWARD COUNTY, MARYLAND

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE: 10.16.24

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CENTENNIAL SQUARE OFFICE PARK - 10272 BALTIMORE NATIONAL PIKE
ELLICOTT CITY, MARYLAND 21042
(410) 461 - 2855

#27020
STATE OF MARYLAND — PAUL G. CAVANAUGH — No. 27020 — PROFESSIONAL ENGINEER

DESIGNED BY :	L.A.G.
DRAWN BY :	T.L.
CHECKED BY :	P.G.C.
DATE :	JULY, 2024

BY	NO.	REVISION	DATE

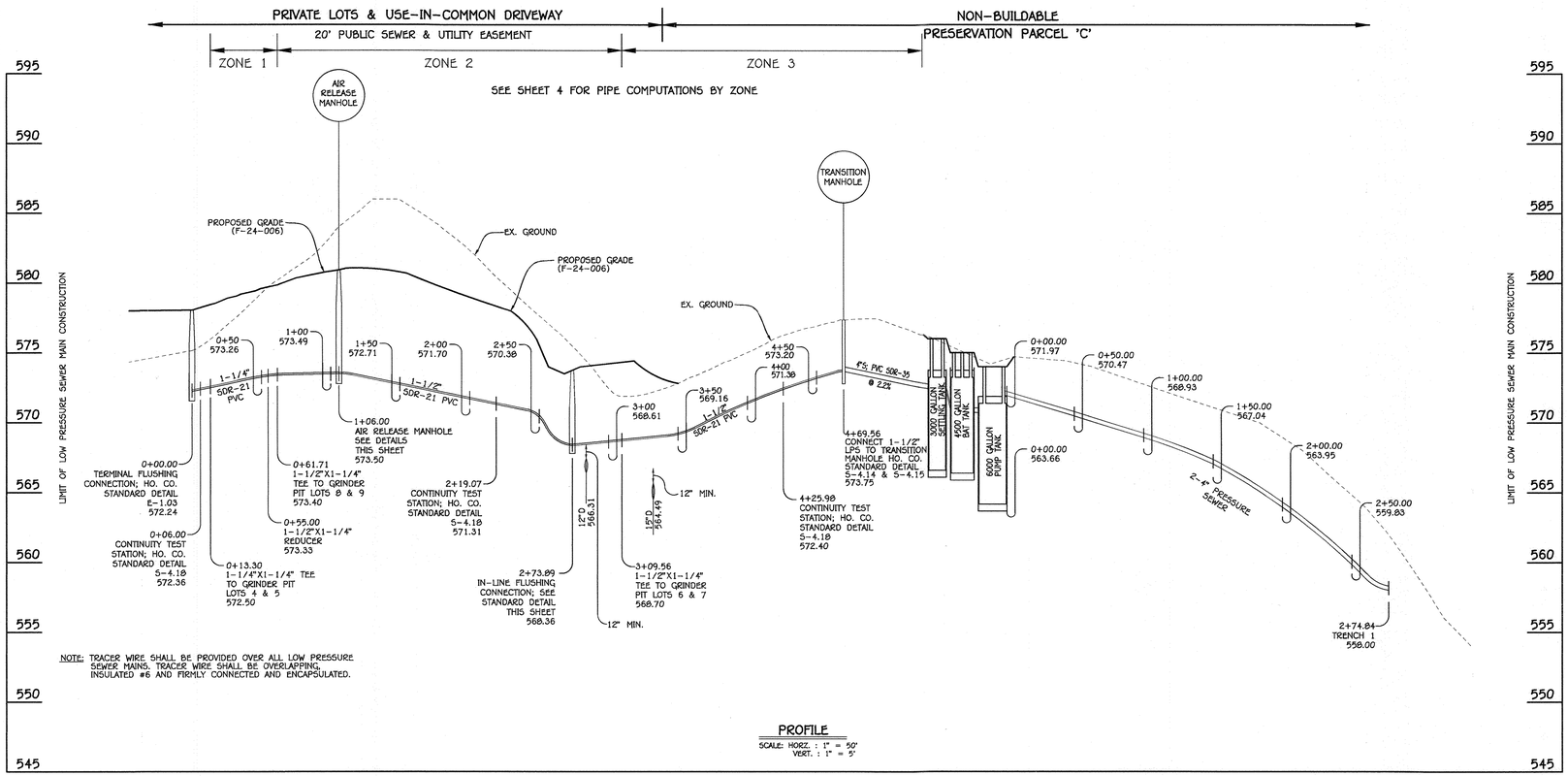
LOW PRESSURE SEWER MAIN & WASTEWATER TREATMENT & DISPOSAL SYSTEM PLAN

600' SCALE MAP NO. 9, 10 — GRID NO. 1, 6
F.C.C. WORK ORDER NO. 17040
FILE NAME : SEWER MAIN EXTENSIONS PLAN

BRICKELL PROPERTY
LOTS 4 THRU 9
LOW PRESSURE SEWER MAIN
& WASTEWATER TREATMENT & DISPOSAL SYSTEM
CONTRACT NO. 50-5187-D
THIRD ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

SHEET 2 OF 7



NOTE: TRACER WIRE SHALL BE PROVIDED OVER ALL LOW PRESSURE SEWER MAINS. TRACER WIRE SHALL BE OVERLAPPING, INSULATED #6 AND FIRMLY CONNECTED AND ENCAPSULATED.

PROFILE

SCALE: HORZ. : 1" = 50'
VERT. : 1" = 5'

LOW PRESSURE SEWER MAIN: LOTS 4 THRU 9; ALIGNMENT TO TREATMENT FACILITIES

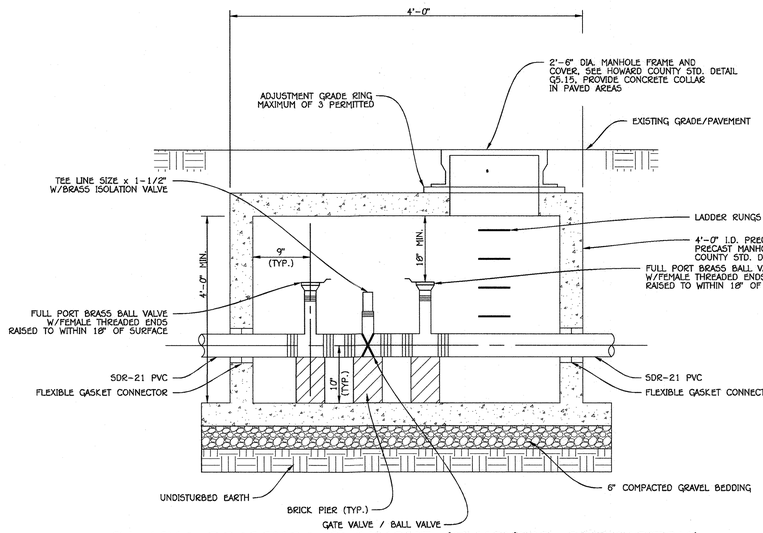
LOW PRESSURE SEWER MAIN TABULATION CHART				
L.P.S. STA.	APPURTENANCE	NORTHING	EASTING	RIM ELEVATION
LOW PRESSURE SEWER MAIN: LOTS 4 THRU 9; ACCESS ROAD TO TREATMENT FACILITIES				
0+00.00	TERMINAL FLUSHING CONN.	610458.69	1331073.72	578.06
0+06.00	CONTINUITY TEST STATION	610457.11	1331079.51	
0+13.30	1 1/4"X1 1/4" TEE	610455.19	1331086.55	———
0+55.00	2"X1 1/4" REDUCER	610444.22	1331126.79	———
0+61.71	2"X1 1/4" TEE	610442.45	1331133.26	———
1+06.01	AIR RELEASE MANHOLE	610430.80	1331176.00	580.94
2+19.07	CONTINUITY TEST STATION	610401.06	1331285.08	———
2+73.89	IN-LINE FLUSHING CONN.	610400.01	1331288.94	574.10
2+96.36	PC (CRIMP RADIUS 10')	610380.73	1331359.65	———
3+08.43	PT (CRIMP RADIUS 10')	610372.08	1331366.97	———
3+09.56	2"X1 1/4" TEE	610370.96	1331367.08	———
3+23.85	PC (CRIMP RADIUS 50')	610356.74	1331368.52	———
3+44.61	PT (CRIMP RADIUS 50')	610336.25	1331366.31	———
4+25.98	CONTINUITY TEST STATION	610258.88	1331341.12	———
4+64.53	TRANSITION MANHOLE	610217.44	1331327.63	577.38

NOTE: SET MH RIMS FLUSH W/EXISTING GROUND OR PROPOSED GRADE AS APPLICABLE.

OWNERS/DEVELOPER SHARED SEPTIC CERTIFICATION

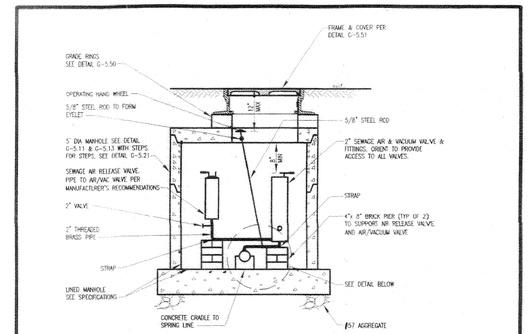
THE SHARED SEWERAGE SYSTEM WILL BE AVAILABLE TO LOTS 4-9. PLANS FOR THE FACILITY INCLUDING ANY NECESSARY POINT OF DISCHARGE HAVE BEEN APPROVED BY THE DEPARTMENT OF THE ENVIRONMENT.

