

CAPERTON VILLAGE AT TURF VALLEY

PHASE 2

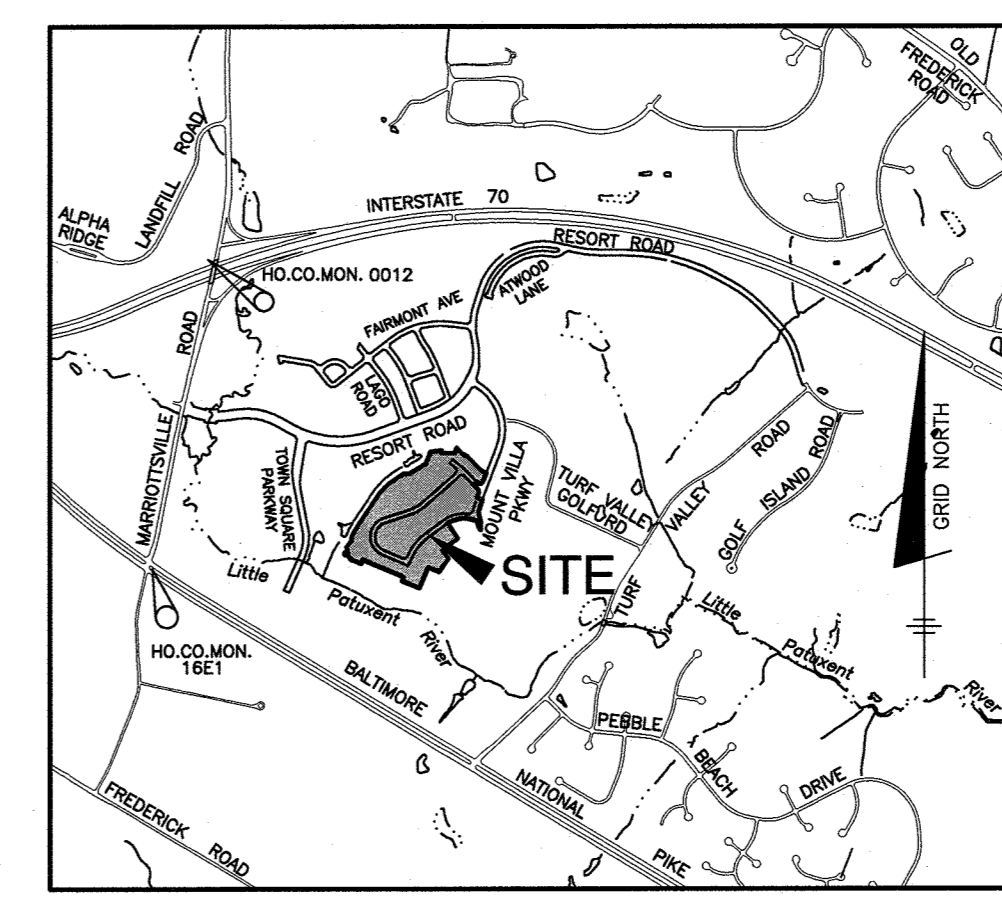
PUBLIC WATER AND SEWER PLANS

CONTRACT NO. 14-4978-D

ITEMS	QUANTITIES ESTIMATED	AS-BUILT		MANUF./SUPPLIER
		QUANTITIES	TYPE	
8" DIP WATER	1411 LF	1411	DIP	McWANE/FRIZZELL
6" FIRE HYDRANT, TEE, & VALVE	4 EA	4	DIP	AM. FLOW CONTROL / FRIZZELL
1.5" COPPER WHC	971 LF	971	COPPER	CRONA FLOW / FRIZZELL
1" METER VAULT	36 EA	36	CONCRETE	HERNE CONCRETE SUPPLIER
8" PVC SDR-35 SEWER	951 LF	951	PVC	DIAMOND PLASTIC / FRIZZELL
MANHOLES	7 EA	7	CONC. PRECAST	ATLANTIC PRECAST / FRIZZELL
4" PVC SHC	984 LF	984	PVC	DIAMOND PLASTIC / FRIZZELL

NAME OF UTILITY CONTRACTOR: **CCS**
SURVEY AND DRAFTING DIVISION AS-BUILT DATE:

Lot Number	Distance (feet)
56	53.56
57	52.00
58	52.00
59	52.00
60	55.00
61	55.00
62	55.00
63	55.01
64	72.66
65	55.00
66	55.00
67	55.00
68	55.00
69	55.00
70	55.00
71	55.00
72	55.00
73	55.05
74	40.18
75	55.01
76	55.00
77	55.00
78	55.00
79	55.00
80	55.00
81	55.00
82	55.00
83	53.28
84	52.48
85	52.22
86	60.00
87	55.00
88	55.00
89	57.51
90	98.90
91	111.46



VICINITY MAP
SCALE: 1" = 2000'
ADC MAP: 19
GRID: D4

BENCHMARKS
NAD'83 HORIZONTAL
HO. CO. #16E1 (AKA: 3438001)
STAMPED BRASS DISK SET ON TOP OF A 3" DEEP COLUMN OF CONCRETE.
ELEVATION: 463.981'
HO. CO. #0012 (AKA: 3439001)
STAMPED BRASS DISK SET ON TOP OF A 3" DEEP COLUMN OF CONCRETE.
ELEVATION: 486.298'

GENERAL NOTES
PART I

- 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 IN JANUARY, 2006 BY WINGS AERIAL MAPPING CO., INC.
- HORIZONTAL AND VERTICAL SURVEY CONTROLS:

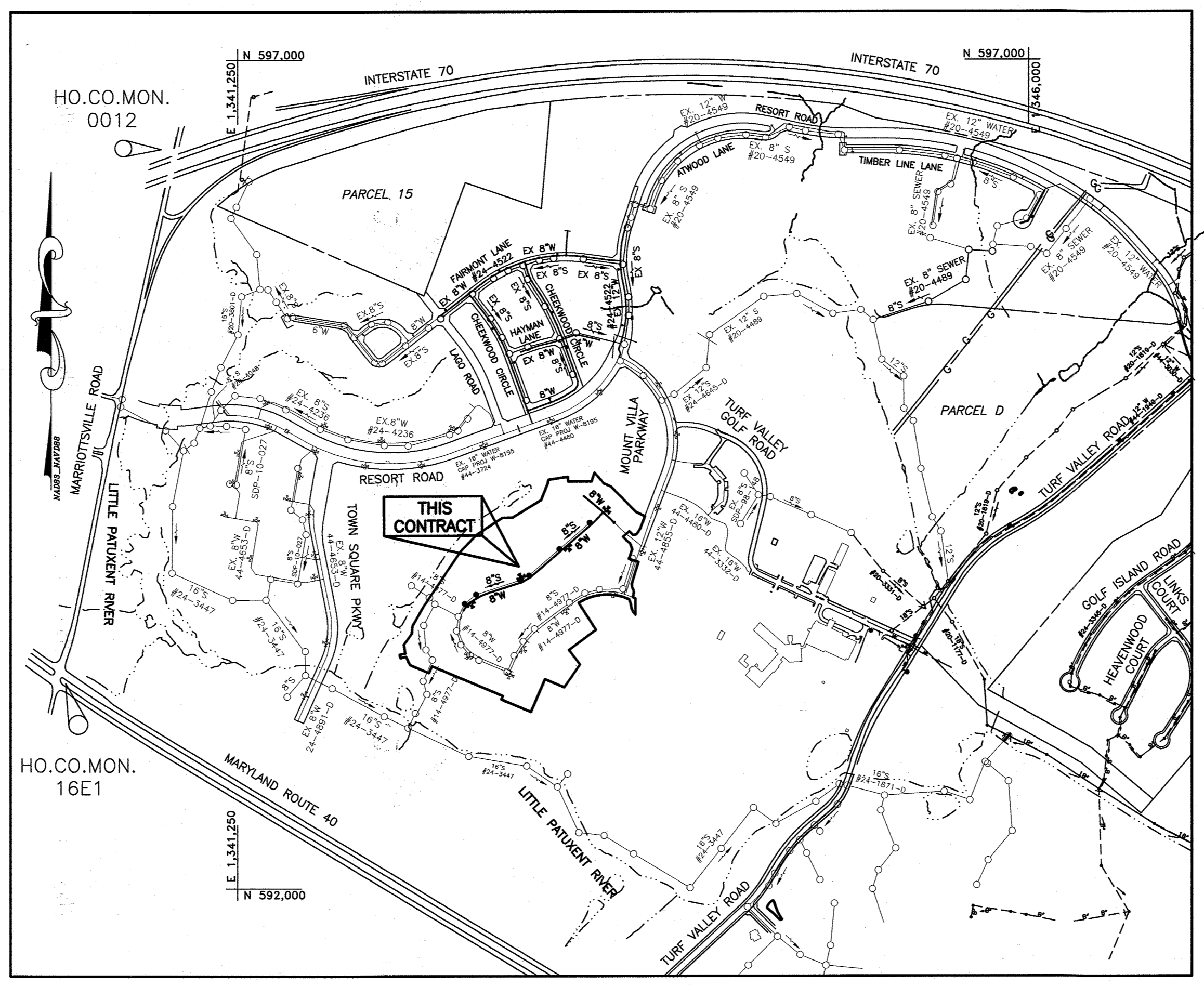
THE COORDINATES SHOWN ON THE DRAWINGS ARE BASED ON MARYLAND STATE REFERENCE SYSTEM NAD '83/91 AS PROJECTED BY HOWARD COUNTY GEODETIC CONTROL STATIONS NO. 0012 AND NO. 16E1.

ALL VERTICAL CONTROLS ARE BASED ON NAVD '88. VERTICAL CONTROLS PROVIDED ON THE DRAWINGS ARE 0012 AND 16E1.

- 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 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 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.
- 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
MISS UTILITY	1-800-257-7777
STATE HIGHWAY ADMINISTRATION	410-531-5333
VERIZON	1-800-743-0033

- 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 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 OF ANY COUNTY ROAD FOR LAYING WATER SEWER MAINS OR HOUSE CONNECTIONS. THE SOIL DRAWINGS WILL CONSTITUTE COMPLIANCE WITH DPW REQUIREMENTS PER SECTION 18.114(G) OF THE HOWARD COUNTY CODE.



VICINITY MAP
SCALE: 1" = 600'

TYPE OF BUILDING:	RESIDENTIAL - SFD
NUMBER OF SHC'S:	36
NUMBER OF WHC'S:	36
DRAINAGE AREA:	LITTLE PATUXENT WRP
TREATMENT PLANT:	ROUTE 108 PS
WATER ZONE:	630W
TEST GRADIENT:	780

LEGEND

---	EXIST. WATER MAIN
- - - -	EXIST. SEWER MAIN
○	PROP. STORM DRAIN
—●—	PROP. SEWER MAIN
—●—	PROP. SEWER MANHOLE
—●—	PROP. TERMINAL MANHOLE
—●—	PROP. SEWER HOUSE CONNECTIONS
—●—	PROP. WATER MAIN
—●—	PROP. FIRE HYDRANT
—●—	PROP. VALVE
—●—	PROP. PLUG & BUTTRESS
—●—	PROP. WATER HOUSE CONNECTION

NOTE:
ALL WATER HOUSE CONNECTIONS ARE TO BE 1.5" COPPER WITH A 1" METER (OUTSIDE SETTING).
ALL SEWER HOUSE CONNECTIONS SHALL BE 4" PVC.

