

STANDARD DRAWING LEGEND		
FOR ENTIRE PLAN SET (NOT TO SCALE)		
EXISTING NOTE	TYPICAL NOTE TEXT	PROPOSED NOTE
---	ON-SITE PROPERTY LINE / R.O.W. LINE	---
---	NEIGHBORING PROPERTY LINE / INTERIOR PARCEL LINE	---
---	EASEMENT LINE	---
---	SETBACK LINE	---
---	UNDERGROUND FORCE MAIN	---
S	SANITARY SEWER MAIN	---
⊙	SANITARY MANHOLE	•
○	TERMINAL SANITARY MANHOLE	•
---	STREAM BUFFER	SB
---	FLOODPLAIN	---
---	LIMIT OF DISTURBANCE	---
---	UTILITY TEST PIT LOCATION	+
WB	WETLAND BUFFER	---
---	PERCOLATION HOLE (PASSED)	•
---	PERCOLATION HOLE (FAILED)	⊗
---	PERENNIAL STREAM	---
---	INTERMITTENT STREAM	---
---	SEWAGE DISPOSAL AREA	PRIVATE SHARED
---	PROPOSED SEWER HOUSE CONNECTION	---
---	WETLAND BUFFER	---
---	STREAM BUFFER	---
---	TREELINE	---
---	SEWER CLEANOUT	•

QUANTITIES TABLE				
ITEMS	QUANTITIES ESTIMATED	QUANTITIES	AS-BUILT TYPE	MANUFACTURER / SUPPLIER
GRINDER PUMP (DUPLIC)	2	2	DUPLEX	ZOELLER
CLEANOUTS	7	7	CONCRETE	HORNE CONCRETE
GATE VALVES	1	1	MJ RS O/R	MUELLER CO.
4" S.H.C.	66 L.F.	75 L.F.	PVC-SDR 35	JM-MFG.
1 1/2" SDR 11 HDPE (LPSS)	830 L.F.	830 L.F.	HDPE	FLYING W PLASTICS
8" SDR 35 PVC	591 L.F.	590 L.F.	PVC	JM-MFG.
TERMINAL FLUSHING CONNECTION MANHOLE	2	2	PRECAST CONC.	ATLANTIC CONCRETE
SANITARY MANHOLE	2	2	PRECAST CONC.	ATLANTIC CONCRETE
3" WIDE DRAINFIELD TRENCH	750 L.F.	750 L.F.	TYPE 2-A WASHED STONE	HYDRO-TERRA
2" PVC LATERALS	744 L.F.	744 L.F.	2" PVC HDPE	FLYING W PLASTICS
3" PVC PVC FORCE MAINS	180 L.F.	180 L.F.	3" PVC HDPE	FLYING W PLASTICS
2,000 GALLON SETTLING TANKS	1	1	PRECAST CONC.	GILLESPIE
4.5 BAT UNIT (MICROFAST)	1	1	PRECAST CONC.	GILLESPIE
6,000 GALLON SETTLING TANK	1	1	PRECAST CONC.	GILLESPIE
DOSING PUMPS	3	3	CAST IRON	GOULDS W&S
8' X 12' CONTROL SHED	1	1	COTTAGE A-FRAME	RIDGE CABINET CO.
TRANSITION MANHOLE	2	2	PRECAST CONC.	ATLANTIC CONCRETE
NAME OF UTILITY CONTRACTOR				HIGHLAND TURE, INC.
CHECK BOX				AS-BUILT DATE 11-4-2021
SURVEY AND DRAFTING DIVISION				

SHEET INDEX		
SHEET TITLE	SHEET NUMBER	
WATER AND SEWER PLAN - TITLE SHEET	1	
WATER AND SEWER PLAN - PUBLIC SEWER & FORCE MAIN PLAN & PROFILES	2	
WATER AND SEWER PLAN - DRAINFIELD PLAN	3	
WATER AND SEWER PLAN - TREATMENT SYSTEM DETAIL	4	
WATER AND SEWER PLAN - DISTRIBUTION DETAILS	5	

SANITARY STRUCTURE SCHEDULE					
NAME	TYPE	RIM ELEV. (FT.)	INVERTS	NORTHING	EASTING
CO1	CLEANOUT	489.88	INV OUT = 487.05 (4")	N 570,993.9915	E 1,311,126.6162
CO2	CLEANOUT	489.22	INV OUT = 487.05 (4")	N 570,994.4136	E 1,312,238.6271
CO5	CLEANOUT	490.48	INV OUT = 487.05 (12")	N 570,992.4287	E 1,311,127.8163
CO6	CLEANOUT	489.96	INV OUT = 487.05 (12")	N 570,994.0229	E 1,312,239.3952
GP#1	GRINDER PUMP HO.CO. STD. DET. E-2.03	500.00	INV IN = 487.50 (12") INV IN = 487.00 (4")	N 570,999.2047	E 1,312,238.0072
GP#2	GRINDER PUMP HO.CO. STD. DET. E-2.03	490.00	INV IN = 487.50 (12") INV IN = 487.00 (4")	N 570,997.8891	E 1,311,125.7163
SM#4	TERMINAL FLUSHING CONNECTION HO.CO. STD. DTL. E-1.03	499.88	INV OUT = 494.84 (12")	N 570,992.4276	E 1,312,252.7898
SM#3	TERMINAL FLUSHING CONNECTION HO.CO. STD. DTL. E-1.03	481.82	INV OUT = 485.00 (12")	N 570,992.9433	E 1,311,127.1739
SM#1	STANDARD MANHOLE HO.CO. STD. DET. G-5.12	498.77	INV IN = 482.10 (8") INV IN = 482.00 (8") INV OUT = 491.90 (8")	N 570,984.8743	E 1,311,377.1162
SM#2	STANDARD MANHOLE HO.CO. STD. DET. G-5.12	500.00	INV IN = 494.04 (8") INV IN = 494.14 (4") INV OUT = 493.94 (8")	N 570,938.3398	E 1,311,537.9644
TSM#1	TRANSITION MANHOLE HO.CO. STD. DET. S-4.15	497.17	INV IN = 483.09 (12") INV OUT = 492.50 (8")	N 570,999.0542	E 1,311,372.8479
TSM#2	TRANSITION MANHOLE HO.CO. STD. DET. S-4.15	511.97	INV IN = 506.65 (12") INV OUT = 506.15 (8")	N 570,427.8169	E 1,311,922.3346
VALVE BOX	ISOLATION VALVE BOX	497.19	INV IN = 491.86 (8") INV OUT = 491.86 (8")	N 570,979.8789	E 1,311,375.7005

AS-BUILT DATE 1/24/2022

DEVELOPER: ELM STREET DEVELOPMENT
5074 DORSEY HALL ROAD, SUITE 205
COLUMBIA, MD 21042
CONTACT: JASON VAN KIRK
PHONE: (410) 720-3021

OWNERS:
PARCEL 34
TOLL MID ATLANTIC LP COMPANY INC.
250 GIBRAL TAY ROAD
HORSHAM PA, 19044
TEL.
PARCEL 111
DENNIS A LEAF
LENDRE D SINES
5225 GREEN BRIDGE ROAD
DAYTON, MD 21036
TEL.

PARCEL 112
TOLL MID ATLANTIC LP COMPANY INC.
250 GIBRAL TAY ROAD
HORSHAM PA, 19044
TEL.
PARCEL 98
JERRY MAUCK
JANET BURKE JT
5234 GREEN BRIDGE ROAD
DAYTON, MD 21036
TEL.

TYPE OF BUILDING: RESIDENTIAL - SINGLE FAMILY DETACH DWELLING
DRAINAGE AREA: PATAPSCO
NUMBER OF LOTS/PARCELS/UNITS WITHIN SUBDIVISION: 45
NUMBER OF LOTS/PARCELS SERVED BY PROPOSED SHARED SEPTIC SYSTEM: 5
AREA OF RESIDENTIAL LOT/PARCEL: 99.95 AC
NUMBER OF S.H.C.: 5
WATER ZONE: N/A
TEST GRADIENT: N/A
TREATMENT PLANT: SHARED TREATMENT FACILITY
SHARED SEPTIC DISPOSAL FACILITY
ON NON-BUILDABLE PRES. PARCEL "D"

LOCATION MAP

SCALE: 1"=600'

REFERENCE DRAWINGS

ECP-19-008 SP-17-002
WP-17-105 F-18-086
DMV2-19-009 (SEE GENERAL NOTE 12)

USE PROJECTION	
HOUSES SERVED BY ON-SITE SYSTEM	5
BEDROOMS PER HOUSE	5
FLOW PER BEDROOM (GPD)	150
TOTAL DESIGN FLOW AT 150 GPD/BEDROOM (GAL)	3,750
ADF (GPD)	1,875

BENCHMARK	
GEODETIC SURVEY CONTROL - 28DA	ELEV. 564.389 N 570,824.987 E 1,314,434.228
GEODETIC SURVEY CONTROL - 28DB	ELEV. 537.361 N 569,055.561 E 1,313,795.348

SEE SHEET 4 FOR SHARED SEPTIC TREATMENT SYSTEM NOTES.