OWNER'S/ DEVELOPER'S SIGNATURE — DATE 9-19-24



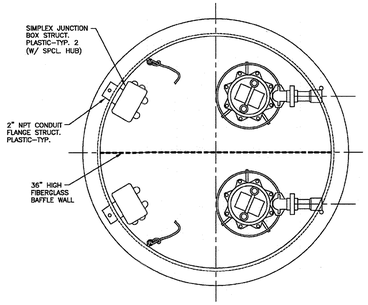
IN-LINE PRESSURE CLEANOUT (FLUSHING CONNECTION)

NO SCALE



CONNECTION AIR/VACUUM VALVE TO MAINLINE PRESSURE SEWER

Revised	Howard County, Maryland Department of Public Works	PRESSURE SEWER Sewage/Air Vacuum & Release Valve	Detail S-4.07
Revised 5/30/2017 Approved	Approved _____ Chief, Bureau of Engineering		



PLAN

Revised	Howard County, Maryland Department of Public Works	GRINDER PUMP Duplex	Detail E-2.06
Revised 5/30/2017 Approved	Approved _____ Chief, Bureau of Engineering		

0' 50' 100' 200'

SCALE: 1" = 50'

CONTRACT NO. 50-5187-D
BRICKELL PROPERTY
LOTS 4 THRU 9
LOW PRESSURE SEWER MAIN & WASTEWATER TREATMENT & DISPOSAL SYSTEM
HOWARD COUNTY, MARYLAND

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND
CHIEF, BUREAU OF UTILITIES — DATE 9/26/24

DEPARTMENT OF PLANNING AND ZONING
HOWARD COUNTY, MARYLAND
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 10.16.24

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. 27020 EXPIRATION DATE IS 1/23/26.

FISHER, COLLINS & CARTER, INC.
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
CENTENNIAL SQUARE OFFICE PARK - 10272 BALTIMORE NATIONAL PIKE
ELLICOTT CITY, MARYLAND 21042
(410) 461 - 2855

STATE OF MARYLAND #27020 HOWARD CAVANAUGH CAVANAUGH 2400 PROFESSIONAL ENGINEER
PAUL G. CAVANAUGH

DESIGNED BY : L.A.G.	BY	NO.	REVISION	DATE
DRAWN BY : T.L.				
CHECKED BY : P.G.C.				
DATE : JULY, 2024				

PROFILE, CHART & DETAILS

600' SCALE MAP NO. 9, 10 GRID NO. 1, 6
F.C.C. WORK ORDER NO. 17040
FILE NAME : SEWER MAIN EXTENSIONS PLAN

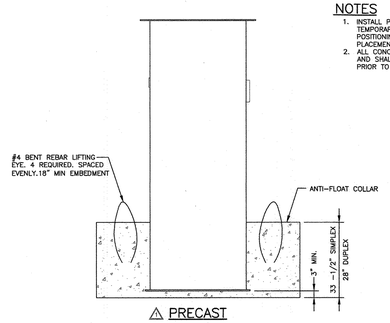
BRICKELL PROPERTY
LOTS 4 THRU 9
LOW PRESSURE SEWER MAIN
& WASTEWATER TREATMENT & DISPOSAL SYSTEM
CONTRACT NO. 50-5187-D
THIRD ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

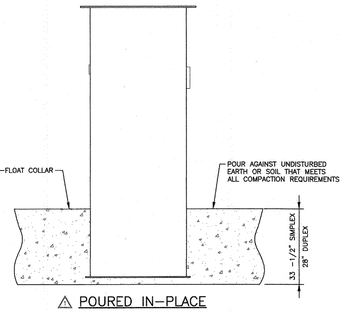
SHEET 3 OF 7

NOTES

1. INSTALL PLUMB – PROVIDE TEMPORARY BRACING TO MAINTAIN POSITIONING DURING CONCRETE PLACEMENT.
2. ALL CONCRETE TO BE MIX NO. 1 AND SHALL CURE 24 HOURS PRIOR TO BACKFILL.

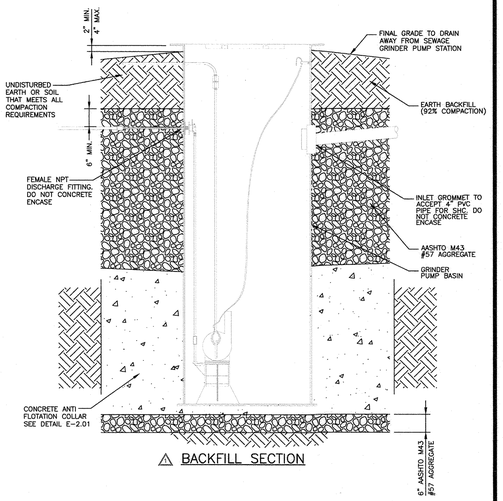


⚠ PRECAST



⚠ POURED IN–PLACE

Revised ⚠ 5/30/2017 Revised 5/7/2007 Approved	Howard County, Maryland Department of Public Works Approved: Thomas E. Butler Chief, Bureau of Engineering	⚠ GRINDER PUMP TANK Anti–Floatation Collar	Detail E–2.01

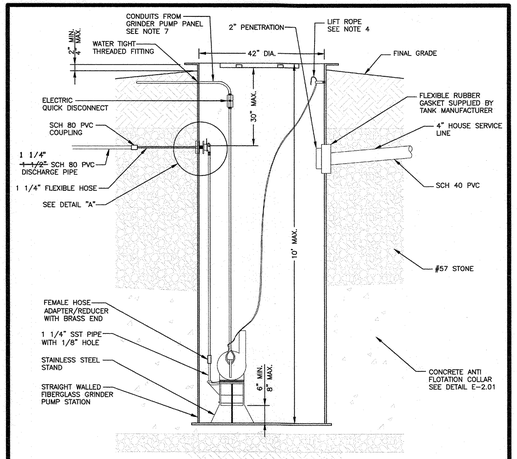


⚠ BACKFILL SECTION

NOTES:

1. SIMPLEX PUMP SHOWN, DUPLEX BACKFILL IS THE SAME.
2. INSTALL PLUMB. PROVIDE TEMPORARY BRACING TO MAINTAIN POSITIONING DURING BACKFILL.
3. CONCRETE SHALL CURE A MINIMUM OF 24 HOURS PRIOR TO BACKFILL.

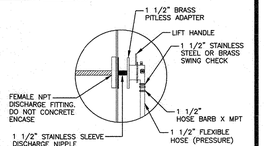
Revised ⚠ 5/30/2017 Revised 5/7/2007 Approved	Howard County, Maryland Department of Public Works Approved: Thomas E. Butler Chief, Bureau of Engineering	⚠ GRINDER PUMP BACKFILL	Detail E–2.02



⚠ GRINDER PUMP SECTION

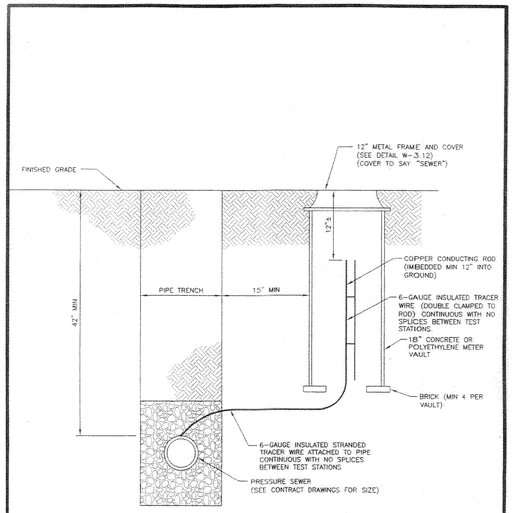
NOTES:

1. FLEXIBLE HOSE SHALL BE PRESSURE RATED "NYLOBRADE" HIGH PRESSURE HOSE OR EQUIVALENT.
2. LEVEL CONTROLS BY MANUFACTURER.
3. SS CARABINER FOR LIFTING EYE AT PUMP.
4. USE 1/4" MIN. NYLON ROPE ATTACHED TO SS EYE TO SIDE WALL WITH MINIMAL SLACK.
5. LIFT HANDLE TO BE SUPPLIED BY THE PUMP MANUFACTURER.
6. WATER TIGHT THREADED FITTING FOR ELECTRIC SERVICE LINE TO BE SUPPLIED BY THE TANK MANUFACTURER.
7. SEE DETAIL E–1.01 FOR ELECTRIC SERVICE OUTSIDE OF THE TANK TO THE GRINDER PUMP SUB PANEL.
8. PROVIDE POSITIVE DRAINAGE AWAY FROM GRINDER TANK LID.
9. ELECTRICAL QUICK DISCONNECT TO BE RECOMMENDED BY THE PUMP MANUFACTURER.
10. SEE DETAIL E–1.07 FOR LEVEL CONTROLS.
11. IF FLOAT TREE ASSEMBLY IS REQUIRED, IT MUST BE SUBMITTED FOR APPROVAL. FLOAT TREE ASSEMBLY MUST BE MINIMUM 6" OFF THE BOTTOM OF THE TANK AND ALL COMPONENTS SHALL BE CORROSION RESISTANT.



