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FINAL WATER AND SEWER CONSTRUCTION PLAN

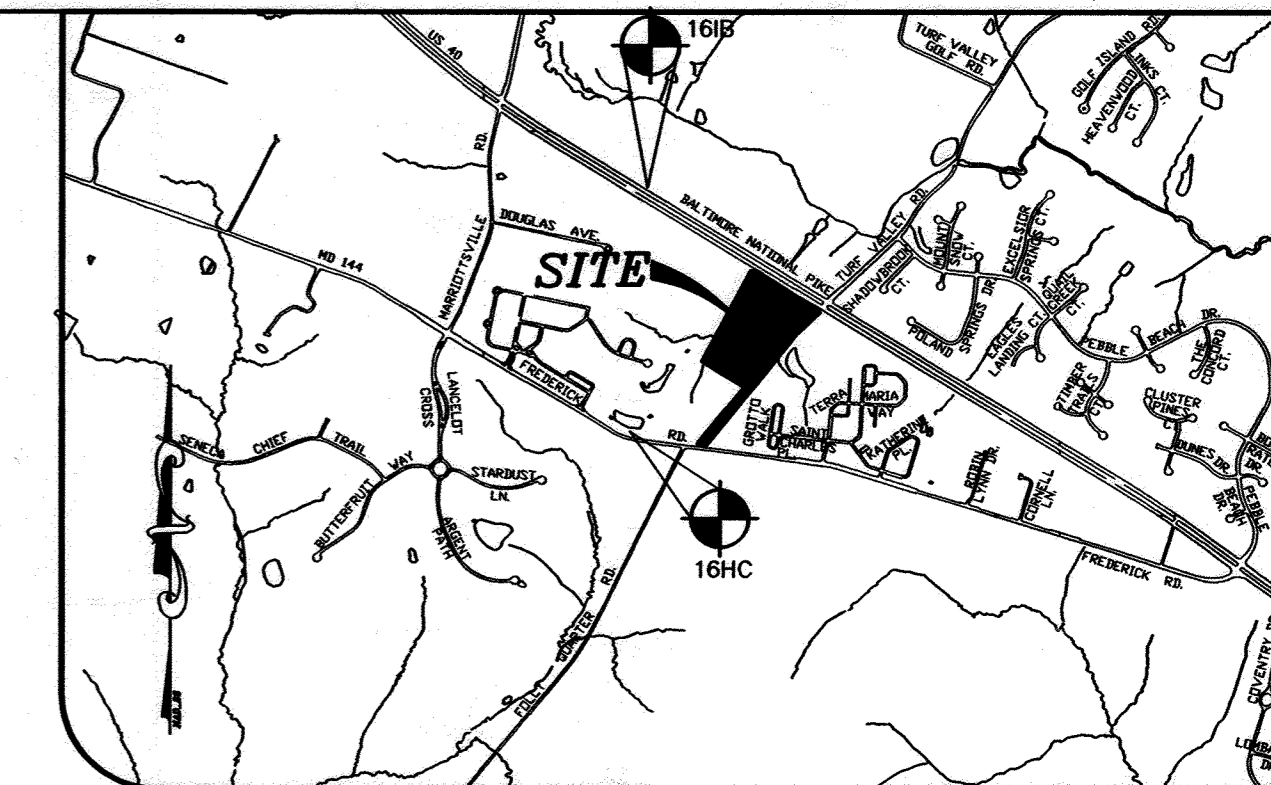
CONTRACT NO.: 24-4901-D

ST. CHARLES WOODS

LOTS 1-10 AND OPEN SPACE LOTS 11-12

HOWARD COUNTY, MARYLAND

DEPARTMENT OF PUBLIC WORKS



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 OR ABOUT OCTOBER, 2004 BY CHRISTOPHER CONSULTANTS, 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. 16B AND NO. 16HC. ALL VERTICAL CONTROLS ARE BASED ON NAVD '88. MILDENBERG, BOENDER & ASSOCIATES, INC. SHALL PROVIDE DESCRIPTIONS OF VERTICAL CONTROL POINTS, I.E., IRON BARS, CROSS CUTS ON CONCRETE STRUCTURES, ETC.
- 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 (CONSTRUCTION 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.....410-531-5533
 - 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 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 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.