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT (F-19-086)

APPROVED: FOR PRIVATE WATER AND SHARED SEWER SYSTEM FOR LOTS 23, 38, 39, 40 & 42.

HOWARD SCD
DATE 1/28/2020

COUNTY HEALTH OFFICER
HOWARD COUNTY HEALTH DEPARTMENT
DATE 2/12/2020

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND

CHIEF, BUREAU OF UTILITIES
DATE 1-15-2020

DEPARTMENT OF PLANNING & ZONING HOWARD COUNTY, MARYLAND

CHIEF, DEVELOPMENT ENGINEERING DIVISION
DATE 2-19-20



BOHLER ENGINEERING
901 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21204
Phone: (410) 821-7900
Fax: (410) 821-7987
www.BohlerEngineering.com

B. ROWE
PROFESSIONAL ENGINEER
MARYLAND LICENSE NO. 4008
JERRY MAUCK
JANET BURKE JT
5234 GREEN BRIDGE ROAD
DAYTON, MD 21036
TEL.

DES. AVG
DRN. AVG
CK. TG
DATE: 01/03/20

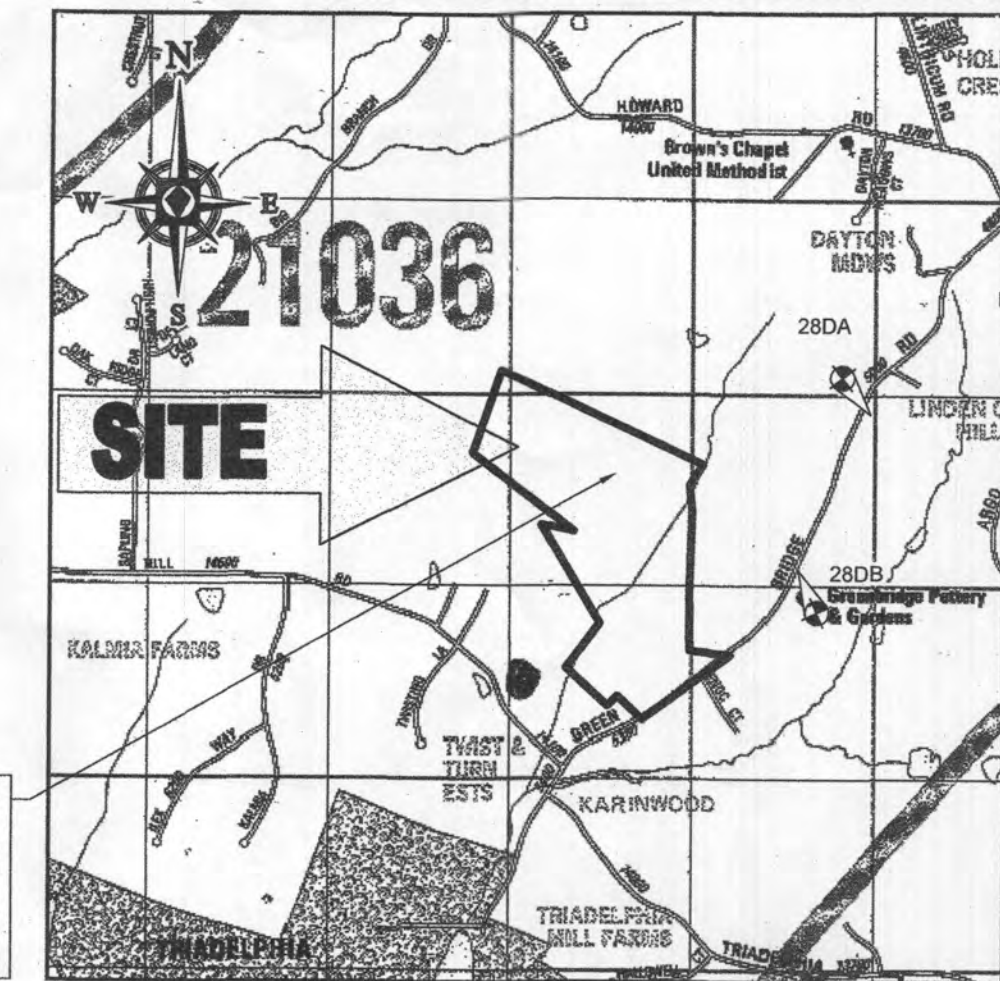
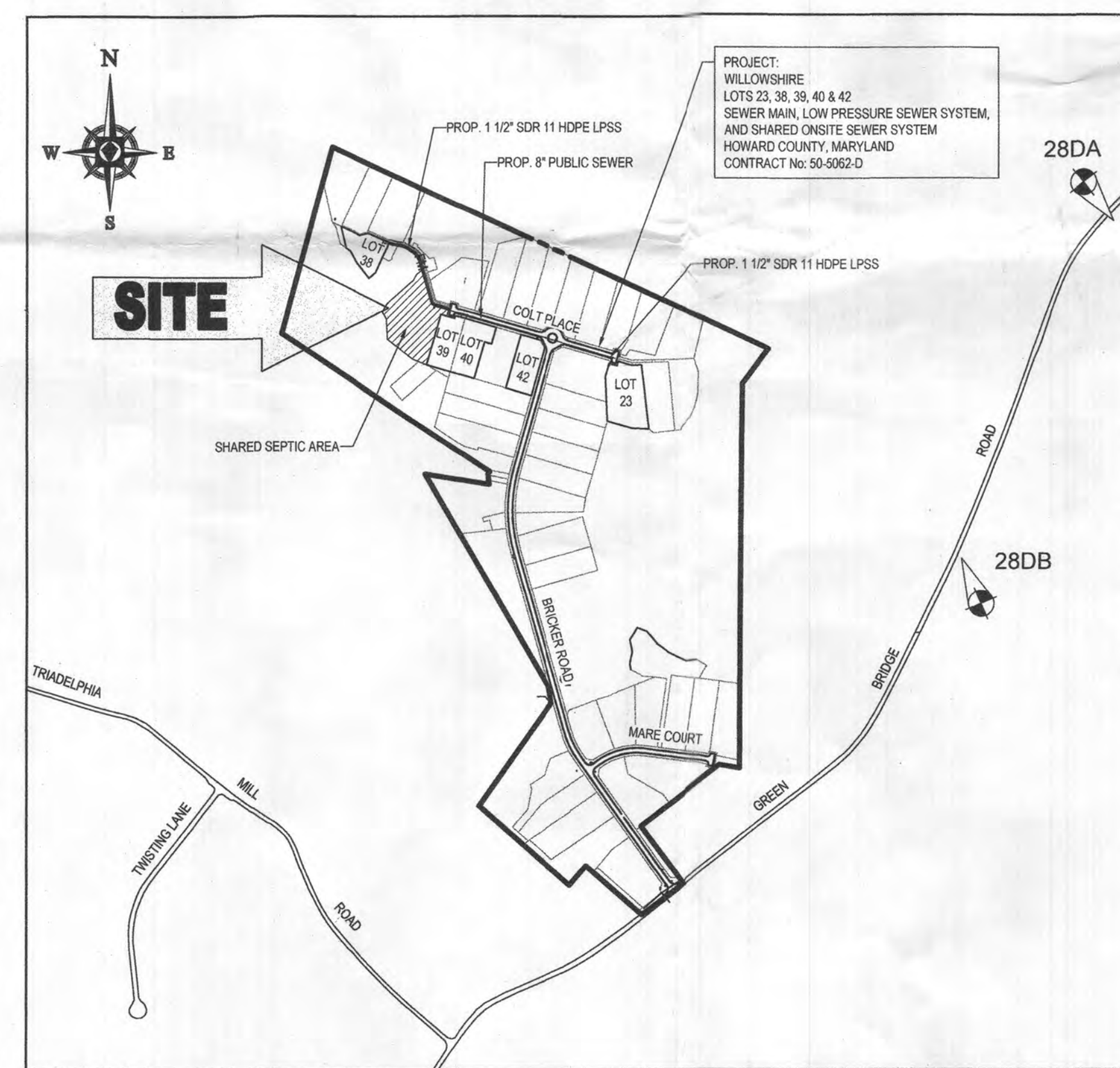
REV.	DATE	DESCRIPTION
1	1/24/2022	AS-BUILT
2	11/23/21	AS BUILT