DETAIL "A"

Revised ⚠ 5/30/2017 Revised 5/7/2007 Approved	Howard County, Maryland Department of Public Works Approved: Thomas E. Butler Chief, Bureau of Engineering	⚠ GRINDER PUMP	Detail ⚠ E–2.03



NOTES:

1. FOR LOCATIONS ALONG PRESSURE SEWER ALIGNMENT, SEE CONTRACT DRAWINGS.

Revised 5/7/2007 Approved	Howard County, Maryland Department of Public Works Approved: Chief, Bureau of Engineering	PRESSURE SEWER Tracer Wire, Conducting Rod & Vault	Detail S–4.18

Design Input			
Lots 4 & 5 Duplex Grinder Pump Station			
residential units connected to pump station	2	***design average daily flow per unit (gpd)***	**375**
bedrooms per unit	5	***pump station total capacity (gal)***	**504**
total bedrooms connected to duplex pump station	10	*capacity (gal/inch)*	6.0
design maximum daily flow (gpd)	**1500**	***capacity under 36" baffle wall per pump***	**108**
design maximum daily flow (gpm)	1.04	*pump off height (in)*	12
design average daily flow (gpd)	**750**	*pump on height (in)*	18
design average daily flow (gpm)	0.52	***dose volume per pump (gal)***	**36**
approximate finished grade (ft msl)	578.5	*dose/day @ MDF for each pump*	20.84
grinder pump station inlet elevation (feet msl)	575.5	*dose/day @ ADF for each pump*	10.42
force main invert elevation (feet msl)	572.5	***flow rate per pump (gpm)***	**12**
approximate bottom elevation (feet msl)	568.5	*lift (feet)*	4.75
approximate grinder pump elevation (ft msl)	569	*head loss (feet)*	9.00
transition manhole invert elevation (ft msl)	573.75	***TDH (feet)***	**13.75**
pump station inner diameter (in)	42		
inlet invert height from bottom (in)	84		
first segment discharge line interior diameter (in)	1.25	**Pump: E/One Grinder Pump, 1 HP**	
first segment discharge line length (ft)	92.7		
second segment discharge line interior diameter (in)	1.5		
second segment discharge line length (ft)	358.53	*Note: Duplex Grinder Pump Station will follow*	
friction C factor	140	*Howard County Standard Details. (see this sheet)*	

Design Input			
Lots 8 & 9 Duplex Grinder Pump Station			
residential units connected to pump station	2	***design average daily flow per unit (gpd)***	**375**
edrooms connected to each pump station section	5	***pump station total capacity (gal)***	**504**
edrooms connected to each pump station section	10	*capacity (gal/inch)*	6.0
design maximum daily flow (gpd)	**1500**	***capacity under 36" baffle wall per pump***	**108**
design maximum daily flow (gpm)	1.04	*pump off height (in)*	12
design average daily flow (gpd)	**750**	*pump on height (in)*	18
design average daily flow (gpm)	0.52	***dose volume per pump (gal)***	**36**
approximate finished grade (ft msl)	579.5	*dose/day @ MDF for each pump*	20.84
grinder pump station inlet elevation (feet msl)	576.5	*dose/day @ ADF for each pump*	10.42
force main invert elevation (feet msl)	474.91	***flow rate per pump (gpm)***	**12**
approximate bottom elevation (feet msl)	569.5	*lift (feet)*	3.75
approximate grinder pump elevation (ft msl)	570	*head loss (feet)*	7.19
air release manhole invert elevation (ft msl)	573.75	***TDH (feet)***	**10.94**
pump station inner diameter (in)	42		
inlet invert height from bottom (in)	84		
first segment discharge line interior diameter (in)	1.25		
first segment discharge line length (ft)	44.29		
cond segment discharge line interior diameter (in)	1.5	**Pump: E/One Grinder Pump, 1 HP**	
second segment discharge line length (ft)	358.53	*Note: Duplex Grinder Pump Station will follow*	
friction C factor	140	*Howard County Standard Details. (see this sheet)*	

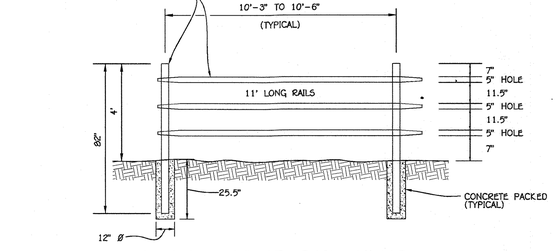
Design Input			
Lots 6 & 7 Duplex Grinder Pump Station			
residential units connected to pump station	2	***design average daily flow per unit (gpd)***	**375**
bedrooms per unit	5	***pump station total capacity (gal)***	**504**
total bedrooms connected to duplex pump station	10	*capacity (gal/inch)*	6.0
design maximum daily flow (gpd)	**1500**	***capacity under 36" baffle wall per pump***	**108**
design maximum daily flow (gpm)	1.04	*pump off height (in)*	12
design average daily flow (gpd)	**750**	*pump on height (in)*	18
design average daily flow (gpm)	0.52	***dose volume per pump (gal)***	**36**
approximate finished grade (ft msl)	572	*dose/day @ MDF for each pump*	20.84
grinder pump station inlet elevation (feet msl)	569	*dose/day @ ADF for each pump*	10.42
force main invert elevation (feet msl)	568.7	***flow rate per pump (gpm)***	**12**
approximate bottom elevation (feet msl)	562	*lift (feet)*	11.25
approximate grinder pump elevation (ft msl)	562.5	*head loss (feet)*	2.39
transition manhole invert elevation (ft msl)	573.75	***TDH (feet)***	**13.64**
pump station inner diameter (in)	42		
inlet invert height from bottom (in)	84		
discharge line interior diameter (in)	1.5	**Pump: E/One Grinder Pump, 1 HP**	
discharge line length (ft)	154.97	*Note: Duplex Grinder Pump Station will follow*	
friction C factor	140	*Howard County Standard Details. (see this sheet)*	

OWNERS/DEVELOPER SHARED SEPTIC CERTIFICATION

THE SHARED SEWERAGE SYSTEM WILL BE AVAILABLE TO LOTS 4–9. PLANS FOR THE FACILITY INCLUDING ANY NECESSARY POINT OF DISCHARGE HAVE BEEN APPROVED BY THE DEPARTMENT OF THE ENVIRONMENT.

OWNER'S/ DEVELOPER'S SIGNATURE — DATE 9.19.24

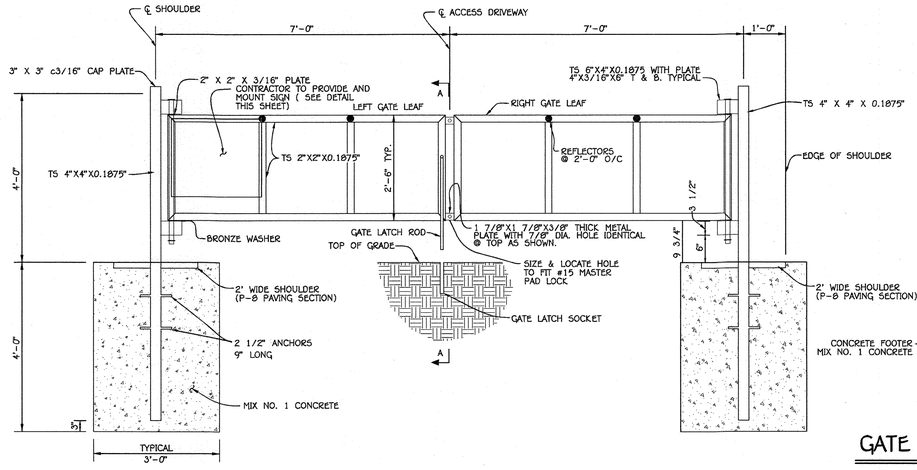
Zone Number	Total Pumps in Zone	Max Flow per Pump (gpm)	Max Flow (gpm)	Nominal Pipe Size (SDR-21, in)	Interior Diameter (SDR-21, in)	Maximum Velocity (ft/s)	Length of Main in Zone (ft)	Friction Loss (ft/100 ft)	Accumulative Friction Loss (ft)	Maximum Main Elevation (ft msl)	Pump Elevation (ft msl)	Static Head (ft)	Total Dynamic Head (feet)
1	2	12	24	1.25	1.502	4.35	48.4	5.52	2.7	573.75	569.0	4.75	10.27
2	4	12	48	1.5	1.72	6.63	247.9	10.30	25.5	573.75	570.0	3.75	14.05
3	6	12	72	1.5	1.72	9.94	155.0	21.80	33.8	573.75	562.5	11.25	33.05



DETAIL: SPLIT RAIL FENCE

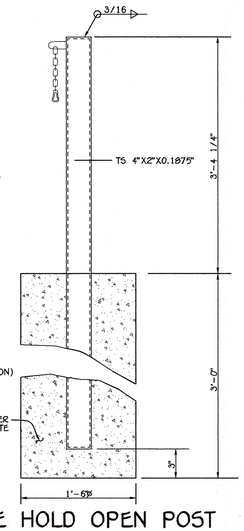
NO SCALE

NOTE: SEE SHEET 2 FOR PLAN LOCATION



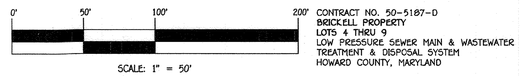
SWING GATE ASSEMBLY

NO SCALE



GATE HOLD OPEN POST

NO SCALE (TWO REQUIRED)



CONTRACT NO. 50–5187–D
BRICKELL PROPERTY
LOTS 4 THRU 9
LOW PRESSURE SEWER MAIN & WASTEWATER TREATMENT & DISPOSAL SYSTEM
HOWARD COUNTY, MARYLAND

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND
CHIEF, BUREAU OF UTILITIES — DATE 9/26/24

DEPARTMENT OF PLANNING AND ZONING
HOWARD COUNTY, MARYLAND
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 10.16.24

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. 27020 EXPIRATION DATE IS 1/25/26.