ITEMS	QUANTITIES ESTIMATED	QUANTITIES	TYPE	MANUFACTURER/SUPPLIER
8" WATER MAIN (PVC C-900, DR-14)	1,500 LF			
1 1/2" WATER HOUSE CONNECTION	196 LF			
# 1 1/2" WHC	2 EACH			
# 1 1/2" TWIN WHC	4 EACH			
12"x8" TAPPING SLEEVE AND VALVE	1 EACH			
8"x6" F.H.T. & V.	3 EACH			
8" CAP AND BUTTRESS	2 EACH			
STANDARD MH (HO. CO. STD.G-5.11)	8 EACH			
8" SEWER MAIN	1,450 LF			
4" SHC	294 LF			
# 4" SHC	10 EACH			

NAME OF UTILITY CONTRACTOR: _____

SURVEY AND DRAFTING DIVISION AS-BUILT DATE: _____

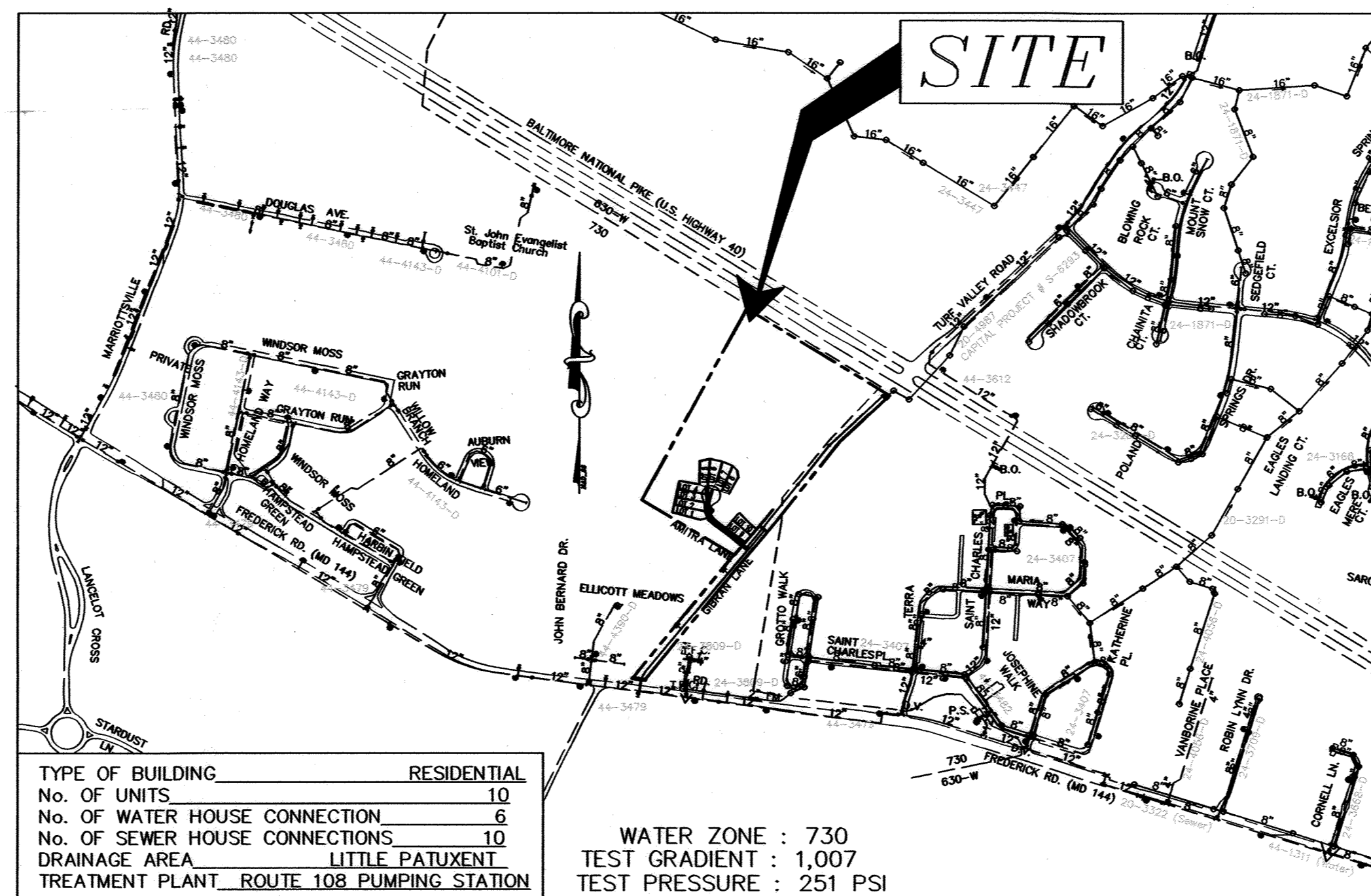
LEGEND

- EXISTING SEWER MAIN AND MANHOLE
- EXISTING WATER MAIN AND VALVE
- EXISTING FIRE HYDRANT
- PROPOSED WATER MAIN
- PROPOSED WATER HOUSE CONNECTION
- PROPOSED FIRE HYDRANT
- PROPOSED TEE
- PROPOSED BEND
- PROPOSED VALVE
- PROPOSED SEWER MAIN
- PROPOSED SEWER HOUSE CONNECTION
- PROPOSED SEWER MANHOLE

PLAN REFERENCE NUMBERS:

- ECP-15-006
- SP-15-010
- F-18-115

**EROSION AND SEDIMENT CONTROL
FOR THIS CONTRACT IS PROVIDED
UNDER : F-18-115**



LOCATION MAP
SCALE: 1"=600'

ALL PROPOSED DWELLINGS WILL BE EQUIPPED WITH FIRE SPRINKLERS AND WATER HOUSE CONNECTIONS (WHC) SHALL HAVE A MINIMUM DIAMETER OF 1-1/2 IN. 1" OUTSIDE METERS WILL ALSO BE INSTALLED.

PART II WATER

- ALL WATER MAINS SHALL 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 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 WIRES 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 DUCTILE IRON 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 