WATER AND SEWER PLAN	
TITLE SHEET	
PARCEL NO.	34, 36, 98, 111 & 112
600' SCALE MAP NO.	27 & 28
BLOCK	

WILLOWSHIRE	
LOTS 1-45, BUILDABLE PRESERVATION PARCEL C, NON-BUILDABLE PRESERVATION PARCEL A, B, D, E, G, L, & NON-BUILDABLE BULK PARCEL H-K	
5232 GREEN BRIDGE ROAD TAX MAP 27, GRID 18, PARCELS 34, 36, 98, 111 & 112 5TH ELECTION DISTRICT, ZONED RR-DE0 HOWARD COUNTY MARYLAND CONTRACT NO.: 50-5062-D	
SCALE AS SHOWN	SHEET 1 OF 5

FINAL PUBLIC SEWER, FORCE MAIN AND SHARED ONSITE SEWER SYSTEM PLANS FOR WILLOWSHIRE LOTS 23, 38, 39, 40 & 42 CONTRACT NO.: 50-5062-D

LOCATION OF SITE
5232 GREEN BRIDGE ROAD
TAX MAP 27, GRID 18, PARCELS 34,36, 98, 111 & 112
5TH ELECTION DISTRICT, ZONED RR-DE0
HOWARD COUNTY MARYLAND



PROJECT: WILLOWSHIRE
LOTS 23, 38, 39, 40 & 42
SEWER MAIN, LOW PRESSURE SEWER SYSTEM, AND SHARED ONSITE SEWER SYSTEM
HOWARD COUNTY, MARYLAND
CONTRACT NO. 50-5062-D

VICINITY MAP
COPYRIGHT ADC THE MAP PEOPLE
PERMIT USE NO. 20602153-5
SCALE: 1"=200'
ADC MAP COORDINATES: 30/C5

GENERAL NOTES

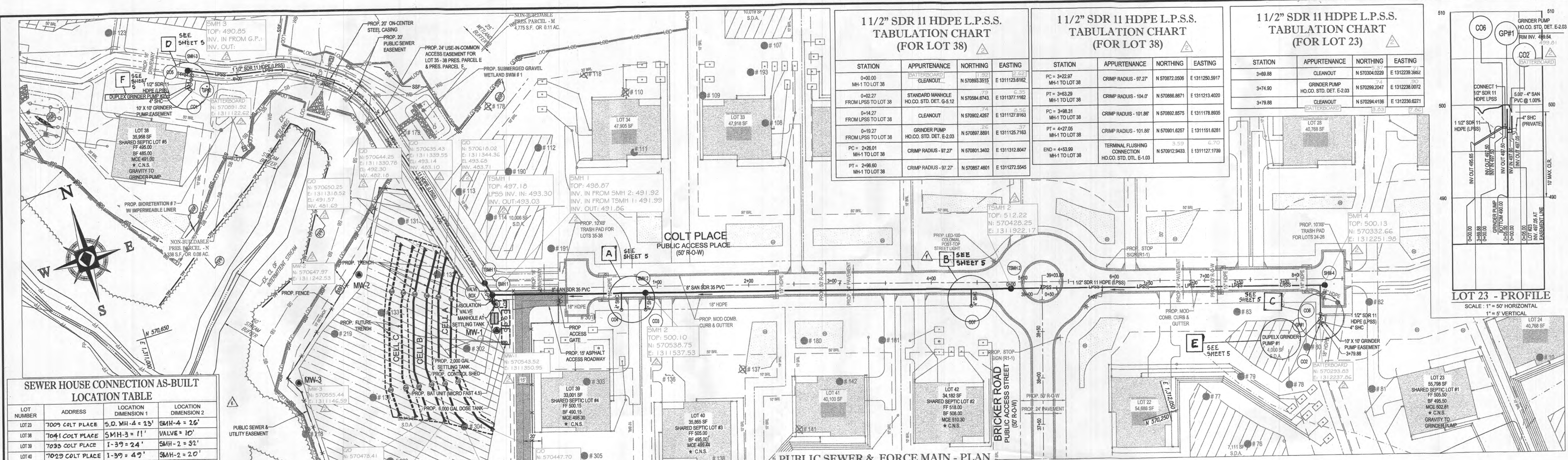
- APPROXIMATE LOCATIONS OF EXISTING MAINS ARE SHOWN. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PROTECT EXISTING MAINS AND SERVICES AND MAINTAIN UNINTERRUPTED SERVICE. ANY DAMAGE INCURRED SHALL BE REPAIRED IMMEDIATELY TO THE SATISFACTION OF THE ENGINEER AT THE CONTRACTOR'S EXPENSE.
- TOPOGRAPHIC FIELD SURVEYS WERE PERFORMED ON APRIL 28, 2015 BY BOHLER ENGINEERING.
- THE COORDINATES SHOWN HEREON ARE BASED UPON THE HOWARD COUNTY GEODETIC CONTROL WHICH IS BASED UPON THE MARYLAND STATE PLAN COORDINATE SYSTEM. HORIZONTAL AND VERTICAL CONTROL DATUM ARE BASED ON HOWARD COUNTY MONUMENT NOS. 28DA AND 28DB WHICH WERE USED FOR THIS PROJECT.
HOWARD COUNTY MONUMENT NO. 28DA ELEV. = 564.389'
HOWARD COUNTY MONUMENT NO. 28DB ELEV. = 537.361'
- ALL PIPE ELEVATIONS SHOWN ARE INVERT ELEVATIONS UNLESS OTHERWISE NOTED ON THE PLANS.
- 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 THE BRACING OF ADDITIONAL POLES, ANY COST INCURRED BY THE OWNER FOR THE BRACING OF ADDITIONAL POLES OR DAMAGES SHALL BE DEDUCTED FROM MONIES OWED BY THE CONTRACTOR. THE CONTRACTOR SHALL COORDINATE WITH THE UTILITY COMPANIES TO SCHEDULE THE BRACING OF THE POLES.
- FOR DETAILS NOT SHOWN ON THE DRAWING, 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.
- 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 IN 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.
- 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
BOE (CONSTRUCTION SERVICES) 410-637-8713
BOE (EMERGENCY) 410-688-0123
BUREAU OF UTILITIES 410-313-4900
COLONIAL PIPELINE COMPANY 410-795-1390
MISS TILITY 1-800-257-7777
STATE HIGHWAY ADMINISTRATION 410-531-5533
VERIZON 1-800-743-0033
HOWARD COUNTY HEALTH DEPARTMENT OFFICE 410-313-8300
- 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.
- THE 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 CONSTRUCTION OF THE MAIN.
- 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 OFF ANY COUNTY ROAD FOR LAYING WATER/SEWER MAINS OR HOUSE CONNECTIONS. THE APPROVAL OF THESE DRAWINGS WILL CONSTITUTE COMPLIANCE WITH IPW REQUIREMENTS PER SECTION 18.11(A) OF THE HOWARD COUNTY CODE.
- WAIVER (DMV2-19-09) FROM THE HOWARD COUNTY DESIGN MANUAL VOL. II, WATER AND SEWER SECTION 4.3.3.B AND 4.5.E FOR LOTS 23, 38-40 AND 42 (NO BASEMENT GRAVITY SERVICE) HAS BEEN APPROVED BY HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS ON DEC. 14, 2018. AS A RESULT OF TOPOGRAPHY CAUSING DEPTHS OF SEWER IN EXCESS OF 20 FEET, BASEMENT SEWER SERVICE CANNOT BE PROVIDED TO THESE LOT PROPOSED LOTS. FOR THESE LOTS: GRAVITY SEWER SERVICE TO BE PROVIDED TO FIRST FLOOR ONLY; BASEMENT SERVICE TO BE PROVIDED BY PRIVATE ON-SITE PUMP TO BE LOCATED INSIDE THE HOUSE. THE APPROVAL AND INSPECTION OF ON-SITE PUMPING UNITS INCLUDES THE DEPARTMENT OF INSPECTION, LICENSE AND PERMIT (DILP).
- CONSTRUCTION SHALL CONFORM TO ALL LOCAL, COUNTY, AND STATE GUIDELINES, INCLUDING HOWARD COUNTY BUILDING CODES AND RECOMMEND STANDARD FOR WASTEWATER SYSTEMS (2004); DISCREPANCIES SHALL BE REFERRED TO ENGINEER.
- REFER TO SEPTIC PERMIT APPROVAL FOR SAMPLING PROTOCOLS AND FREQUENCY FOR THE RESPECTIVE SITES. COPY OF THE SEPTIC PERMIT APPROVAL SHALL BE KEPT WITH THE CONSTRUCTION.
- A PRE-CONSTRUCTION MEETING SHALL BE HELD WITH THE MDE (410-537-3680), HOWARD COUNTY HEALTH DEPARTMENT AND BUREAU OF UTILITIES & CONSTRUCTION INSPECTIONS REPRESENTATIVES PRIOR TO STARTING WORK TO REVIEW DESIGN DOCUMENTS AND CONSTRUCTION REQUIREMENTS.
- AN OPEN TRENCH INSPECTION SHALL BE CONDUCTED PRIOR TO FILLING WITH GRAVEL.
- THIS AREA DESIGNATES A SEWAGE DISPOSAL AREA OF AT LEAST 10,000 SQ FT PER LOT ON SHARED-SYSTEM AS REQUIRED BY THE MARYLAND DEPARTMENT OF ENVIRONMENT FR 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 SEWAGE SYSTEM. THE COUNTY HEALTH OFFICER SHALL HAVE AUTHORITY TO GRANT ADJUSTMENTS TO THE PRIVATE SEWAGE AREA, RECORDED OF A REVISED SEWAGE EASEMENT SHALL NOT BE NECESSARY.
- WAIVER (DMV2-20-31) FROM THE HOWARD COUNTY DESIGN MANUAL VOL. II, WATER AND SEWER, SECTION 8.1.E.9.C WHICH REQUIRES "SEPTIC TANKS SIZED (TOTAL CAPACITY) FOR A MINIMUM VOLUME EQUAL TO 1250 GALLONS PER 4-BEDROOM HOUSE, WITH AN ADDITIONAL 250 GALLONS FOR EACH ADDITIONAL BEDROOM. HAS BEEN APPROVED BY HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS ON DECEMBER 10, 2019.
- THE DEVELOPER SHALL CONDUCT QUARTERLY MONITORING OF THE TREATED EFFLUENT DURING THE 12-MONTH PERIOD FOLLOWING 80% OCCUPANCY OF THE LOTS CONNECTED TO THE SHARED SYSTEM. THE SAMPLING AND ANALYSES SHALL BE IN ACCORDANCE WITH MDE GUIDANCE FOR PRE-TREATMENT SYSTEMS WITH GREATER THAN 1500 GPD CAPACITY. THIS INCLUDES GRAB SAMPLING EFFLUENT IN THE PUMP TANK WITH LABORATORY ANALYSES OF BOD, TSS, TOTAL NITROGEN (TKN, NITRATE, NITRE), ALKALINITY, AND FOG. DO, PH, AND TEMPERATURE SHOULD BE FIELD TESTED AS CLOSE TO THE TREATMENT PLANT EFFLUENT PIPE AS POSSIBLE. IF THE EFFLUENT CONSISTENTLY EXCEEDS THE APPROVED DESIGN CRITERIA OR APPLICABLE REGULATORY LIMITS, THE DEVELOPER WILL NOTIFY HCHD, MDE, AND HOBU ANNUALLY MAKE THE NECESSARY ADJUSTMENTS OR REPAIRS TO THE SYSTEM WITH AGENCY OVERSIGHT PRIOR TO DEDICATION OF THE SYSTEM TO HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS. IF A TREATMENT REDUCTION IN PERCENT IS SPECIFIED, CONCURRENT INFLUENT MONITORING IS REQUIRED.