PART II WATER

- ALL WATER MAINS TO BE D.I.P. CLASS 54 UNLESS OTHERWISE NOTED.
- TOPS OF ALL WATER MAINS SHALL HAVE A MINIMUM OF 3'-6" OF COVER UNLESS OTHERWISE NOTED.
- VALVES ADJACENT TO TEES SHALL BE STRAPPED TO TEES.
- ALL FITTINGS SHALL BE BUTTRESSED OR ANCHORED WITH CONCRETE IN ACCORDANCE WITH STANDARD DETAILS UNLESS OTHERWISE PROVIDED FOR ON THE DRAWINGS.
- FIRE HYDRANTS SHALL BE SET TO THE BURY LINE ELEVATIONS SHOWN ON THE DRAWINGS. ALL FIRE HYDRANTS SHALL BE INSTALLED IN ACCORDANCE WITH THE STANDARD DETAILS. THE SOIL AROUND THE FIRE HYDRANT SHALL BE COMPACTED IN ACCORDANCE WITH SECTION 1000 AND SECTION 1005 OF THE STANDARD SPECIFICATIONS.
- THE CONTRACTOR SHALL NOT OPERATE ANY WATER MAIN VALVES ON THE EXISTING WATER SYSTEM.
- TRACER WIRE AND CONTINUITY TEST STATIONS SHALL BE INSTALLED ON ALL DIP AND PVC WATER MAINS IN ACCORDANCE WITH THE HOWARD COUNTY DESIGN MANUAL.
- FOR PVC WATER MAINS, ALL RECORDS FOR THE QUALITY CONTROL AND QUALIFICATION TEST REQUIREMENTS NOTED IN SECTION 5.1 OF THE AWWA STANDARD C900 FOR PVC PRESSURE PIPE SHALL BE SUBMITTED WITH THE PIPE MATERIAL CERTIFICATIONS OR SHOP DRAWINGS PRIOR TO APPROVAL OF THE MATERIAL FOR USE. THE TEST RECORDS SHALL BE FOR THE PIPE TO BE INSTALLED UNDER THIS CONTRACT. ALL PVC PIPE SHALL CONTAIN MARKINGS TO ALLOW CROSS REFERENCING OF THE PIPE SUPPLIED TO THE TEST RECORDS RECEIVED.
- UNLESS OTHERWISE NOTED ON THE PLANS OR IN THE SPECIFICATIONS SACRIFICIAL ANODES SHALL BE INSTALLED ON ALL VALVES AND METALLIC FITTINGS USED WITH PVC WATER MAINS IN ACCORDANCE WITH VOLUME IV, STANDARD SPECIFICATIONS AND DETAILS FOR CONSTRUCTION, SEVENTEEN (17) POUND MAGNESIUM ANODES SHALL BE INSTALLED ON ALL VALVES AND METALLIC FITTINGS INCLUDING RESTRAINTS AND HARNESSES. TWELVE (12) POUND ZINC ANODES SHALL BE INSTALLED ON ALL STAINLESS STEEL FITTINGS AND SADDLES USED WITH PVC MAINS. ALL "TEES" USED WITH PVC MAINS SHALL BE DUCTILE IRON.
- PROPER ASSEMBLY OF GASKETED PVC PIPE JOINTS, THE MANUFACTURER'S INSERTION LINE OF GASKETED PVC PIPE JOINTS INDICATES THE MAXIMUM DEPTH OF THE SPIGOT INTO THE BELL. AFTER ASSEMBLY OF THE JOINT, THE INSERTIONLINE SHALL REMAIN VISIBLE. DUAL INSERTION LINES ON GASKETED PVC PIPE INDICATE THE MAXIMUM AND MINIMUM DEPTH OF INSERTION OF THE SPIGOT INTO THE BELL. THE CONTRACTOR SHALL NOT OVER INSERT OR OVER HOME THE SPIGOT INTO THE BELL OF PVC PIPE.
- ALL CHANGES IN HORIZONTAL AND VERTICAL DIRECTION OF PVC WATER PIPE SHALL BE MADE WITH STANDARD BENDS, 5-DEGREE SWEEPS OR HIGH DEFLECTION (HD) COUPLINGS. NO BENDING OF THE PIPE OR DEFLECTING OF PVC PIPE JOINTS IS PERMITTED, WHERE HIGH DEFLECTION COUPLINGS OR 5-DEGREE SWEEPS ARE PERMITTED, THE CONTRACTOR SHALL PROVIDE ONE FULL PIPE LENGTH (20-FOOT LONG) ON EITHER SIDE OF THE HIGH DEFLECTION COUPLING OR 5-DEGREE SWEEP. THE CONTRACTOR SHALL USE A VIBRATORY PLATE COMPACTOR OR OTHER APPROVED MEANS TO THOROUGHLY COMPACT THE #57 STONE ON BOTH SIDES OF THE HIGH DEFLECTION COUPLING OR 5-DEGREE SWEEP, TAKING CARE NOT TO USE COMPACTION EQUIPMENT DIRECTLY OVER THE FITTING.
- PVC HIGH DEFLECTION COUPLINGS SHALL BE LIMITED TO A TOTAL DEFLECTION OF 3-DEGREES (1 1/2 DEGREE ON EITHER END OF THE COUPLING), SHALL BE RATED FOR A MINIMUM 200 PSI MEETING THE REQUIREMENTS OF AWWA C900, SHALL HAVE A MINIMUM LAUNCH LENGTH OF 9-INCHES AND SHALL HAVE CENTER STOPS. PVC HIGH DEFLECTION COUPLINGS SHALL BE CERTIFIED PVC HIGH DEFLECTION (HD) STOP COUPLINGS OR EQUAL.
- 5-DEGREE SWEEPS SHALL BE BELL BY SPIGOT, RATED FOR A MINIMUM 225 PSI, DR18 MEETING THE REQUIREMENTS OF AWWA C900 AND SHALL BE MULTI FITTINGS (PEX) BLUE BRUTE DR18 OR EQUAL.
- WHEN PVC HIGH DEFLECTION COUPLINGS OR PVC 5-DEGREE SWEEPS ARE USED TO FACILITATE CHANGES IN HORIZONTAL OR VERTICAL ALIGNMENTS OF AWWA C-900 PVC PIPELINES, THE CONTRACTOR SHALL INSTALL DEVICES FOR THE PREVENTION OF OVER-INSERTION OF THE PVC PIPE SPIGOTS OR FLANGE ENDS INTO THE PUSH ON BELL JOINT ON BOTH SIDES OF THE HIGH DEFLECTION COUPLINGS AND 5-DEGREE SWEEPS. BELL STOPS SHALL BE PLACED AT THE PROPER INSERTION LINE FOR THE FITTING. THE BELL STOP SHALL BE MANUFACTURED OF DUCTILE IRON AND INCORPORATE AN EXPANSION RETENTION SPRING TO ALLOW FOR PIPE EXPANSION AND CONTRACTION. THE BELL STOPS SHALL BE SERIES 5000 MESA-STOP, AS MANUFACTURED BY EBM INC. OR APPROVED EQUAL.

SHEET INDEX

NO.	DESCRIPTION
1	TITLE SHEET
2	PLAN VIEW: PUBLIC WATER & SEWER MAINS
3	PROFILE VIEW: PUBLIC WATER & SEWER MAINS
4	PROFILE VIEW: PUBLIC WATER & SEWER MAINS

PART III SEWER

- ALL SEWER MAINS SHALL BE D.I.P. OR P.V.C. 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 DESIGNATED W.T. IN PLAN AND PROFILE SHALL HAVE WATERIGHT FRAME AND COVER, STANDARD DETAIL CS-52. WATERTIGHT MANHOLE FRAMES AND COVERS ARE USED, SET TOP OF FRAME 1'-6" ABOVE FINISHED GRADE UNLESS OTHERWISE NOTED ON THE DRAWINGS.
- HOUSE(S) WITH THE SYMBOL "C.N.S." INDICATES THAT CELLAR CANNOT BE SERVED.