INSERTION OF THE SPIGOT INTO THE BELL. AFTER ASSEMBLY OF THE JOINT, THE INSERTION LINE 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 OR 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 COMPACTOR 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 LAY LENGTH OF 9-INCHES AND SHALL HAVE CENTER STOPS. PVC HIGH DEFLECTION COUPLINGS SHALL BE CERTAINTED PVC HIGH DEFLECTION (HD) STOP COUPLINGS OR EQUAL. FIVE 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 PLAIN 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 MEGA-STOP, AS MANUFACTURED BY EBAA IRON, INC. OR APPROVED EQUAL.

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 16" WALLS ARE FOR BRICK MANHOLES ONLY.
- MANHOLES DESIGNATED W.T. IN PLAN AND PROFILE SHALL HAVE WATER TIGHT FRAME AND COVER, STANDARD DETAIL GS.52. WHERE WATER TIGHT MANHOLE FRAMES AND COVERS ARE USED, SET TOP OF FRAME 1'-0" ABOVE FINISHED GRADE UNLESS OTHERWISE NOTED ON THE DRAWINGS.
- HOUSE(S) WITH THE SYMBOL "C.N.S." INDICATES THAT THE CELLAR CANNOT BE SERVED.

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

DEVELOPER
GREENBERRY INC.
8318 FORREST ST. SUITE 200
ELLCOTT CITY, MD 21043
(410)997-0296

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, LICENCE NO. 26859, EXP. DATE 08/08/23

**MILDENBERG,
BOENDER & ASSOC., INC.**
Engineers Planners Surveyors
8318 Forrest Street, Suite 200, Ellicott City, Maryland 21043
(410) 997-0296 Balt. (410) 997-0298 Fax.