WATER NOTES:

- WATER SERVICE TOLL BUILDABLE LOTS SHALL BE PRIVATE AND PROVIDED BY INDIVIDUAL PRIVATE WELLS.

SEWER NOTES:

- ALL SEWER MAINS SHALL BE DIP OR PVC UNLESS OTHERWISE NOTED.
- ALL MANHOLES SHALL BE 4'-0" INSIDE DIAMETER UNLESS OTHERWISE NOTED.
- FORCE MAINS SHALL BE D.I.P. ONLY.
- MANHOLES SHOWN WITH 12" AND 18" WALLS ARE FOR BRICK MANHOLES ONLY.
- MANHOLES DESIGNED W.T. IN PLAN AND PROFILE SHALL HAVE WATERTIGHT FRAME AND COVERS, STANDARD DETAIL 05.52. WHERE WATERTIGHT FRAME AND COVER IS UNSET, THE COVER SHALL BE FIELD TESTED AS CLOSE TO THE TREATMENT PLANT EFFLUENT PIPE AS POSSIBLE. IF THE EFFLUENT CONSISTENTLY EXCEEDS THE APPROVED DESIGN CRITERIA OR APPLICABLE REGULATORY LIMITS, THE DEVELOPER WILL NOTIFY HCHD, MDE, AND HOBU ANNUALLY MAKE THE NECESSARY ADJUSTMENTS OR REPAIRS TO THE SYSTEM WITH AGENCY OVERSIGHT PRIOR TO DEDICATION OF THE SYSTEM TO HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS. IF A TREATMENT REDUCTION IN PERCENT IS SPECIFIED, CONCURRENT INFLUENT MONITORING IS REQUIRED.
- LOTS 1 THRU 22, 24 THRU 37, 41, AND 43 THRU 45 SHALL HAVE PRIVATE ON-SITE DISPOSAL SYSTEMS.
- LOW PRESSURE SEER PORTION OF THE COLLECTION SYSTEM MUST BE HDPE SDR-11 OR BETTER WITH THERMALLY WELDED JOINTS.
- A SPARE PUMP W/BE PROVIDED TO THE COUNTY AT DEDICATION OF THE PUBLIC SANITARY SEWER IMPROVEMENTS.
- THE FORCEMAIN ELEMENT OF THE SHARED-SEPTIC SYSTEM MUST BE CONSTRUCTED OF FUSIBLE HDPE WHEN PASSING WITHIN 50 FEET OF THE WELL ZONES ON LOTS 22, 23 AND 30.