FISHER, COLLINS & CARTER, INC.
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
CENTENNIAL SQUARE OFFICE PARK – 10272 BALTIMORE NATIONAL PIKE
ELLICOTT CITY, MARYLAND 21042
(410) 461 – 2855

#27020 STATE OF MARYLAND PAUL G. CAVANAUGH PROFESSIONAL ENGINEER
PAUL G. CAVANAUGH

DESIGNED BY : L.A.G.				
DRAWN BY : T.L.				
CHECKED BY : P.G.C.				
DATE : JULY, 2024	BY	NO.	REVISION	DATE

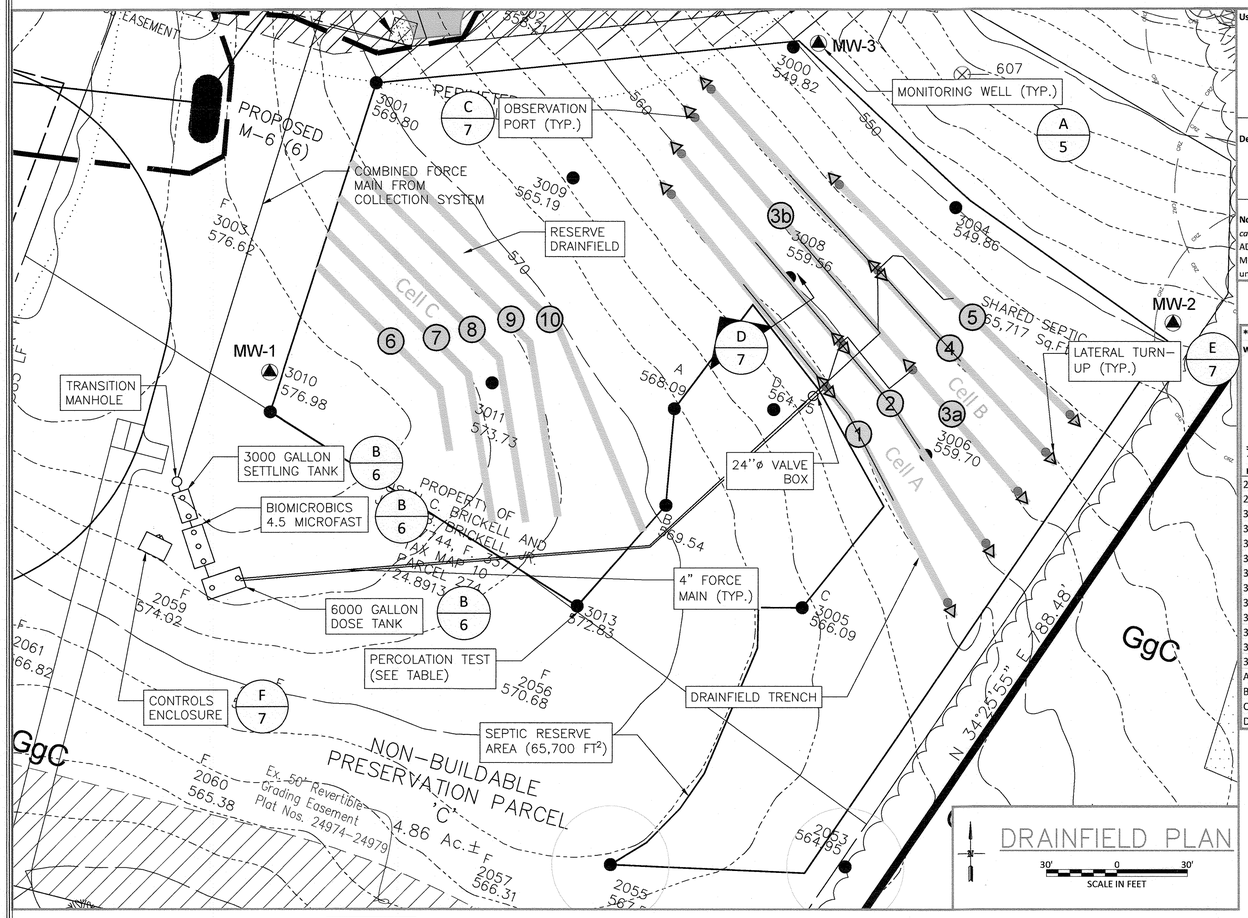
DETAILS

600' SCALE MAP NO. 9, 10 GRID NO. 1, 6
F.C.C. WORK ORDER NO. 17040
FILE NAME : SEWER MAIN EXTENSIONS PLAN

BRICKELL PROPERTY
LOTS 4 THRU 9
LOW PRESSURE SEWER MAIN
& WASTEWATER TREATMENT & DISPOSAL SYSTEM
CONTRACT NO. 50–5187–D
THIRD ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

SHEET 4 OF 7



Use Projections

properties served	6
bedrooms per property	5
total bedrooms served	30
flow per bedroom (gpd)	150
MDF (gpd)	*4,500*
ADF (gpd)	*2,250*
settling tank volume (gal)	3000

Design Wastewater Strength

	Influent	Effluent
BOD (mg/L)	220	30
TSS (mg/L)	220	30
Total Nitrogen (mg/L as N)	60	30

Notes
calculated values in italics
ADF = average daily flow
MDF = maximum daily flow
unit rates from Howard County Well and Septic memo Nov 2014

USE PROJECTIONS

***All results recorded here are for passed perc testing locations within the septic reserve area**

Test #	Perc Test Depth (feet)	Test Pit Depth (feet)	Limiting Zone Depth (ft)	Perc Rates (min/inch)	*Max sidewall height (feet)*	Approx. Ground Surface Elevation (feet msl)	*Perc Test Depth Elevation (feet msl)*	*Sidewall Bottom Elevation (feet msl)*	*Application Rate (gpd/ft²)*
2053	6.0	13.0	3	12.0	*5.0*	564.95	*552.0*	*557.0*	*0.8*
2055	5.0	15.0	4	6.0	*4.0*	567.56	*552.6*	*559.6*	*0.8*
3000	5.7	13.5	4.8	3.0	*3.2*	549.82	*536.3*	*541.8*	*1.2*
3001	6.0	12.0	5	10.0	*3.0*	569.80	*557.8*	*561.8*	*0.8*
3004	4.4	13.6	4	9.0	*4.0*	549.85	*536.3*	*541.9*	*0.8*
3005	5.8	13.5	4	5.0	*4.0*	569.09	*555.6*	*561.1*	*1.2*
3006	6.0	14.0	3	3.0	*5.0*	559.70	*545.7*	*551.7*	*1.2*
3007	6.0	13.0	3	2.0	*5.0*	550.16	*537.2*	*542.2*	*1.2*
3008	6.0	13.0	2.4	2.0	*5.6*	559.56	*546.6*	*551.6*	*1.2*
3009	5.0	11.0	5	6.0	*2.0*	565.19	*554.2*	*558.2*	*0.8*
3010	5.5	11.5	5	6.0	*2.5*	576.98	*565.5*	*569.5*	*0.8*
3011	6.0	12.5	2	4.0	*6.0*	573.73	*561.2*	*565.7*	*1.2*
3013	6.5	14.0	5	6.0	*3.0*	572.83	*558.8*	*564.8*	*0.8*
A	N/A	13.0	2	N/A	*6.0*	568.09	*555.1*	*560.1*	
B	N/A	13.0	2.5	N/A	*5.5*	569.54	*556.5*	*561.5*	
C	N/A	---	---	N/A		556.09			
D	N/A	10	2.5	N/A	*3.5*	564.75	*554.8*	*558.8*	

PERC TEST RESULTS

SYMBOLS

A/1 — INDICATES DETAIL

A/1 — INDICATES SECTION OR VIEW

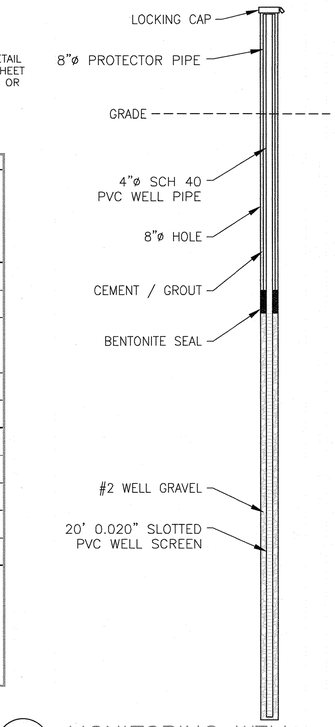
A/1 — NUMBER INDICATES A DETAIL, A LETTER INDICATES A SECTION. SHEET NUMBER ON WHICH THE DETAIL OR SECTION IS DRAWN, OR THE SHEET NUMBER FROM WHERE THE DETAIL OR SECTION IS REFERENCED.