SAMER A. ALOMER, P.E.
DATE: 5.12.22

engineering	illustration	approval	project	date	BY	NO.	REVISION	DATE
MMM	MMM	SA	09-004	JAN. 2022				

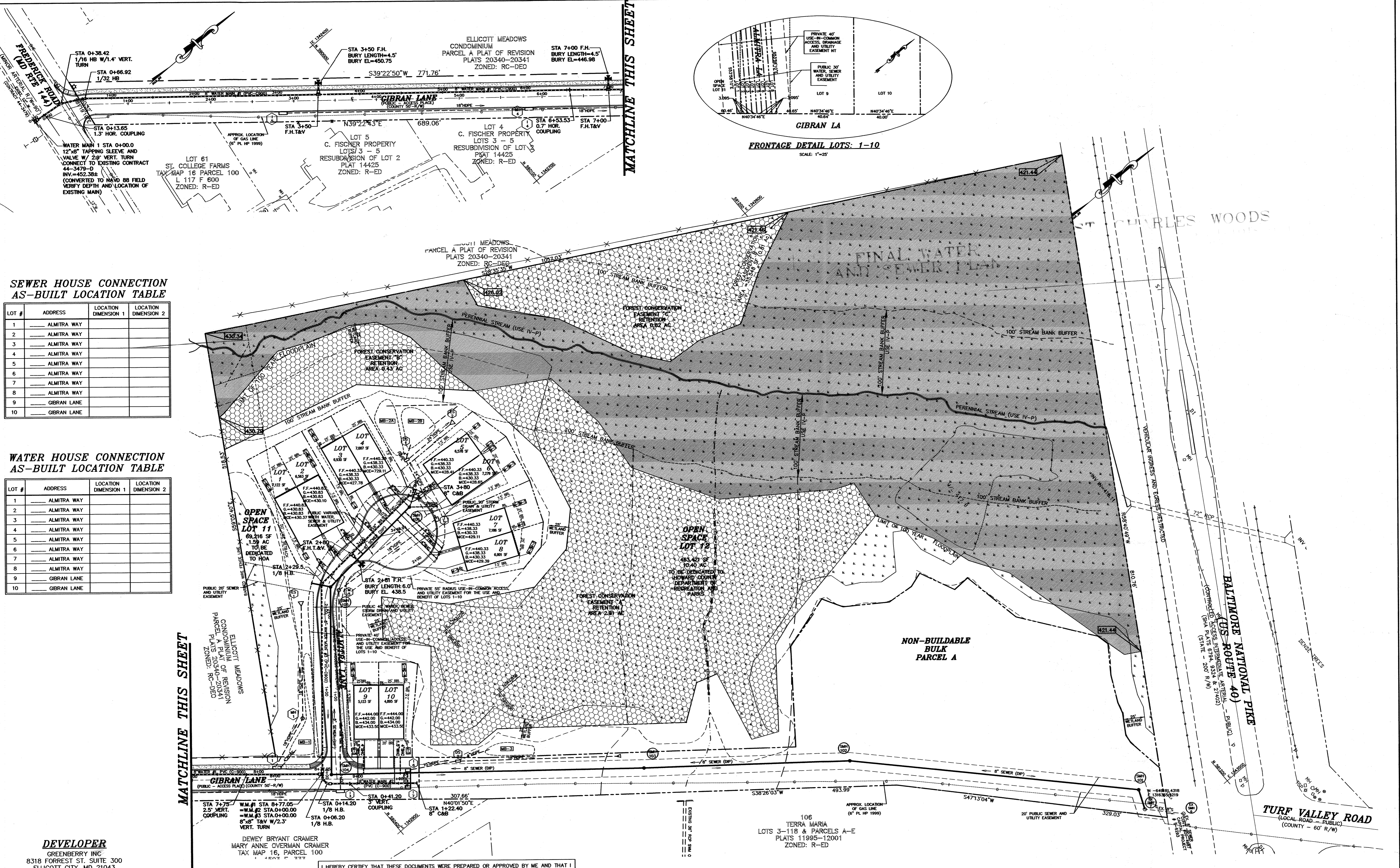
COVER SHEET

600' SCALE MAP NO. 16 BLOCK NO. 23

ST. CHARLES WOODS
LOTS 1-10 AND OPEN SPACE LOTS 11-12
CONTRACT NO.: 24-4901-D
THIRD ELECTION DISTRICT
HOWARD COUNTY

scale
AS SHOWN
1 OF 4

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SEWER HOUSE CONNECTION AS-BUILT LOCATION TABLE

LOT #	ADDRESS	LOCATION DIMENSION 1	LOCATION DIMENSION 2
1	ALMITRA WAY		
2	ALMITRA WAY		
3	ALMITRA WAY		
4	ALMITRA WAY		
5	ALMITRA WAY		
6	ALMITRA WAY		
7	ALMITRA WAY		
8	ALMITRA WAY		
9	GIBRAN LANE		
10	GIBRAN LANE		