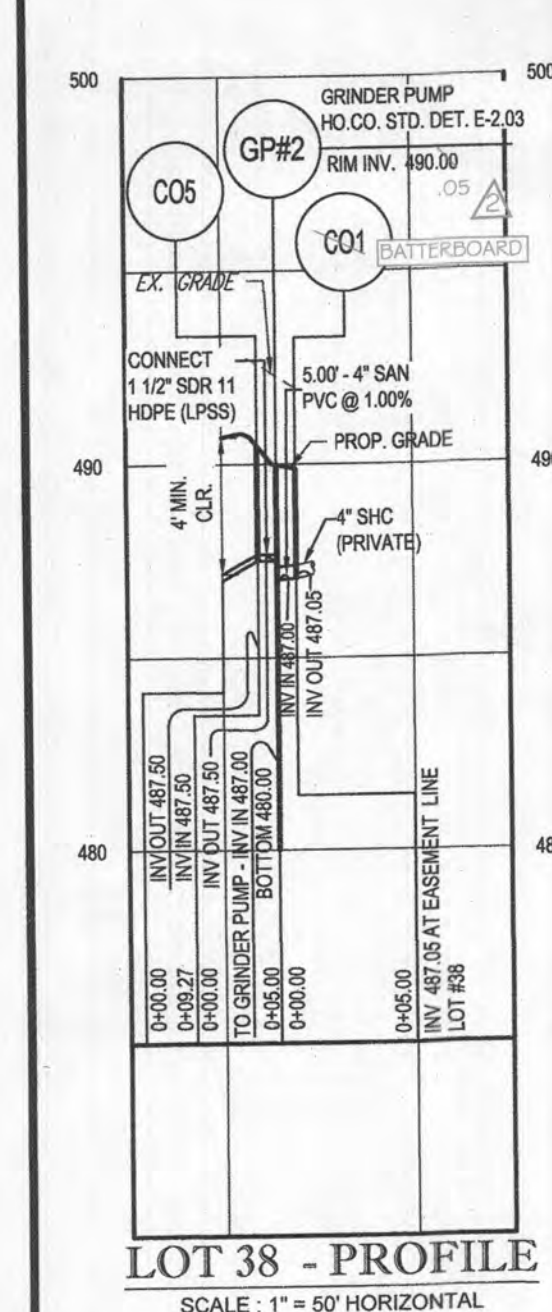


SEWER HOUSE CONNECTION AS-BUILT LOCATION TABLE

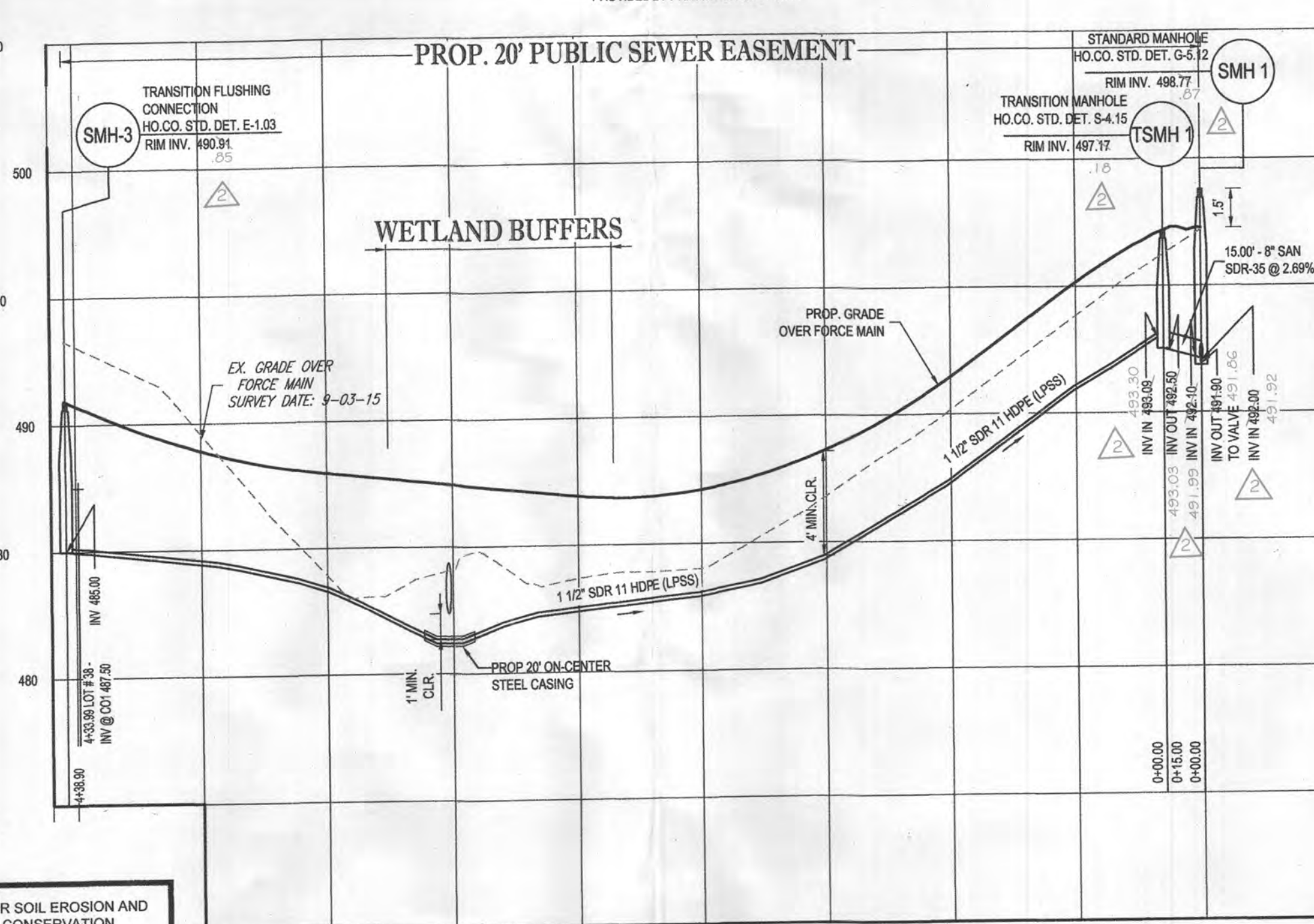
LOT NUMBER	ADDRESS	LOCATION DIMENSION 1	LOCATION DIMENSION 2
LOT 23	7009 COLT PLACE	5.0' MH-4 = 2.3'	SMH-4 = 2.6'
LOT 38	7041 COLT PLACE	SMH-3 = 11'	VALVE = 10'
LOT 39	7035 COLT PLACE	1-3-9 = 2.4'	SMH-2 = 3.2'
LOT 40	7029 COLT PLACE	1-3-9 = 4.7'	SMH-2 = 2.0'
LOT 42	7021 COLT PLACE	TRANSFORMER-79	TSMH-2 = 4.6'

LOT	MCE	BF	FF	Inv. Out of House	SHC Length (ft)	SHC Slope	Inv. @ Grinder Pump	Inv. @ Connection	Prop. Grade @ Grinder Pump	Bottom of Grinder Pump	Drop Connection	Drop Length (ft)	ONS
23	502.81	496.50	505.50	500.31	331.00	1.00%	497.05	497.00	500.00	480.00	N/A	N/A	NO
38	491.00	485.00	495.00	488.50	150.00	1.00%	487.05	487.00	490.00	480.00	N/A	N/A	NO
39	498.30	491.00	501.00	495.80	183.00	1.00%	494.15	N/A	N/A	N/A	N/A	N/A	NO
40	499.44	495.00	505.00	496.54	278.00	1.00%	494.34	N/A	N/A	N/A	N/A	N/A	NO
42	510.30	508.00	518.00	507.80	264.00	1.00%	505.34	N/A	N/A	N/A	YES	2.56	NO

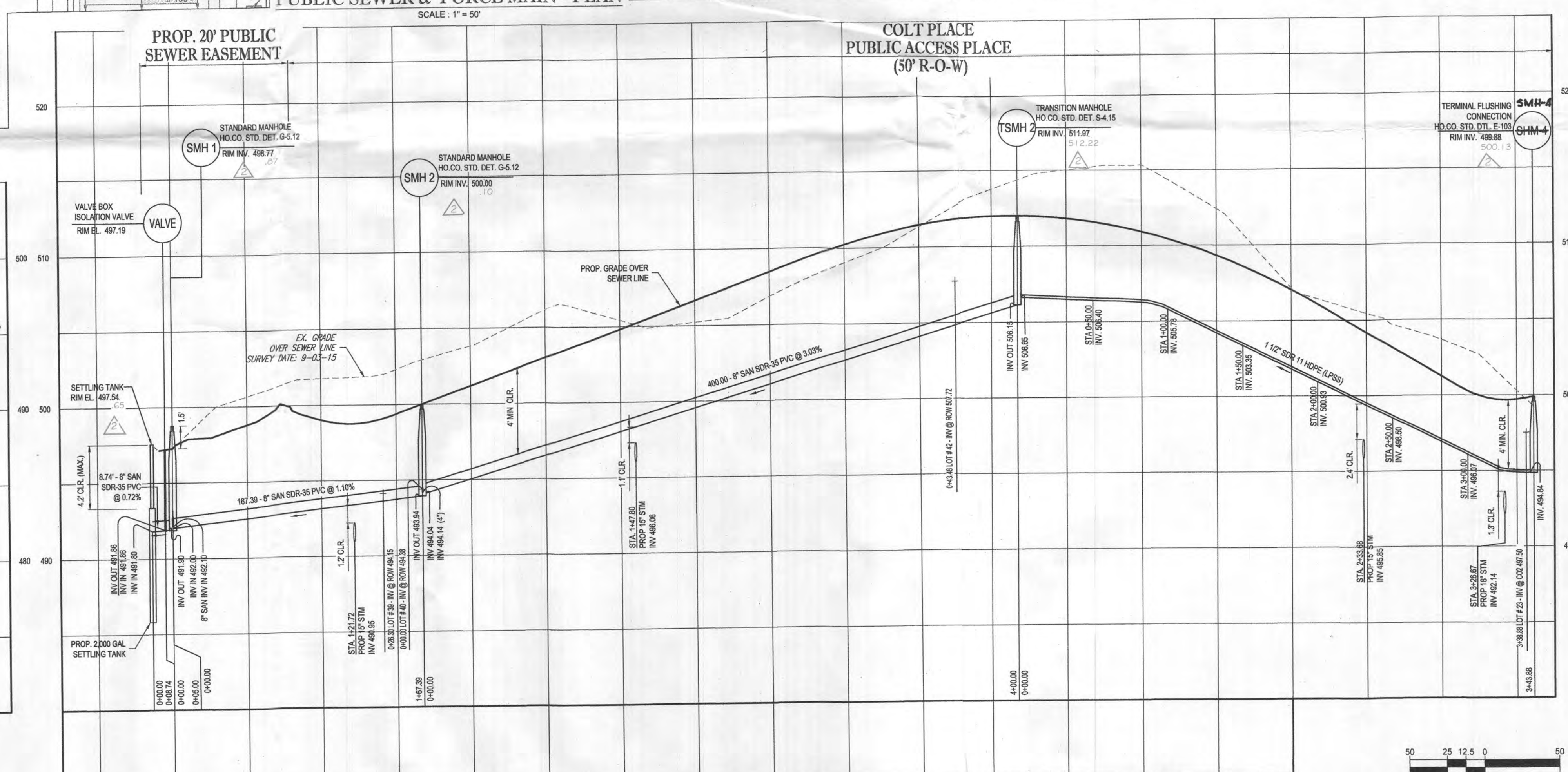
* C.N.S. (CELLAR NOT SERVED) DENOTES GRAVITY SEWER SERVICE, FIRST FLOOR ONLY. GRAVITY BASEMENT SERVICE NOT AVAILABLE. BASEMENT TO BE PROVIDED BY GRAVITY ON-SITE PUMP.