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

John L. Roberts 3/16/18
HOWARD SOIL CONSERVATION DISTRICT DATE

SEDIMENT CONTROL MEASURES FOR THIS CONTRACT WILL BE IMPLEMENTED IN ACCORDANCE WITH SECTION 219 OF THE HOWARD COUNTY STANDARD SPECIFICATIONS AND AS PER F-17-102 305

OWNER/DEVELOPER:
MANGIONE ENTERPRISES OF TURF VALLEY, LP
1205 YORK ROAD, PENTHOUSE
LUTHERVILLE, MARYLAND 21093
410-825-8400

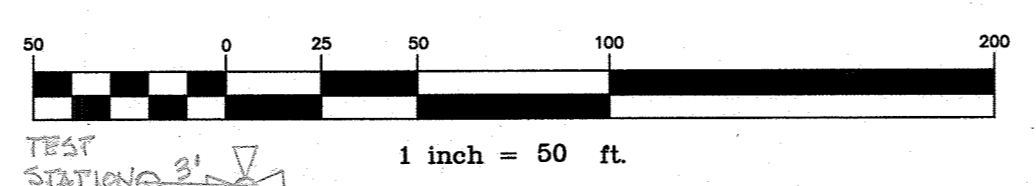
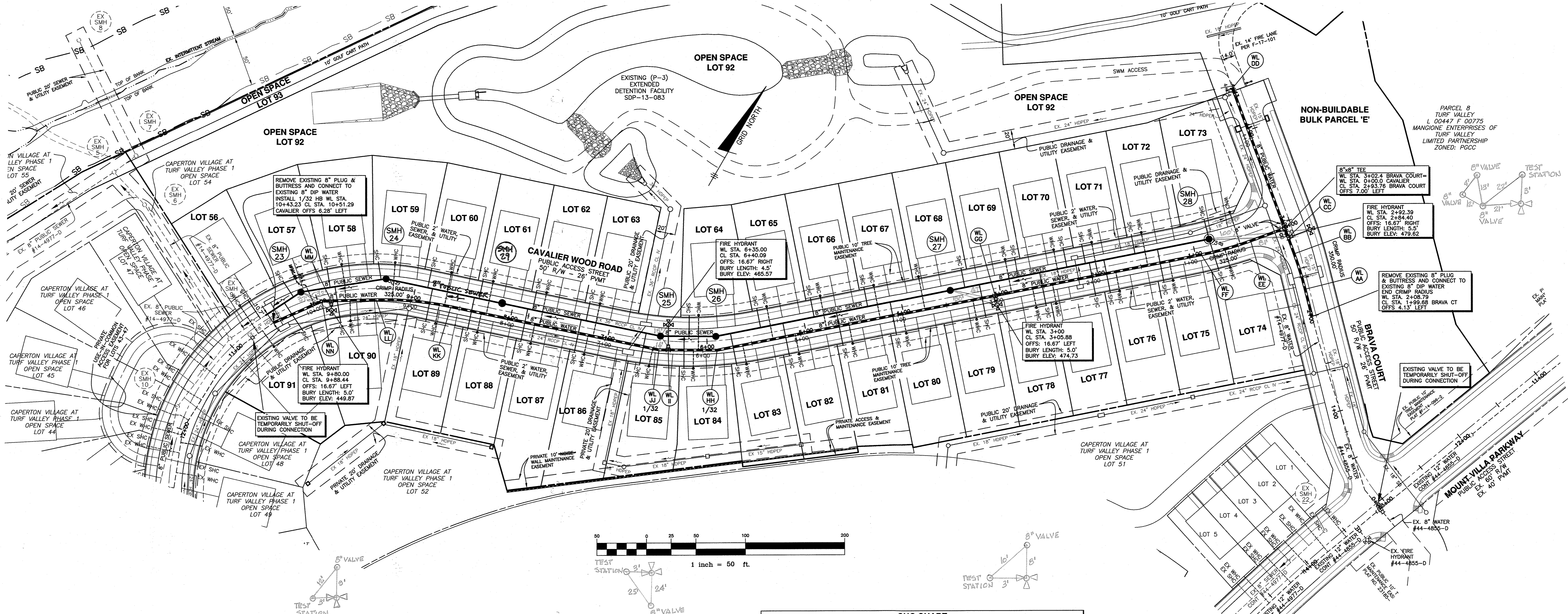
Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 22390, Expiration Date: 6-30-2019.

BENCHMARK ENGINEERING, INC.
ENGINEERS & LAND SURVEYORS & PLANNERS
8480 BALTIMORE NATIONAL PIKE & SUITE 418 & ELLICOTT CITY, MARYLAND 21043
(P) 410-465-6105 (F) 410-465-8644
WWW.BEI-CVLENGINEERING.COM

DESIGN:	DBT
DRAFT:	DBT
CHK:	CAM
DATE:	1/2018
BY:	BE1
NO.:	1
REVISIONS:	REVISE MANHOLE COUNT IN QUANTITIES CHART
DATE:	8.17.2018

TITLE SHEET
PUBLIC WATER & SEWER MAINS
600 SCALE MAP NO. 16
BLOCK: 11

CAPERTON VILLAGE AT TURF VALLEY
PHASE 2
LOTS 56-91; OPEN SPACE LOTS 92-93; AND NON-BUILDABLE BULK PARCEL 'E'
TAX MAP: 16 - GRID: 19 - PARCEL: P/O 8 - ZONED: PGCC - ELECTION DISTRICT 3
CONTRACT NO. 14-4978-D
SCALE: AS SHOWN
SHEET NO. 1 OF 4