200% capacity build-out

Cell	Trench	Existing Ground Elevation (feet msl)	perc ID's	Sidewall Top Elevation (feet msl)	Perc Rate (min/inch)	Sidewall Height (feet)	*Trench Bottom Elevation (feet msl)*	Trench Bottom Depth (feet)	Trench Length (feet)	Trench Width (feet)	Application Rate (gpd/ft²)	*Capacity (gpd, L*W*Appl#/ft²)*
Primary	1	562		558	≤5	4	*554*	*8.0*	223	3	1.2	*1,927*
	2	560		556	≤5	4	*552*	*8.0*	223	3	1.2	*1,927*
	3a	558	3006, 3008	554	≤5	4	*550*	*8.0*	75	3	1.2	*646*
	3b								148			*1,280*
	4	556		552	≤5	4	*548*	*8.0*	223	3	1.2	*1,927*
	5	554		550	<5	4	546	8.0	150	3	1.2	*1,293*
Reserve	6	575		572	≤5	4	*568*	*7.0*	148	3	0.8	*852*
	7	574		571	≤5	4	*567*	*7.0*	166	3	0.8	*956*
	8	573	3011	570	≤5	4	*566*	*7.0*	182	3	0.8	*1,048*
	9	572		569.00	≤5	4	*565.0*	*7.0*	185	3	0.8	*1,066*
	10	571		568.00	≤5	4	*564.0*	*7.0*	100	3	0.8	*576*
											300 % total capacity (gpd)	*13,500*
											100% capacity (gpd)	***4,500***
											primary capacity, 200% (gpd)	*9,000*
											reserve capacity, 100% (gpd)	*4,500*

calculated values in italics
gpd = gallons per day
NA = not available
msl = mean sea level in feet
laterals in each trench are at same elevation

DRAINFIELD DESIGN



A/5 — MONITORING WELL

NOT TO SCALE

MONITORING WELL NOTE:

MONITORING WELLS SHALL BE DRILLED TO A MINIMUM DEPTH OF 15 FEET BELOW THE FIRST ENCOUNTER WITH GROUNDWATER.

Construction Specifications / Flow Calculations

Cell	Trench	Existing Ground Elevation (feet msl)	*Sidewall Top Elevation (feet msl)*	*Trench Bottom Elevation (feet msl)*	Lateral Elevation (feet msl)	*Trench Length (feet)*	# of laterals	*Lateral Length (feet)*	*Total # of Holes*	*# of Holes per Lateral*	*Perf Spacing (feet)*	Perf Dia (inches)	*design distal head (feet)*	*Perf Flow (gpm)*	*Trench Flow (gpm)*	*Dose Rate (gpm/ foot of trench)*	*Lateral Velocity (feet/second)*	***Cell Flow (gpm)***
	1	**562**	558.0	554.0	558.0	*223*	*4*	*53.2*	44	11	*5.07*	5/16	*3.00*	*2.00*	*88.0*	*0.39*	*2.1*	
A	2	**560**	556.0	552.0	558.0	*223*	*4*	*53.2*	44	11	*5.07*	5/16	*3.00*	*2.00*	*88.0*	*0.39*	*2.1*	***205***
	3a	**558**	554.0	550.0	556.5	*75*	*1*	*71.7*	12	12	*6.23*	5/16	*4.50*	*2.45*	*29.4*	*0.39*	*2.9*	
	3b	**558**	554.0	550.0	554.0	*148*	*2*	*71.5*	28	14	*5.29*	5/16	*3.00*	*2.00*	*56.0*	*0.38*	*2.7*	
B	4	**556**	552.0	548.0	554.0	*223*	*4*	*53.2*	44	11	*5.07*	5/16	*3.00*	*2.00*	*88.0*	*0.39*	*2.1*	***203***
	5	**554**	550.0	546.0	552.5	*150*	*2*	*71.7*	24	12	*6.24*	5/16	*4.50*	*2.45*	*58.8*	*0.39*	*2.9*	

Notes
calculated values in italics
gpm = gallons per minute
msl = mean sea level in feet
Minimum cover over laterals shall be 24".
design minimum distal head (feet)= 3.0
friction C factor for plastic pipe= 130
lateral inside diameter (2"dia sch40PVC, in)= 2.047

Lots on Shared Septic System	bedrooms	unit rate in gpd/unit	maximum daily flow (MDF) in gpd	average daily flow (ADF) in gpd
Lot 4	5	150	750	375
Lot 5	5	150	750	375
Lot 6	5	150	750	375
Lot 7	5	150	750	375
Lot 8	5	150	750	375
Lot 9	5	150	750	375
total daily flows (gpd)		***4,500***	***2,250***	
total nitrogen in septic tank effluent (mg/l)		60		
nitrogen reduction with BAT (%)		50%		
soil renovation factor (%)		0%		
topographic catchment for drainfield (acres)		8.53		
estimated imperviousness (%)		5%		
total groundwater recharge in drainfield catchment (gpd)		*9,041*		
		#/day	mg/l	
ADF nitrogen load in septic tank effluent without BAT		*1.13*	*60.0*	
nitrogen load to dispersal area without BAT		*1.17*		
nitrogen load in wastwater effluent with BAT		*0.56*	*30.0*	
nitogen load to dispersal area with BAT		***0.60***	***6.4***	

Notes
calculated values in italics — flow rates in gallons per day (gpd)
BAT = best accepted available treatment technology
nitrate (nitrate-nitrogen) concentrations in milligrams per liter (mg/l)
nitrate loading rate in total pounds per day as nitrate-nitrogen (#/day)
estimated atmospheric nitrate concentration, in mg/l 0.5
average groundwater recharge rate, in gpd/acre 1116

NITRATE BALANCE TABLE

line symbol	description
WW	wastewater
TW	treated water
V	vent (to atmosphere)
PE	polyethylene
E	electric power wire
PVC	sch 40 polyvinyl chloride
DWV	drain waste vent polyvinyl chloride
ECPVC	polyvinyl chloride electrical conduit

PIPE IDENTIFIER:

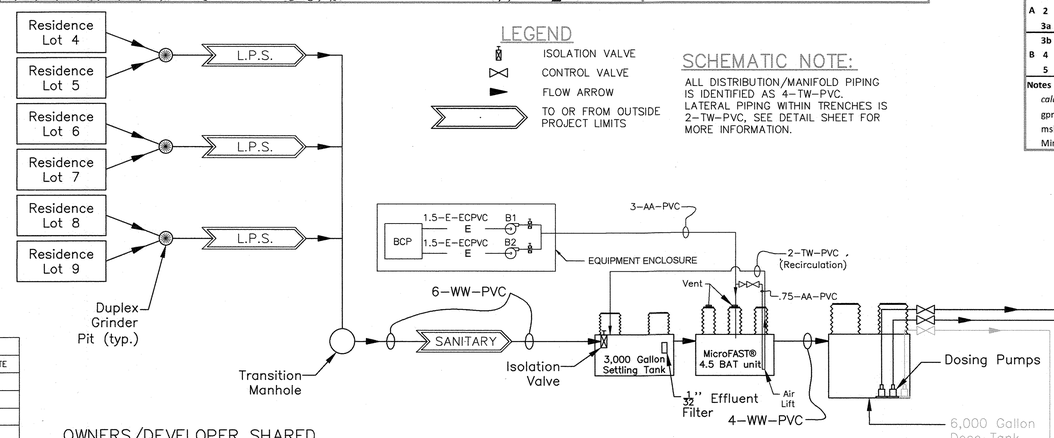
#-XX-XXX
- # — NOMINAL PIPE SIZE (IN INCHES)
- XX — PIPE FUNCTION
- XXX — PIPE MATERIAL

LEGEND

- ISOLATION VALVE
- CONTROL VALVE
- FLOW ARROW
- TO OR FROM OUTSIDE PROJECT LIMITS

SCHEMATIC NOTE:

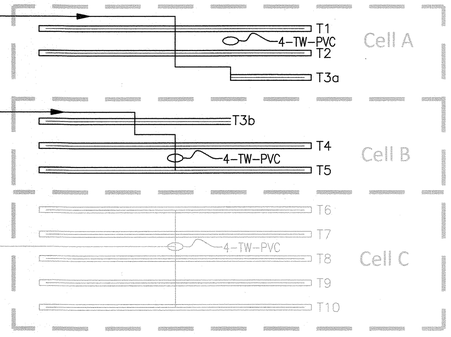
ALL DISTRIBUTION/MANIFOLD PIPING IS IDENTIFIED AS 4-TW-PVC. LATERAL PIPING WITHIN TRENCHES IS 2-TW-PVC, SEE DETAIL SHEET FOR MORE INFORMATION.