WATER HOUSE CONNECTION AS-BUILT LOCATION TABLE

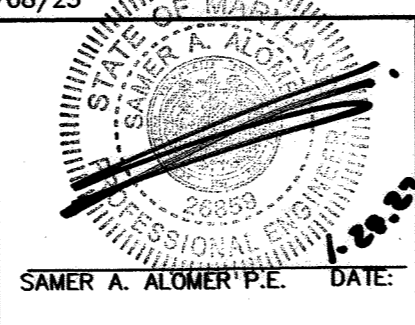
LOT #	ADDRESS	LOCATION DIMENSION 1	LOCATION DIMENSION 2
1	ALMITRA WAY		
2	ALMITRA WAY		
3	ALMITRA WAY		
4	ALMITRA WAY		
5	ALMITRA WAY		
6	ALMITRA WAY		
7	ALMITRA WAY		
8	ALMITRA WAY		
9	GIBRAN LANE		
10	GIBRAN LANE		

DEVELOPER
GREENBERRY INC
8318 FORREST ST. SUITE 300
ELLCOTT CITY, MD 21043
(410)997-0296

DEWEY BRYANT CRAMER
MARY ANNE OVERMAN CRAMER
TAX MAP 16, PARCEL 100

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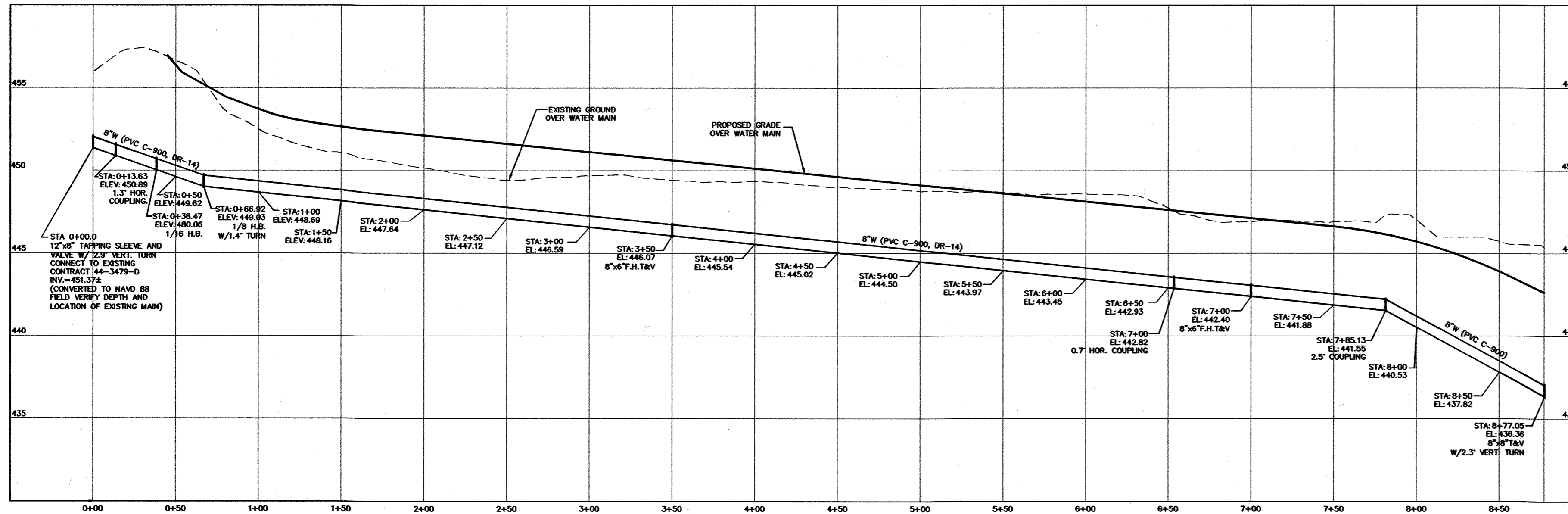
engineering	MMM						
illustration	MMM						
approval	SA						
project	09-004						
date	JAN 2022	BY	NO.	REVISION	DATE	600' SCALE MAP NO.	16 BLOCK NO.