LOT	ADDRESS	LOCATION DIMENSION 1	LOCATION DIMENSION 2
56	CAVALIER WOOD ROAD	SHC TO SMH 23 55'	SHC TO WHC LOT 26 11'
57	CAVALIER WOOD ROAD	SHC TO SMH 23 22'	SHC TO WHC LOT 27 14'
58	CAVALIER WOOD ROAD	SHC TO SMH 24 62'	SHC TO WHC LOT 28 15'
59	CAVALIER WOOD ROAD	SHC TO SMH 24 19'	SHC TO WHC LOT 29 19'
60	CAVALIER WOOD ROAD	SHC TO SMH 24 52'	SHC TO WHC LOT 30 23'
61	CAVALIER WOOD ROAD	SHC TO SMH 24 38'	SHC TO WHC LOT 31 31'
62	CAVALIER WOOD ROAD	SHC TO SMH 24 38'	SHC TO WHC LOT 32 10'
63	CAVALIER WOOD ROAD	SHC TO SMH 25 80'	SHC TO WHC LOT 33 10'
64	CAVALIER WOOD ROAD	SHC TO SMH 25 34'	SHC TO WHC LOT 34 10'
65	CAVALIER WOOD ROAD	SHC TO SMH 26 51'	SHC TO WHC LOT 35 10'
66	CAVALIER WOOD ROAD	SHC TO SMH 27 123'	SHC TO WHC LOT 36 10'
67	CAVALIER WOOD ROAD	SHC TO SMH 27 82'	SHC TO WHC LOT 37 10'
68	CAVALIER WOOD ROAD	SHC TO SMH 27 73'	SHC TO WHC LOT 38 45'
69	CAVALIER WOOD ROAD	SHC TO SMH 27 78'	SHC TO WHC LOT 39 11'
70	CAVALIER WOOD ROAD	SHC TO SMH 28 140'	SHC TO WHC LOT 40 11'
71	CAVALIER WOOD ROAD	SHC TO SMH 28 130'	SHC TO WHC LOT 41 10'
72	CAVALIER WOOD ROAD	SHC TO SMH 28 81'	SHC TO WHC LOT 42 10'
73	CAVALIER WOOD ROAD	SHC TO SMH 28 28'	SHC TO WHC LOT 43 10'
74	CAVALIER WOOD ROAD	SHC TO SMH 28 25'	SHC TO WHC LOT 44 10'
75	CAVALIER WOOD ROAD	SHC TO SMH 28 38'	SHC TO WHC LOT 45 10'
76	CAVALIER WOOD ROAD	SHC TO SMH 28 64'	SHC TO WHC LOT 46 10'
77	CAVALIER WOOD ROAD	SHC TO SMH 28 104'	SHC TO WHC LOT 47 12'
78	CAVALIER WOOD ROAD	SHC TO SMH 27 143'	SHC TO WHC LOT 48 10'
79	CAVALIER WOOD ROAD	SHC TO SMH 27 42'	SHC TO WHC LOT 49 10'
80	CAVALIER WOOD ROAD	SHC TO SMH 27 70'	SHC TO WHC LOT 50 10'
81	CAVALIER WOOD ROAD	SHC TO SMH 27 112'	SHC TO WHC LOT 51 10'
82	CAVALIER WOOD ROAD	SHC TO SMH 26 78'	SHC TO WHC LOT 52 10'
83	CAVALIER WOOD ROAD	SHC TO SMH 26 57'	SHC TO WHC LOT 53 21'
84	CAVALIER WOOD ROAD	SHC TO SMH 26 47'	SHC TO WHC LOT 54 10'
85	CAVALIER WOOD ROAD	SHC TO SMH 26 34'	SHC TO WHC LOT 55 10'
86	CAVALIER WOOD ROAD	SHC TO SMH 26 28'	SHC TO WHC LOT 56 10'
87	CAVALIER WOOD ROAD	SHC TO SMH 26 44'	SHC TO WHC LOT 57 10'
88	CAVALIER WOOD ROAD	SHC TO SMH 26 43'	SHC TO WHC LOT 58 10'
89	CAVALIER WOOD ROAD	SHC TO SMH 26 43'	SHC TO WHC LOT 59 10'
91	CAVALIER WOOD ROAD	SHC TO SMH 23 72'	SHC TO WHC LOT 91 10'

LOT	ADDRESS	LOCATION DIMENSION 1	LOCATION DIMENSION 2
56	CAVALIER WOOD ROAD	WHC TO SMH 23 68'	WHC TO SHC LOT 26 11'
57	CAVALIER WOOD ROAD	WHC TO SMH 23 10'	WHC TO SHC LOT 27 14'
58	CAVALIER WOOD ROAD	WHC TO SMH 24 41'	WHC TO SHC LOT 28 15'
59	CAVALIER WOOD ROAD	WHC TO SMH 24 18'	WHC TO SHC LOT 29 19'
60	CAVALIER WOOD ROAD	WHC TO SMH 24 58'	WHC TO SHC LOT 30 23'
61	CAVALIER WOOD ROAD	WHC TO SMH 24 23'	WHC TO SHC LOT 31 31'
62	CAVALIER WOOD ROAD	WHC TO SMH 24 47'	WHC TO SHC LOT 32 10'
63	CAVALIER WOOD ROAD	WHC TO SMH 25 70'	WHC TO SHC LOT 33 10'
64	CAVALIER WOOD ROAD	WHC TO SMH 25 48'	WHC TO SHC LOT 34 10'
65	CAVALIER WOOD ROAD	WHC TO SMH 26 59'	WHC TO SHC LOT 35 10'
66	CAVALIER WOOD ROAD	WHC TO SMH 27 111'	WHC TO SHC LOT 36 10'
67	CAVALIER WOOD ROAD	WHC TO SMH 27 71'	WHC TO SHC LOT 37 10'
68	CAVALIER WOOD ROAD	WHC TO SMH 27 25'	WHC TO SHC LOT 38 45'
69	CAVALIER WOOD ROAD	WHC TO SMH 27 65'	WHC TO SHC LOT 39 11'
70	CAVALIER WOOD ROAD	WHC TO SMH 28 158'	WHC TO SHC LOT 40 11'
71	CAVALIER WOOD ROAD	WHC TO SMH 28 128'	WHC TO SHC LOT 41 10'
72	CAVALIER WOOD ROAD	WHC TO SMH 28 70'	WHC TO SHC LOT 42 10'
73	CAVALIER WOOD ROAD	WHC TO SMH 28 32'	WHC TO SHC LOT 43 10'
74	CAVALIER WOOD ROAD	WHC TO SMH 28 33'	WHC TO SHC LOT 44 10'
75	CAVALIER WOOD ROAD	WHC TO SMH 28 25'	WHC TO SHC LOT 45 10'
76	CAVALIER WOOD ROAD	WHC TO SMH 28 60'	WHC TO SHC LOT 46 10'
77	CAVALIER WOOD ROAD	WHC TO SMH 28 102'	WHC TO SHC LOT 47 12'
78	CAVALIER WOOD ROAD	WHC TO SMH 27 103'	WHC TO SHC LOT 48 10'
79	CAVALIER WOOD ROAD	WHC TO SMH 27 38'	WHC TO SHC LOT 49 10'
80	CAVALIER WOOD ROAD	WHC TO SMH 27 62'	WHC TO SHC LOT 50 10'
81	CAVALIER WOOD ROAD	WHC TO SMH 27 117'	WHC TO SHC LOT 51 10'
82	CAVALIER WOOD ROAD	WHC TO SMH 26 82'	WHC TO SHC LOT 52 10'
83	CAVALIER WOOD ROAD	WHC TO SMH 26 40'	WHC TO SHC LOT 53 21'
84	CAVALIER WOOD ROAD	WHC TO SMH 26 47'	WHC TO SHC LOT 54 10'
85	CAVALIER WOOD ROAD	WHC TO SMH 26 39'	WHC TO SHC LOT 55 10'
86	CAVALIER WOOD ROAD	WHC TO SMH 26 79'	WHC TO SHC LOT 56 10'
87	CAVALIER WOOD ROAD	WHC TO SMH 26 52'	WHC TO SHC LOT 57 10'
88	CAVALIER WOOD ROAD	WHC TO SMH 26 32'	WHC TO SHC LOT 58 10'
89	CAVALIER WOOD ROAD	WHC TO SMH 26 41'	WHC TO SHC LOT 59 10'
91	CAVALIER WOOD ROAD	WHC TO SMH 23 68'	WHC TO SHC LOT 91 10'