WASTEWATER TREATMENT SYSTEM SCHEMATIC

NO SCALE

DISTRIBUTION DESIGN



P&ID Key Notes

part symbol	component	size	notes	material	#
ST	settling tank	3000 gal	(2) 24"dia PE manholes	concrete	1
FAST	BAT tank	4500 gal	(3) 30" dia PE manholes	concrete	1
PT	dose tank	6000 gal	(2) 24"dia PE manholes	concrete	1
B1-2	blower	2"	treatment blower	aluminum	2
P1-2	dose pump	2" disch.	Goulds WS10BHF	cast iron	2
T1-T7	trenches per plan	3' wide	8' total depth, 5' sidewall, length varies		7

P&ID KEY NOTES

OWNERS/DEVELOPER SHARED SEPTIC CERTIFICATION

THE SHARED SEWERAGE SYSTEM WILL BE AVAILABLE TO LOTS 4-9 PLANS FOR THE FACILITY INCLUDING ANY NECESSARY POINT OF DISCHARGE HAVE BEEN APPROVED BY THE DEPARTMENT OF THE ENVIRONMENT.

OWNERS/ DEVELOPER'S SIGNATURE — DATE 9.19.24

REVISIONS		
NO.	DESCRIPTION	DATE

Approved: Department Of Planning And Zoning

Chief, Division Of Land Development — Date

Chief, Development Engineering Division M.A.C. — Date 10.16.24

Approved: for private water and shared sewer system for lots 4-9.

Steven Kring, LEHS — Maryland Department of Environment Representative — Date 10-2-24

Approved: Howard County Department Of Public Works

Chief, Bureau Of Highways — Date

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STATE OF MARYLAND — MARK JOSEPH MAZZOCHETTE — 20293 — PROFESSIONAL ENGINEER

PROFESSIONAL CERTIFICATION

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. 50293, EXPIRATION DATE: 12-15-2024.

MARK J. MAZZOCHETTE — 6/11/24 Date

OWNER/DEVELOPER

ESC Meadow Springs L.C.
5074 Dorsey Hall Drive, Suite 205
Ellicott City, MD 21042
410-720-3021

BRICKELL PROPERTY

LOTS 2 THRU 11, BUILDABLE PRESERVATION PARCEL 'F' AND NON-BUILDABLE PRESERVATION PARCEL 'C', 'D', 'E', AND 'G'
A RE-SUBDIVISION OF LOT 1 AND NON-BUILDABLE BULK PARCEL 'A' AND 'B'
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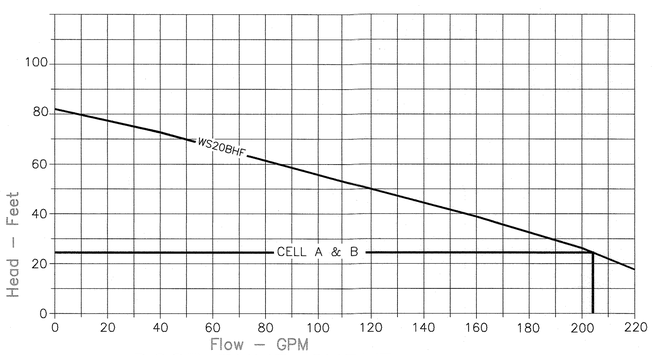
ZONED RR-DEO
THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
SCALE: AS SHOWN DATE: JUNE, 2024
SHEET 5 OF 7 F-20-075

This drawing printed on: June 11, 2024

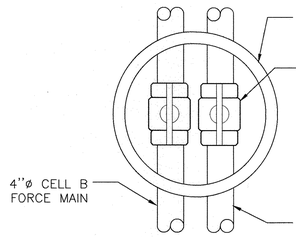
H:\PROJECTS\BRICKELL-PROPERTY\CAD\170457 PLAN BORDER.DWG

SHARED SEPTIC TREATMENT SYSTEM NOTES

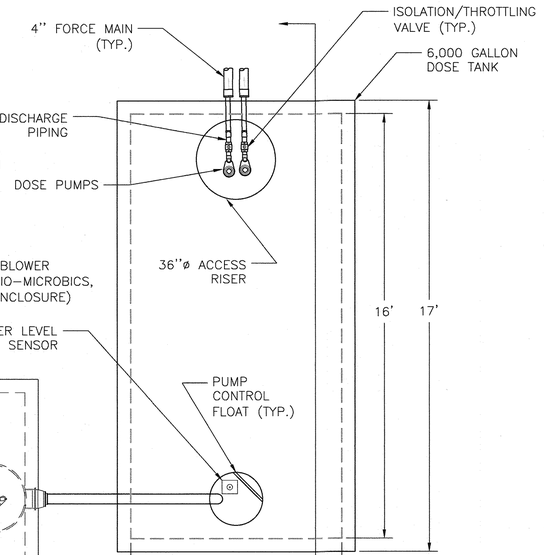
1. ALL INSPECTION, VIEWING AND PUMP OUT PORTS SHALL BE SECURED TO PREVENT ACCIDENTAL OR UNAUTHORIZED ACCESS.
2. ANTI–BUOYANCY MEASURES SHALL BE EMPLOYED PER TANK MANUFACTURER'S SPECIFICATIONS.
3. NO MORE THAN 3' OF FILL SHALL BE PLACED OVER ANY TANK TOP. ALL TANKS WILL BE SET UPON 6" TO 8" OF GRAVEL BEDDING.
4. ALL TANK SHOP DRAWINGS SHALL BE SUBMITTED FOR ENGINEER'S APPROVAL PRIOR TO FABRICATION.
5. ALL NEW TANKS SHALL BE TESTED FOR WATER TIGHTNESS PRIOR TO BACKFILLING. A VACUUM AIR TEST IS AN ACCEPTABLE METHOD.
6. ALL VALVES AND QUICK CONNECTS WITHIN PORTS SHALL BE ACCESSIBLE FROM FINISHED GRADE AND WILL NOT REQUIRE TANK ENTRY FOR SERVICE. ALL PUMPS SHALL HAVE SAFETY ROPES.
7. REMOTE MONITORING SYSTEM (RMS) WILL AUTOMATICALLY NOTIFY THE COUNTY IN THE EVENT OF A PUMP FAILURE OR HIGH WATER ALARM. REMOTE NOTIFICATION WILL BE ROUTINELY TESTED AS PART OF REGULAR O&M.
8. FORCE MAIN SHALL HAVE A ZERO OR NEGATIVE SLOPE THE FROM VACUUM BREAKER TO POINT OF DISCHARGE IN TRENCHES (ORIFICES) TO ENSURE COMPLETE EVACUATION OF DOSE PIPING AFTER EACH DOSE CYCLE, AND NO DRAIN–BACK TO DOSING CHAMBER.
9. BLOWER PIPING TO FAST MAY NOT EXCEED 100 FT TOTAL LENGTH AND USE 45° ELBOWS. BLOWER MUST BE LOCATED ABOVE FLOOD/STANDING WATER LEVELS ON A CONCRETE OR GRAVEL BASE.