LOT 38 - PROFILE
SCALE: 1" = 50' HORIZONTAL
1" = 5' VERTICAL



11/2" LPSS FORCE MAIN - PROFILE
SCALE: 1" = 50' HORIZONTAL
1" = 5' VERTICAL



11/2" LPSS FORCE MAIN AND 8" SEWER MAIN - PROFILE
SCALE: 1" = 50' HORIZONTAL
1" = 5' VERTICAL

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT (F-18-28C)
John M. Roberts
1/23/22
DATE

APPROVED: FOR PRIVATE WATER AND SHARED SEWER SYSTEM FOR LOTS 23, 38, 39, 40 AND 42.
Brian M. Mays
2/12/2020
COUNTY HEALTH OFFICER
HOWARD COUNTY HEALTH DEPARTMENT

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND
Chris Stiff
1-15-2020
CHIEF, BUREAU OF UTILITIES
DATE

DEPARTMENT OF PLANNING AND ZONING HOWARD COUNTY, MARYLAND
David Chisholm
2-19-22
CHIEF, DEVELOPMENT ENGINEERING DIVISION
DATE

THE FOLLOWING STATES REQUIRE NOTIFICATION BY EDUCATORS, DESIGNERS, OR ANY PERSON PREPARING TO DISTURB THE EARTH'S SURFACE ANYWHERE IN THE STATE OF VIRGINIA, MARYLAND, THE DISTRICT OF COLUMBIA, AND DELAWARE CALL: 811 (VA 1-800-345-6488) (PA 1-800-345-7778) (DC 1-800-267-7777) (VA 1-800-552-7001) (MD 1-800-267-7777) (DE 1-800-282-8555)

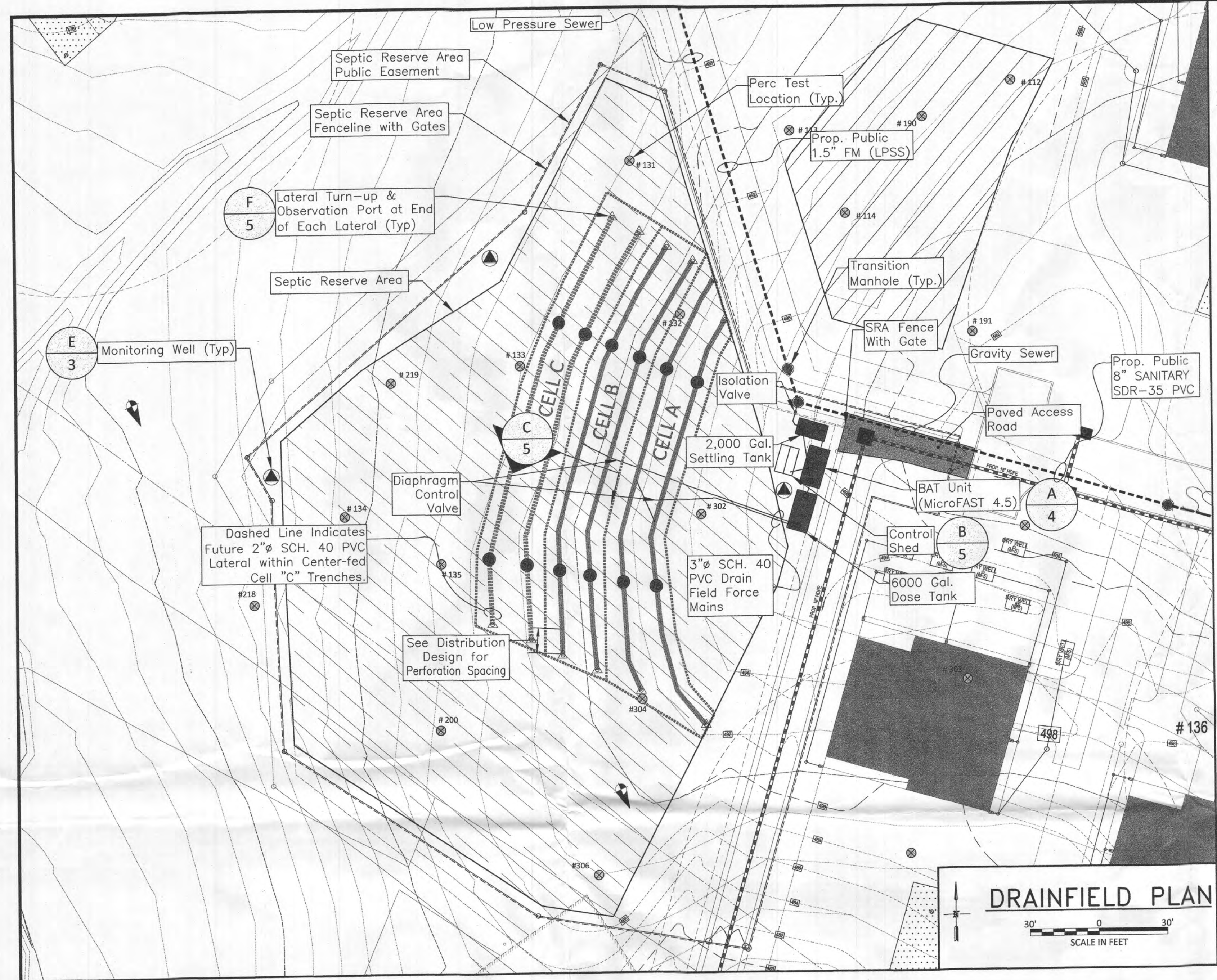
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901 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21204
Phone: (410) 821-7900
Fax: (410) 821-7987
www.BohlerEngineering.com

B.R. ROWE
PROFESSIONAL ENGINEER
1/23/22
DATE

DES. AVG	DRN. AVG	CK. TG	DATE	DESCRIPTION	BY
2	1/24/22	AS-BUILT	1/23/21	AS-BUILT	W/RA
1	1/23/21	AS-BUILT	1/23/21	AS-BUILT	W/RA

WATER AND SEWER PLAN
PUBLIC SEWER & FORCE MAIN
PLAN & PROFILES
PARCEL NO. 34, 36, 98, 111 & 112
600' SCALE MAP NO. 27 & 28 BLOCINO

WILLOWSHIRE
LOTS 1-45, BUILDABLE PRESERVATION PARCEL C, NON-BUILDABLE PRESERVATION PARCEL A, B, D, E-G, L, & NON-BUILDABLE BULK PARCEL H-K
5232 GREEN BRIDGE ROAD
TAX MAP 27, GRID 18, PARCELS 34, 36, 98, 111 & 112
5TH ELECTION DISTRICT, ZONED RR-DEO
HOWARD COUNTY MARYLAND
CONTRACT NO.: 50-5052-D
SCALE AS SHOWN
SHEET 2 OF 5



Use Projections		properties served	5
		bedrooms per property	5
		flow per bedroom (gpd)	150
		MDF (gpd)	3,750
		ADF (gpd)	1,875
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	