Lot Number	Drop Connection	Invert @ main	DHC standpipe length/height	Invert @ R/W or esmt line	Minimum Cellar Elevation	Basement Floor
56	no	437.64	0.00	438.09	442.33	443.74
57	no	438.04	0.00	438.42	442.54	443.07
58	no	438.53	0.00	438.95	443.13	443.68
59	no	439.05	0.00	439.41	443.59	445.19
60	no	439.25	0.00	440.05	444.19	446.94
61	no	440.16	0.00	440.52	444.72	448.48
62	no	446.66	0.00	447.06	451.22	452.71
63	no	449.38	0.00	449.78	453.94	456.09
64	YES	454.72	3.00	458.14	462.36	463.16
65	YES	457.03	3.00	460.43	464.69	465.49
66	YES	458.05	3.00	461.45	465.61	467.25
67	YES	459.07	3.00	462.47	466.63	468.22
68	no	460.91	0.00	461.31	465.47	468.32
69	no	461.46	0.00	461.66	464.99	467.77
70	no	461.96	0.00	462.16	465.49	468.97
71	no	462.15	0.00	462.55	466.71	466.97
72	no	462.66	0.00	463.06	467.22	467.77
73	no	463.58	0.00	463.98	468.14	469.58
74	no	463.58	0.00	464.24	468.62	468.62
75	no	462.99	0.00	463.57	467.81	469.79
76	no	462.34	0.00	463.02	467.18	468.17
77	no	462.19	0.00	462.87	467.03	467.89
78	no	461.68	0.00	462.36	466.52	468.33
79	YES	466.97	3.00	464.65	468.81	469.17
80	YES	469.50	3.00	463.18	467.34	469.34
81	YES	468.48	3.00	462.16	466.32	468.72
82	YES	467.45	3.00	461.13	465.29	467.32
83	YES	466.45	3.00	460.13	464.29	465.05
84	YES	464.47	3.00	458.13	462.31	462.81
85	no	462.44	0.00	463.10	462.20	463.36
86	no	449.13	0.00	449.81	453.97	456.00
87	no	446.41	0.00	447.09	451.25	452.63
88	no	440.11	0.00	440.71	444.75	449.48
89	no	437.68	0.00	440.56	444.52	448.95
90	no	438.58	0.00	439.26	443.66	444.61
91	no	437.93	0.00	438.61	442.91	443.62

All SHC's are at a 2.0% unless otherwise noted.
All Drop connections are Ho.Co.Std. S-2.12 Type 'A'

Manhole Number	Location (NAD '83)	Invert In	Invert Out	Rim Elevation	Howard County Standard Detail
23	Cavalier Wood Road cl sta. 10+13.06, offset 10.00' RIGHT	438.06	-	437.96	448.89 G-5.11 & G-5.12
24	Cavalier Wood Road cl sta. 9+29.39, offset 10.00' RIGHT	439.03	-	438.93	450.27 G-5.11 & G-5.12
25	Cavalier Wood Road cl sta. 8+47.53, offset 4.50' RIGHT	463.10	-	463.00	464.99 G-5.11 & G-5.12
26	Cavalier Wood Road cl sta. 5+90.75, offset 4.50' RIGHT	466.00	-	465.90	468.42 G-5.11 & G-5.12
27	Cavalier Wood Road cl sta. 3+49.25, offset 7.00' RIGHT	460.59	-	460.49	474.65 G-5.11 & G-5.12
28	Cavalier Wood Road cl sta. 0+82.95, offset 6.36' RIGHT	-	-	463.25	475.55 G-5.11 & G-5.12 & S-1.31

Identification	Appurtenance	WL Station	Road Name	Location (NAD '83)	Offset
WL AA	Begin Crimp Radius	2+37.41	Brava Court	2+32.29	4.13' left
WL BB	End Crimp Radius	2+74.88	Brava Court	2+66.92	5.79' left
WL CC	8" x 6" FH Tee	2+92.39	Brava Court	2+83.62	6.76' left
WL DD	8" Plug and Buttress	4+54.09		N 594368.54 E 1343327.65	
WL EE	Begin Crimp Radius	0+36.44	Cavalier Wood Road	0+43.28	7.21' left
WL FF	End Crimp Radius	0+88.10	Cavalier Wood Road	0+94.18	7.21' left
WL GG	8" x 6" FH Tee	3+00.00	Cavalier Wood Road	3+05.88	7.00' left
WL HH	1/32 HB	5+85.65	Cavalier Wood Road	5+90.48	9.57' left
WL II	8" x 6" FH Tee	6+35.00	Cavalier Wood Road	6+38.60	8.92' left
WL JJ	1/32 HB	6+44.47	Cavalier Wood Road	6+47.80	9.57' left
WL KK	Begin Crimp Radius	6+58.76	Cavalier Wood Road	6+61.05	7.00' left
WL LL	End Crimp Radius	9+34.69	Cavalier Wood Road	9+39.01	11.42' left
WL MM	8" x 6" FH Tee	9+80.00	Cavalier Wood Road	9+86.34	7.31' left
WL NN	1/16 HB	9+89.23	Cavalier Wood Road	9+95.62	5.25' left

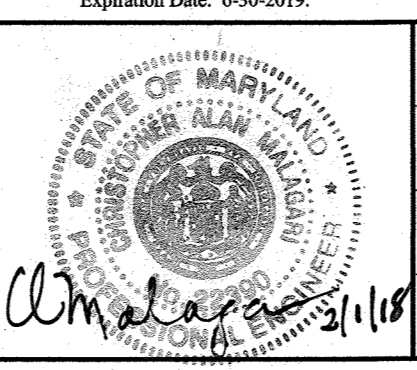
DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DEPARTMENT OF PLANNING AND ZONING
HOWARD COUNTY, MARYLAND

3-12-18

BENCHMARK
ENGINEERS & LAND SURVEYORS & PLANNERS
ENGINEERING, INC.