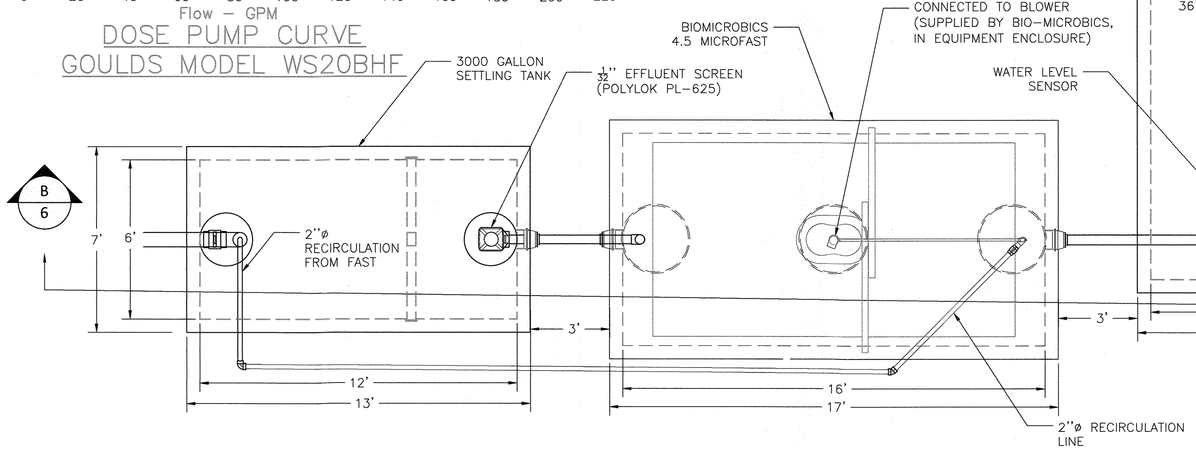


DOSE PUMP CURVE
GOULDS MODEL WS20BHF

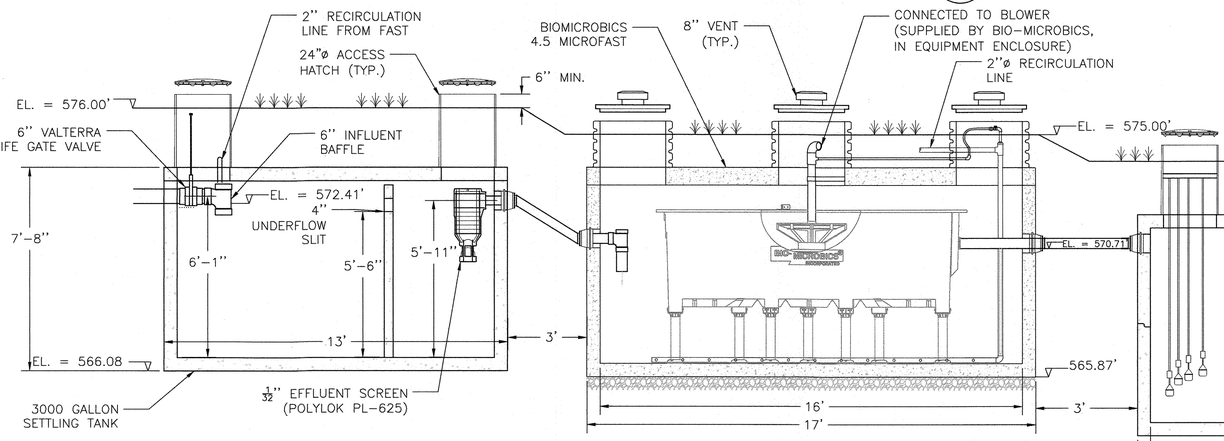


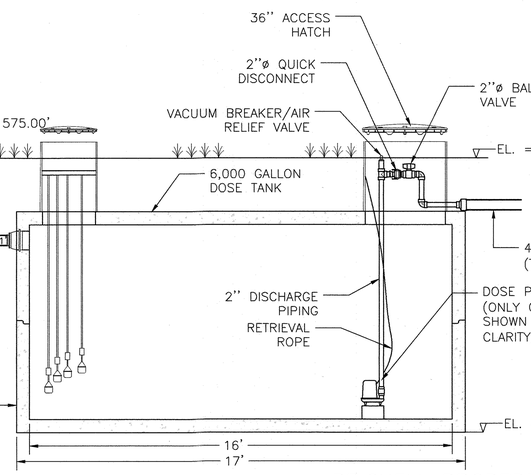
VALVE BOX
SCALE: 1" = 1'-0"





TREATMENT SYSTEM PLAN B/5
SCALE: 3/8" = 1'-0"





TREATMENT SYSTEM SECTION B/6
SCALE: 3/8" = 1'-0"

Design input			Calculations
Primary and Secondary Treatment and Equalization			
total number of bedrooms served	30	*maximum daily flow (MDF) (gpd)*	*4,500*
settling tank width (ft)	6.00	*average daily flow (ADF) (gpd)*	*2,250*
settling tank length (ft)	12.00	*total primary settling operational volume (gal)*	*1,928*
settling tank operating depth (ft)	3.6		
Static Hydraulic Profile (with invert elevations)			
influent invert elev. (feet msl)	572.41	*From FCC*	
dose tank influent invert elev. (feet msl)	570.71	ground surface at pump tank (feet msl)	574.5
dose tank floor elev. (feet msl)	564.16	*overall pump station interior height (ft)*	*14.25*
dose pump elev. (feet msl)	564.66		
Cell A maximum lateral elev. (feet msl)	558.00	*Cell A static lift (feet)*	*-15.5*
Cell B maximum lateral elev. (feet msl)	554.00	*Cell B static lift (feet)*	*-19.5*
air relief valve elev. (feet msl)	573.5	*Riser pipe static lift (feet)*	*8.84*
Drainfield Dosing			
cell A flow (gpm)	***205***	*force main velocity (feet/second)*	*5.2*
Cell A force main length (feet)	280	*Cell B force main friction loss (feet)*	*9.3*
Cell A minor loss equivalent lengths (feet)	44.4	***Cell B max. total dynamic head (feet)***	***8.8***
		Cell B main volume (gal)	*183*
		Cell B total lateral volume (gal)	*85*
		Cell B dose vol. @ 5x lateral (gal)	*425*
cell B flow (gpm)	***203***	*force main velocity (feet/second)*	*5.2*
Cell B force main length (feet)	360	*Cell C force main friction loss (feet)*	*11.3*
Cell B minor loss equivalent lengths (feet)	44.4	***Cell C max. total dynamic head (feet)***	***8.8***
		Cell C main volume (gal)	*235*
		Cell C total lateral volume (gal)	*46*
		Cell C dose vol. @ 5x lateral (gal)	*229*
dose tank interior width (inches)	96	***dose tank capacity (gal)***	***6,064***
dose tank interior length (inches)	192	*dose tank capacity (gals per inch)*	*79.8*
dose tank height to invert (inches)	76	*design dose volume (gals)(Cell B)*	*229*
# cells in service	2	*effective dose volume (gals)*	*399*
lag pump on (inches)	**21**	*daily doses @ ADF*	*9.8*
high water alarm height (inches)	**19**	***average dose time (minutes)***	***1.1***
lead pump on (inches)	**17**	***dose off time setting (hours)***	***2.4***
low water cutoff (inches)	**12**	*residual settling volume (gal)*	*957*
Pump model (Goulds)	**WS20BHF**	***volume above high water alarm (gal)***	***4,548***

dose pump control panel model (SJE Rhombus) IFS 41W–4H 4A 4D BAC 10E 19F

Notes

gpd = gallons per day
gpm = gallons per minute
msl = mean sea level in feet
calculated values in italics
set floats based on weight +/- 3"
one cell is always in service, with the other resting

design distal head (feet)= 3.0
friction C factor for plastic pipe= 130
force main ID (4"dia sch40PVC, in)= 3.998
lateral inside diameter (2"dia sch40PVC, in)= 2.047

DESIGN INPUT

Dose Tank Float Settings		
Float	Height from Bottom of Tank	Float Elevation
low water cutoff (inches)	12	565.16
lead pump on (inches)	17	565.58
high water alarm height (inches)	19	565.74
lag pump on (inches)	21	565.91

REVISIONS		
NO.	DESCRIPTION	DATE

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STATE OF MARYLAND · MARK JOSEPH MAZZOCHETTE · 50293 · PROFESSIONAL ENGINEER

OWNER/DEVELOPER

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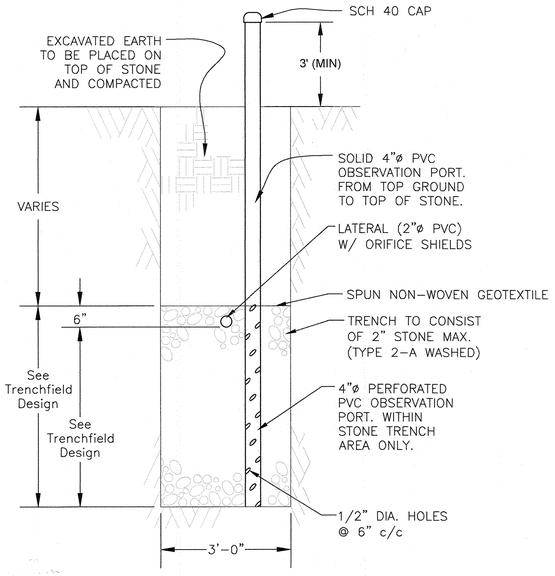
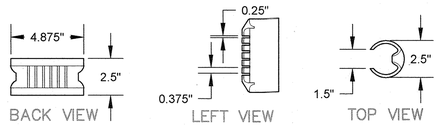


TYPICAL OBSERVATION PORT (D/5)

NOT TO SCALE



SIM TECH ORIFICE SHIELD 2" (STF-106-2.0)

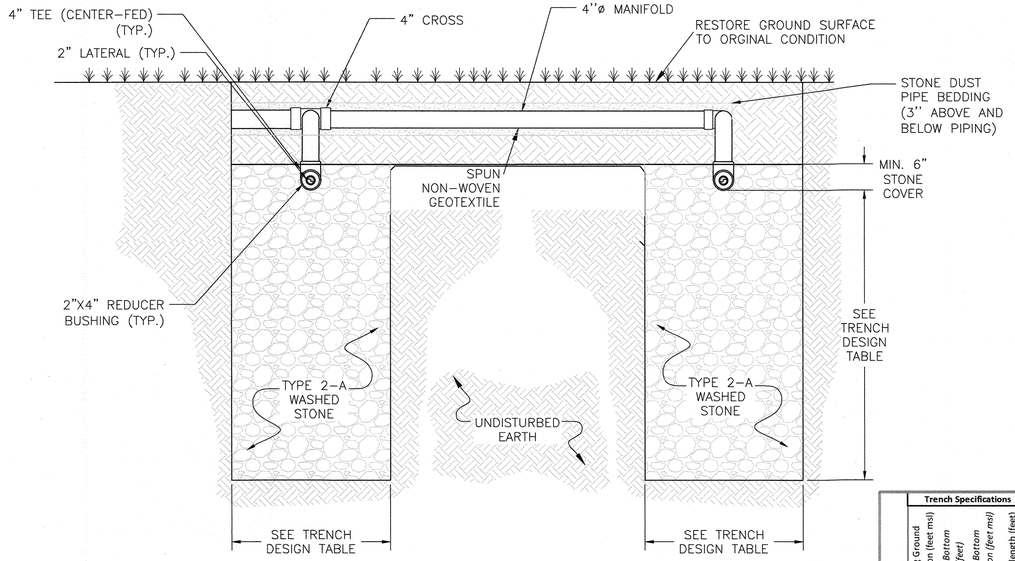
NOT TO SCALE

FEED LINE NOTES:

1. ALL HOLES (EXCEPT ENDS) ARE FACE DOWN AND PROTECTED WITH ORIFICE DIFFUSER (SEE DETAIL THIS SHEET)
2. SEE DRAINFIELD CONSTRUCTION TABLE FOR TRENCH DIMENSIONS AND LATERAL PERFORATIONS NOT SHOWN.
3. DRAINFIELD FORCE MAINS AND MANIFOLDS SHALL BE CONSTRUCTED WITH NO "LOW POINTS" AND SHALL DRAIN COMPLETELY TO LATERALS AT PUMP CYCLE TERMINATION.