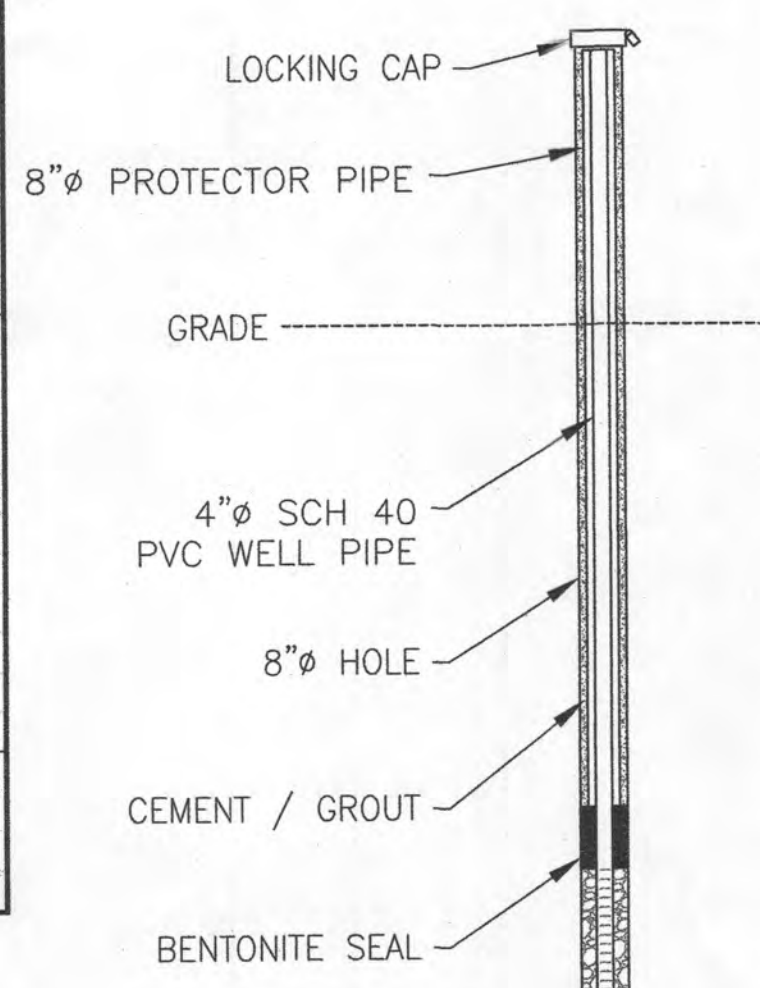
USE PROJECTIONS

*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)	Max gravel depth (feet)	Approx. Ground Surface Elevation (feet msl)	Perc Test Depth Elevation (feet msl)	Side Wall Bottom Elevation (feet msl)	Application Rate (gpd/ft ²)	
131	3.5	10.0	2.5	<5	3.5	6.0	486.10	482.6	480.1	1.2	
132	4.3	13.5	3	5.0	6.5	9.5	490.82	486.5	481.3	1.2	
133	4.3	14.7	2.5	3.3	6.2	10.7	485.96	481.7	475.3	1.2	
134	4.1	11.5	3.8	6.0	3.7	7.5	478.74	474.6	471.2	0.8	
135	4.2	12.5	2.5	3.1	6.0	8.5	484.75	480.6	476.3	1.2	
200	4.0	12.5	2	4.0	6.5	8.5	484.43	480.4	475.9	1.2	
218	3.5	8.0	2.8	5.0	1.2	4.0	474.69	471.2	470.7	1.2	
219	4.0	9.5	2.2	4.0	3.3	5.5	480.83	476.8	475.3	1.2	
302	3.5	13.0	1.8	3.0	7.2	9.0	494.34	490.8	485.3	1.2	
304	4.5	13.0	2.2	4.0	6.8	9.0	491.42	486.9	482.4	1.2	
306	4.5	12.0	3.3	5.0	4.7	8.0	487.98	483.5	480.0	1.2	
112	3.0	11.0	1.7	<5	5.3	7.0	497.19	494.2	490.2	1.2	
113	4.3	12.0	2.8	7.0	5.2	8.0	491.09	486.8	483.1	0.8	
114	3.7	14.0	2.2	3.0	7.8	10.0	495.87	492.2	485.9	1.2	
190	4.0	9.0	1.5	4.0	3.5	5.0	495.40	491.4	490.4	1.2	

PERC TEST RESULTS

200% capacity build-out with low pressure distribution system													
Cell	Trench	Existing Ground Elevation (feet msl)	perc ID's	Side Wall Top Elevation (feet msl)	Perc Rate (min/inch)	Side Wall Height (feet)	Side Wall Bottom Elevation (feet msl)	Trench Bottom Depth (feet)	Trench Length (feet)	Trench Width (feet)	Application Rate (gpd/ft ²)	Capacity gpd, L*W*AppR/ft ²	
A	1	492.5	304, 132, 302	489.50	<5	5	484.5	8.0	186	3	1.2	1,875	
	2	491.5	304, 132	488.50	<5	5	483.5	8.0	186	3	1.2	1,875	
B	3	490.5	304, 132	487.50	<5	5	482.5	8.0	186	3	1.2	1,875	
	4	489.5	132, 131	486.50	<5	5	481.5	8.0	186	3	1.2	1,875	
C	5	488.0	133, 135	485.00	<5	5	480.0	8.0	186	3	1.2	1,875	
	6	487.0	133, 135	484.00	<5	5	479.0	8.0	186	3	1.2	1,875	
		300 % total capacity (gpd)		11,250									
		100% capacity (gpd)		3,750									
		primary capacity, 200% (gpd)		7,500									
		reserve capacity, 100% (gpd)		3,750									
		calculated values in italics		msl = mean sea level in feet									
		gpd = gallons per day		laterals in each trench are at same elevation									
		NA = not available											

TRENCHFIELD DESIGN

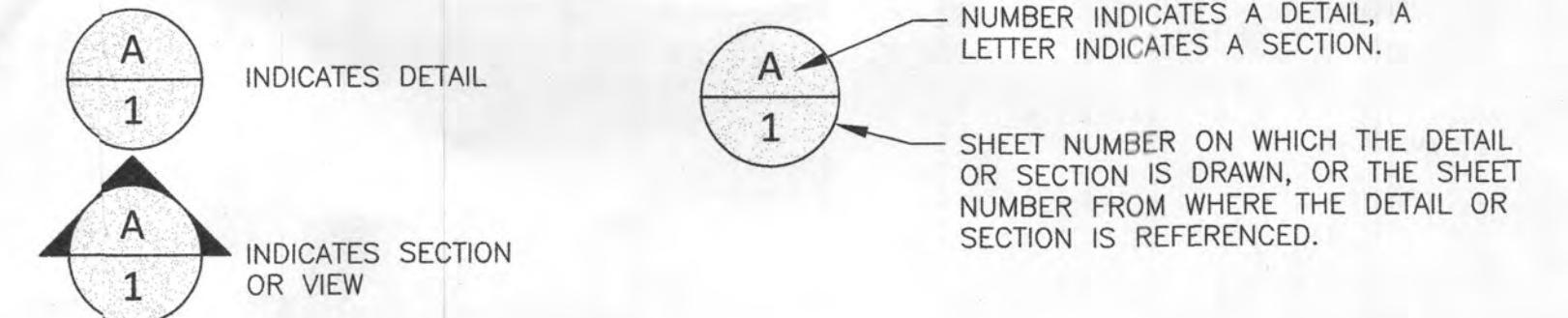


MONITORING WELL NOTE:
MONITORING WELLS SHALL BE DRILLED TO A MINIMUM DEPTH OF 15 FEET BELOW THE FIRST ENCOUNTER WITH GROUNDWATER.