8480 BALTIMORE NATIONAL PIKE & SUITE 418 & ELLICOTT CITY, MARYLAND 21103
(P) 410-485-6105 (F) 410-485-6644
WWW.BM-CVLENGINEERING.COM



DESIGN:	DBT
DRAFT:	DBT
CHK:	CAM
DATE:	1/2018
BY:	BE I
NO.:	1
REVISIONS:	ADD SMH 29. REVISE SHC'S FOR LOTS 60, 61, 88, 89
DATE:	3.17.2018

PLAN VIEW:
PUBLIC WATER & SEWER MAINS

600 SCALE MAP NO. 16

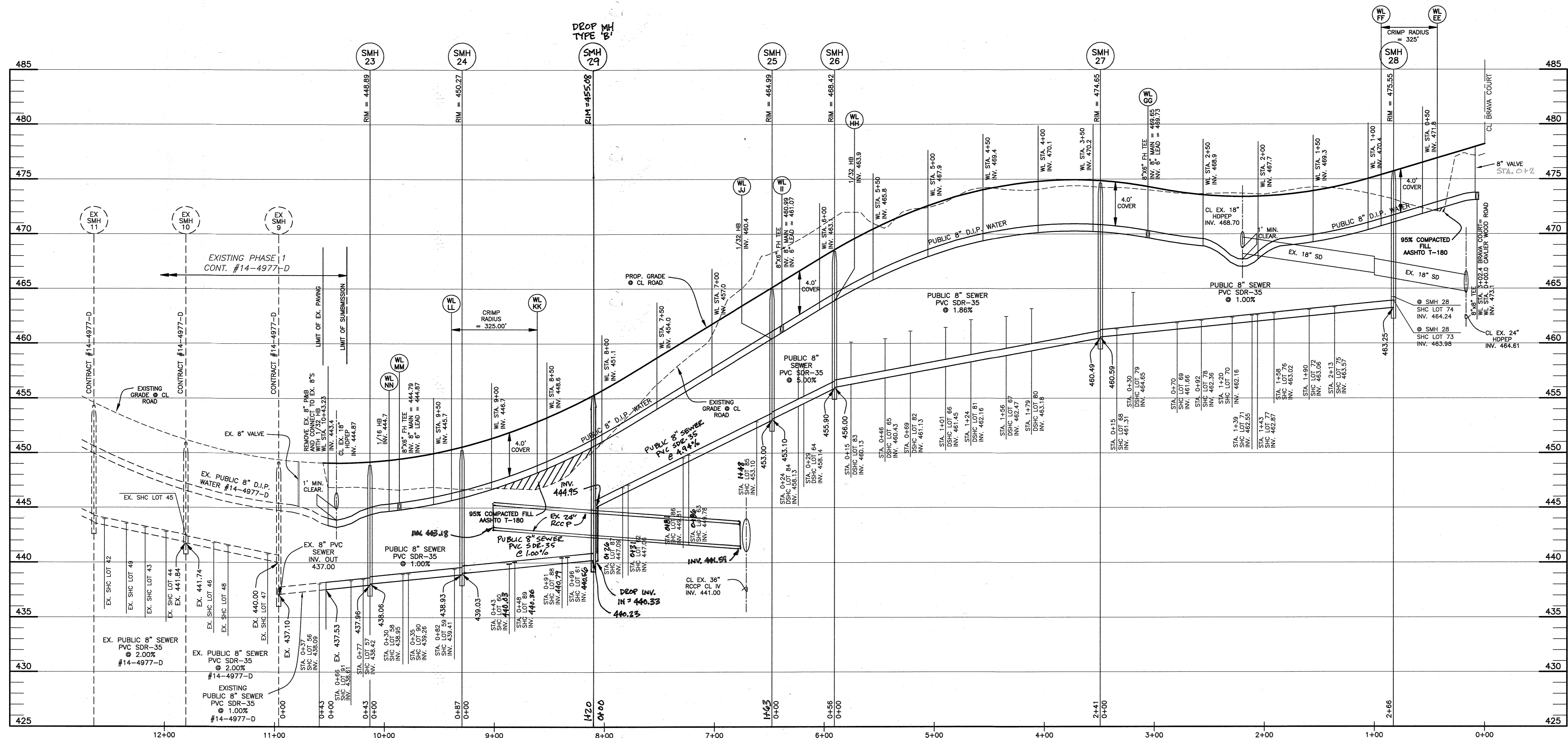
CAPERTON VILLAGE AT TURF VALLEY
PHASE 2
LOTS 56-91; OPEN SPACE LOTS 92-93; AND
NON-BUILDABLE BULK PARCEL 'E'

TAX MAP: 16 - GRID: 19 - PARCEL: P/O 8 - ZONED: PGCC - ELECTION DISTRICT 3

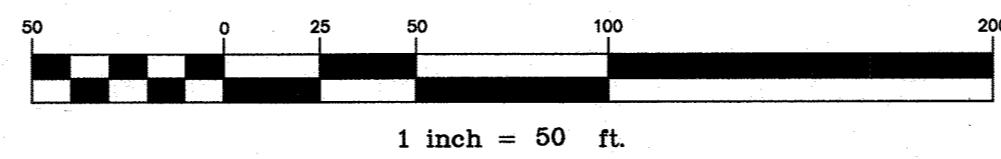
CONTRACT NO. 14-4978-D

SCALE: AS SHOWN

SHEET NO. 2 OF 4

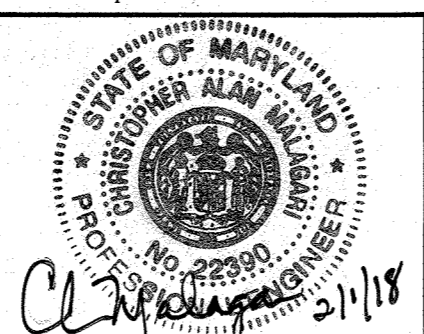


WATER/SEWER PROFILE ALONG CAVALIER WOOD ROAD
SCALE: 1"=50' HORIZ., 1"=5' VERT.



MANGIONE ENTERPRISES OF TURF VALLEY, LP
1205 YORK ROAD, PENTHOUSE
LUTHERVILLE, MARYLAND 21093
410-825-8400

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. 22390, Expiration Date: 6-30-2019.



DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DEPARTMENT OF PLANNING AND ZONING
HOWARD COUNTY, MARYLAND

[Signature]
CHIEF, BUREAU OF UTILITIES
DATE: 2-23-18

[Signature]
CHIEF, DEVELOPMENT ENGINEERING DIVISION
DATE: 3-12-18

BENCHMARK
ENGINEERS & LAND SURVEYORS & PLANNERS
ENGINEERING, INC.
8480 BALTIMORE NATIONAL PIKE & SUITE 418 & ELLICOTT CITY, MARYLAND 21043
(P) 410-458-6105 (F) 410-458-6644
WWW.BEI-CVLEENGINEERING.COM