CONTROL PANEL NOTES

1. ALL PANELS WILL BE NEMA 4X OUTDOOR RATED PANELS WITH HINGED LOCKABLE DOORS.
2. REMOTE MONITORING SYSTEM (RMS) WILL BE BY ONSET COMP, MODEL RX3000. RMS SHALL MONITOR PUMP CURRENT DRAW, DOSE TANK LEVEL, WATER TEMPERATURE, AMBIENT AIR TEMPERATURE
3. PUMP CONTROL PANEL WILL BY BY SJE RHOMBUS AND BE SET TO DEMAND-DOSE THE DRAINFIELD IN A DUAL ALTERNATING FASHION. PANEL WILL HAVE LOCAL ALARM BEACON AND NOISE.



FEED LINE/DEEP TRENCH DETAIL (TYP) (D/5)

NOT TO SCALE

Cell	Trench	Trench Specifications: Existing Ground Elevation (feet msl)	Trench Bottom Depth (feet)	Trench Bottom Elevation (feet msl)	Trench length (feet)	Gravel Specifications: Gravel Height (feet)	Top of Gravel Elevation (feet)	Gravel Volume (cubic yards)	Gravel Tons @ 1.5 tons/cubic yard	Truck Loads @ 22 Tons/Load	Lateral Specifications: # of Laterals	Lateral Length (feet)	Perforation Diameter (in)	Perforation Spacing (feet)	# of holes per lateral
	1	562	8.0	554.0	223.0	*4.0*	*558.0*	*99*	149	6.8	*4*	53.2	*5/16*	*5.07*	*11*
A	2	560	8.0	552.0	223.0	*6.0*	*558.0*	*149*	223	10.1	*4*	53.2	*5/16*	*5.07*	*11*
	3a	558	8.0	550.0	74.8	*6.5*	*556.5*	*54*	81	3.7	*1*	71.7	*5/16*	*6.23*	*12*
totals					520.8			***301.8***	***453***	***21.0***		**497.4**			
	3b	558	8.0	550.0	148.2	*4.0*	*554.0*	*66*	99	4.5	*2*	71.5	*5/16*	*5.29*	*14*
B	4	556	8.0	548.0	223.0	*6.0*	*554.0*	*149*	223	10.1	*4*	53.2	*5/16*	*5.07*	*11*
	5	554	8.0	546.0	149.7	*6.5*	*552.5*	*108*	162	7.4	*2*	71.7	*5/16*	*6.24*	*12*
totals					520.9			***322.7***	**484**	**22.0**		**499.2**			

Notes

calculated values in italics

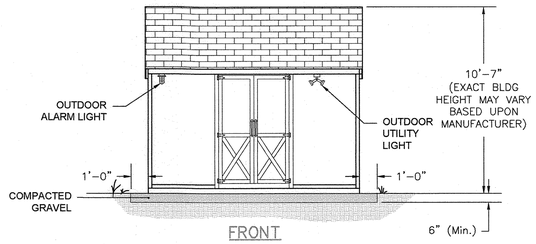
Trench width (feet) = 3

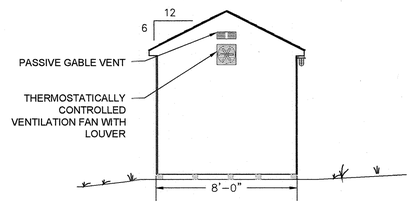
msl = mean sea level in feet

lateral inside diameter (2"dia sch40PVC, in)= 2.047

Minimum cover over laterals shall be 24".

CONSTRUCTION SPECIFICATIONS





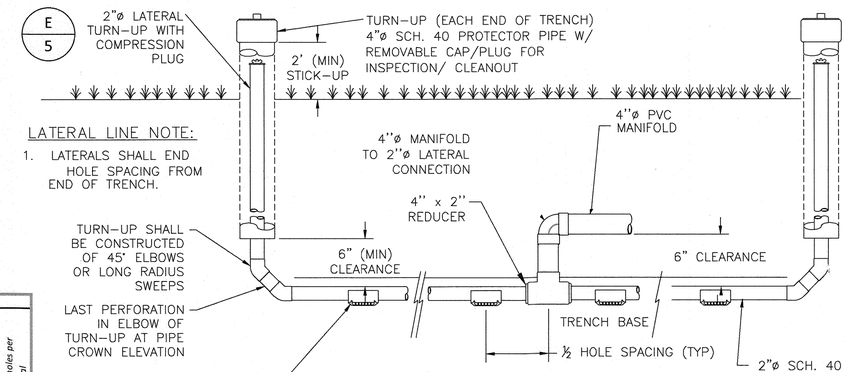
CONTROLS ENCLOSURE ELEVATION (F/5)

1/4" = 1'-0"

CONTROLS ENCLOSURE NOTES:

1. CONTROLS ENCLOSURE SHALL BE PROVIDED NEAR WASTE WATER TREATMENT SYSTEM WITH CONTROL PANEL MOUNTED INSIDE.
2. ENCLOSURE SHALL BE "COTTAGE A-FRAME" STYLE. 8' X 12', VINYL SIDED WITH NOMINAL 7' SIDE WALLS AND NO WINDOWS, WITH ONE DOUBLE DOOR CENTERED ON 12' SIDE OF EQUIPMENT ENCLOSURE. EQUIPMENT ENCLOSURE SHALL HAVE 10" RIDGE VENT, 4"X4" PRESSURE TREATED SKIDS, 2"X4" FLOOR JOISTS (16" ON CENTER), 5/8" PLYWOOD FLOOR SHEATHING, 2'X4' VENT, ALL WALLS TO BE PLATED AT BOTTOM AND DOUBLE PLATED AT THE TOP, 1/2" ROOF SHEATHING, ARCHITECTURAL SHINGLES, DOORS AND FRAME TO BE REINFORCED, DOOR HINGES MUST BE "T" TYPE OR STRAP TYPE, 3 HINGES PER DOOR SIDE (PIANO HINGES ARE NOT ACCEPTABLE), LOCKS ARE TO BE KEYED ALIKE WITH BAUER CH751 LOCK.
3. VINYL SIDING SHALL BE ALMOND COLOR AND SHINGLES SHALL BE BROWN COLOR.
4. A RED ALARM BEACON SHALL BE MOUNTED ON THE OUTSIDE OF THE ENCLOSURE.
5. ENCLOSURE SHALL BE PLACED ON TOP OF 6" (MIN.) COMPACTED STONE.
6. GRADING TO BE LEVEL AND COMPACTED PRIOR TO PLACEMENT OF EQUIPMENT ENCLOSURE.
7. FIELD PLACEMENT OF PANELS, PIPING, AND TANKS SHALL BE APPROVED BY SITE ENGINEER.
8. ENCLOSURE SHALL HAVE A 1ø,230 VAC LOAD CENTER WITH APPROPRIATE CIRCUIT BREAKERS, POWER SHALL BE PROVIDED TO SERVE ALL EQUIPMENT SPECIFIED HEREIN.
9. ENCLOSURE SHALL HAVE AT LEAST 3 DOUBLE-DUPLEX CONVENIENCE OUTLETS, A CEILING LIGHT, OUTDOOR FLOODLIGHTS, AND AN OUTDOOR ALARM LIGHT.
10. A REMOTE MONITORING SYSTEM (RMS) SHALL BE INSTALLED THAT SHALL REMOTELY NOTIFY THE COUNTY IN THE EVENT OF A PUMP FAILURE OR A HIGH WATER ALARM. THE RMS SHALL BE COMPATIBLE WITH THE COUNTY'S EXISTING REMOTE MONITORING NETWORK AND INFRASTRUCTURE. RMS ALERT SYSTEM TESTING SHALL BE PART OF REGULAR O&M.
11. HOWARD COUNTY ISSUED LOCKS SHALL BE PROVIDED TO SECURE EQUIPMENT ENCLOSURE AND ANY OTHER APPROPRIATE SYSTEM APPURTENANCES (E.G. MANHOLE COVERS AND EXTERIOR MOUNTED CONTROL BOXES).

NOTE: SEE LATERAL AND OBSERVATION PORT SECTION ON DRAINFIELD DETAILS SHEET FOR ADDITIONAL DETAIL.



LATERAL LINE NOTE:

1. LATERALS SHALL END HOLE SPACING FROM END OF TRENCH.

DISTRIBUTION LATERAL DETAIL

NOT TO SCALE

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NO.	DESCRIPTION	DATE

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