MONITORING WELL

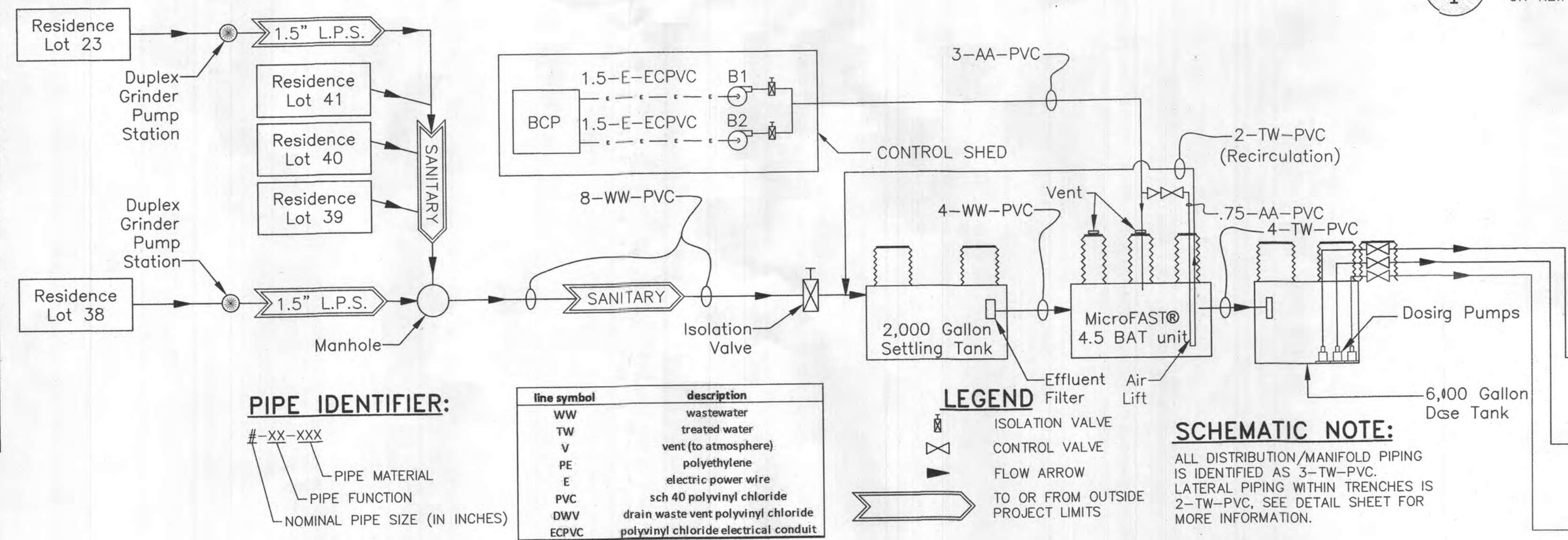
NOT TO SCALE

SYMBOLS



Center feed with 50/50 design													
Cell	Trench	Side Wall Top Elevation (feet msl)	Side Wall Bottom Elevation (feet msl)	Trench Length (feet)	# Holes - Each Lateral	Perf Spacing (feet)	Lateral Length (feet)	Perf Dia (inches)	Perf Flow (gpm)	Lateral Flow (gpm)	Dose Rate (gpm/foot of trench)	Max. Lateral Friction Loss (feet)	Lateral Velocity (feet/second)
A	1	489.5	489.5	186	15	6.20	89.9	5/16	2.00	30.0	0.33	0.7	2.9
	2	488.5	489.5	186	15	6.20	89.9	5/16	2.00	30.0	0.33	0.7	2.9
B	3	487.5	487.5	186	15	6.20	89.9	5/16	2.00	30.0	0.33	0.7	2.9
	4	486.5	487.5	186	15	6.20	89.9	5/16	2.00	30.0	0.33	0.7	2.9
		Notes		calculated values in italics		design distal head (feet)= 3.0		friction C factor for plastic pipe= 130		lateral inside diameter (2\"/>			
						gpm = gallons per minute		msl = mean sea level in feet		Minimum cover over laterals shall be 24\"/>			
						All laterals within a cell shall be at the same elevation.							

DISTRIBUTION DESIGN

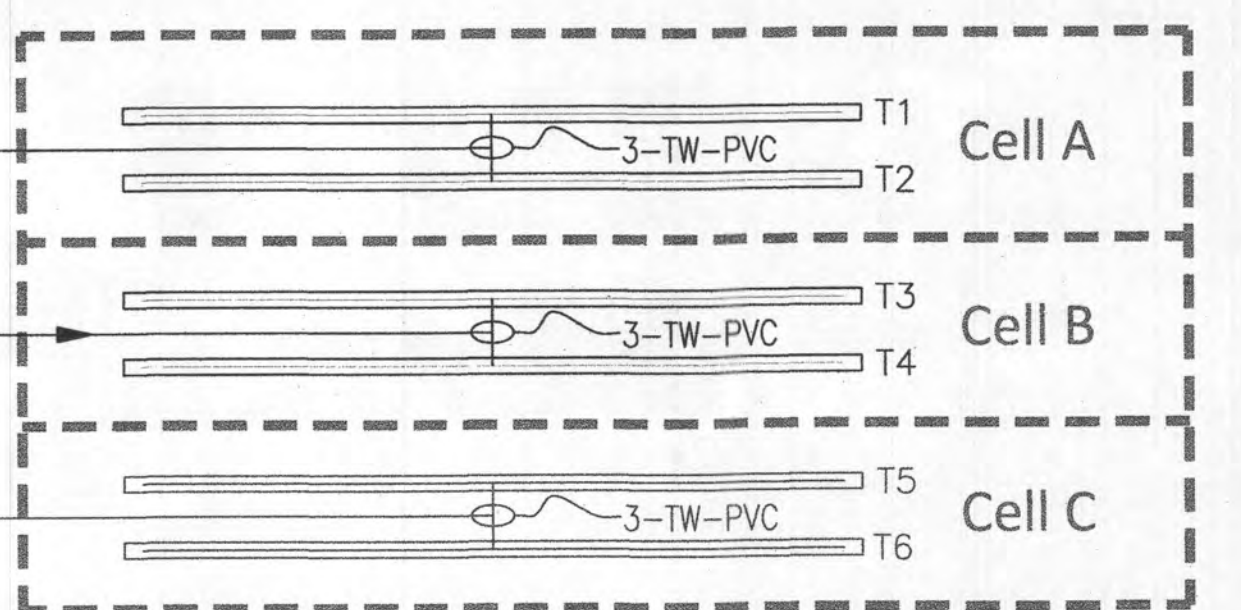


WASTEWATER TREATMENT SYSTEM SCHEMATIC

NO SCALE

P&ID Key Notes				
part symbol	component	size	notes	material #
ST	settling tank	2000 gal	(2) 30\"/>	concrete 1
TT	treatment tank	4240 gal	Biomechanics MicroFAST 4.5	concrete 1
PT	dose tank	6000 gal	(2) 30\"/>	concrete 1
BL-2	blower	2\"/>	Spencer Turbine (1 duty, 1 spare)	var. 2
P1-3	dose pump	2\"/>	Goulds W507BHF (2 duty, 1 spare)	cast iron 3
T1-T6	trenches per plan	3\"/>	8' total depth, 5' sidewall, 186' long each	

P&ID KEY NOTES



APPROVED FOR PRIVATE WATER AND SHARED SEWER SYSTEM FOR LOTS 23, 38, 39, 40 & 42

HOWARD COUNTY HEALTH OFFICER
DATE: 2/12/2020
CHIEF, BUREAU OF UTILITIES

DEPARTMENT OF PLANNING & ZONING
HOWARD COUNTY, MARYLAND
CHIEF, DEVELOPMENT ENGINEERING DIVISION
DATE: 2-14-20

THE FOLLOWING STATES REQUIRE NOTIFICATION BY EXCAVATORS, DESIGNERS, OR ANY PERSON PREPARING TO DISTURB THE EARTH'S SURFACE ANYWHERE IN THE STATE OF VIRGINIA, MARYLAND, THE DISTRICT OF COLUMBIA, AND DELAWARE: CALL 811 (OR 1-800-552-7001) (MD 1-800-282-7777) (DC 1-800-282-8555)

Hydro-Terra Group
1106 Business Parkway South
Suite E
Westminster, Maryland 21157
(410) 861-5376 (phone)
(410) 861-5467 (fax)

PROFESSIONAL ENGINEER
I MARK A. MAZURCHAK, P.E., 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. 00203, EXPIRATION DATE: 12/31/2020

DES: MJM					
DRN: MDS					
CK: MDH					
DATE: 1/3/2020	REV.	DATE	DESCRIPTION	BY	

Water and Sewer Plans
DRAINFIELD PLAN
PARCEL NO. 34, 36, 98, 111 & 112
600' SCALE MAP NO. 27 & 28 BLOCINO.

WILLOWSHIRE
LOTS 1-45, BUILDABLE PRESERVATION PARCEL C, NON-BUILDABLE PRESERVATION PARCEL A, B, E-G & L, NON-BUILDABLE BULK PARCEL D & H-K
5232 GREEN BRIDGE ROAD
TAX MAP 27, GRID 18, PARCELS 34, 36, 98, 111 & 112
5TH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND
CONTRACT NO.: 50-5052-D
SCALE: As Noted
SHEET: 3 of 5