DESIGN:	DBT
DRAFT:	DBT
CHK:	CAM
DATE:	1/2018
BY:	NO.
REVISIONS:	
DATE:	8.17.2018

PROFILE VIEW:
PUBLIC WATER & SEWER MAINS

600 SCALE MAP NO. 16 BLOCK: 11

CAPERTON VILLAGE AT TURF VALLEY

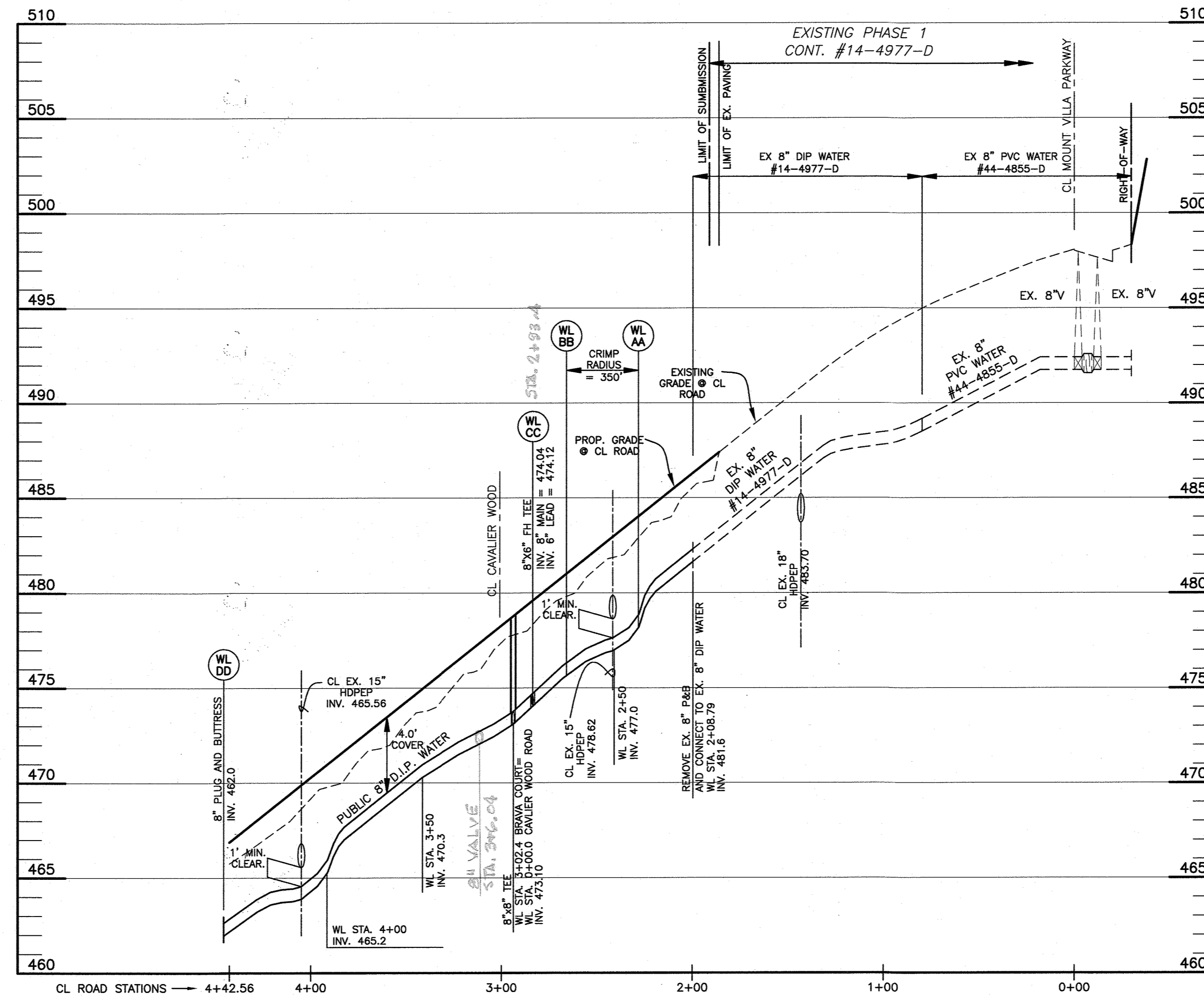
PHASE 2
LOTS 56-91; OPEN SPACE LOTS 92-93; AND
NON-BUILDABLE BULK PARCEL 'E'

TAX MAP: 16 - GRID: 19 - PARCEL: P/O 8 - ZONED: PGCC - ELECTION DISTRICT 3

CONTRACT NO. 14-4978-D

SCALE:
AS SHOWN

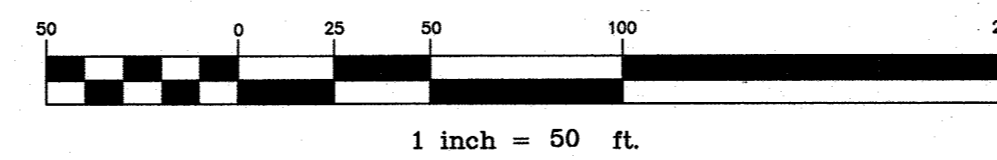
SHEET NO.
3 OF 4



WATER/SEWER PROFILE ALONG BRAVA COURT
 SCALE: 1"=50' HORIZ., 1"=5' VERT.

MANGIONE ENTERPRISES OF TURF VALLEY, LP
 1205 YORK ROAD, PENTHOUSE
 LUTHERVILLE, MARYLAND 21093
 410-825-8400

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. 22390, Expiration Date: 6-30-2019.

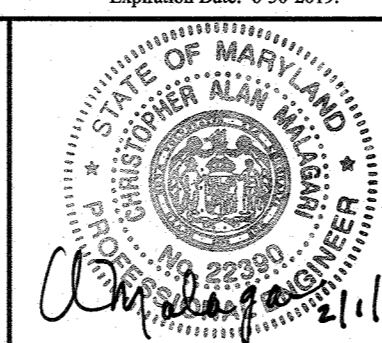


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 HOWARD COUNTY, MARYLAND

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ENGINEERING, INC.

8480 BALTIMORE NATIONAL PIKE & SUITE 418 • ELICOTT CITY, MARYLAND 21043
 (P) 410-485-8105 (F) 410-485-8644
 WWW.BEI-CIVILENGINEERING.COM



DESIGN: DBT

DRAFT: DBT

CHK: CAM

DATE: 1/2018

BY NO. REVISIONS DATE

**PROFILES OF
 PUBLIC WATER & SEWER MAINS**

CAPERTON VILLAGE AT TURF VALLEY

PHASE 2
 LOTS 56-91; OPEN SPACE LOTS 92-93; AND
 NON-BUILDABLE BULK PARCEL 'E'

TAX MAP: 16 - GRID: 19 - PARCEL: P/O 8 - ZONED: PGCC - ELECTION DISTRICT 3

CONTRACT NO. 14-4978-D

SCALE:
 AS SHOWN

SHEET NO.
 4 OF 4

[Signature]
 CHIEF, BUREAU OF UTILITIES
 2-23-18
 DATE

[Signature]
 CHIEF, DEVELOPMENT ENGINEERING DIVISION
 3-12-18
 DATE

600 SCALE MAP NO. 16

BLOCK: 11