FINAL WATER AND SEWER PLAN

ST. CHARLES WOODS
LOTS 1-10 AND OPEN SPACE LOTS 11-12
CONTRACT NO.: 24-4901-D
THIRD ELECTION DISTRICT
HOWARD COUNTY

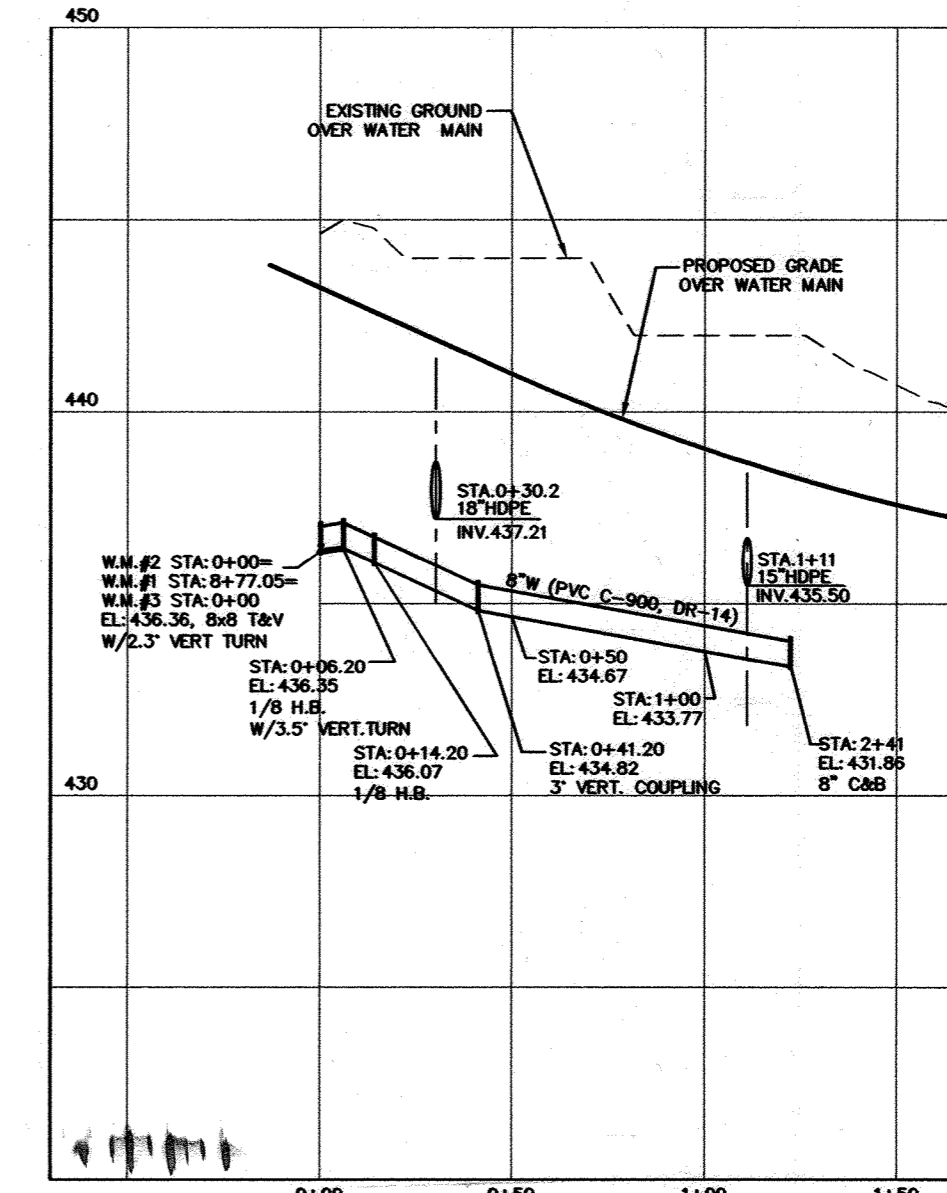
scale
1"=50'
2 OF 4

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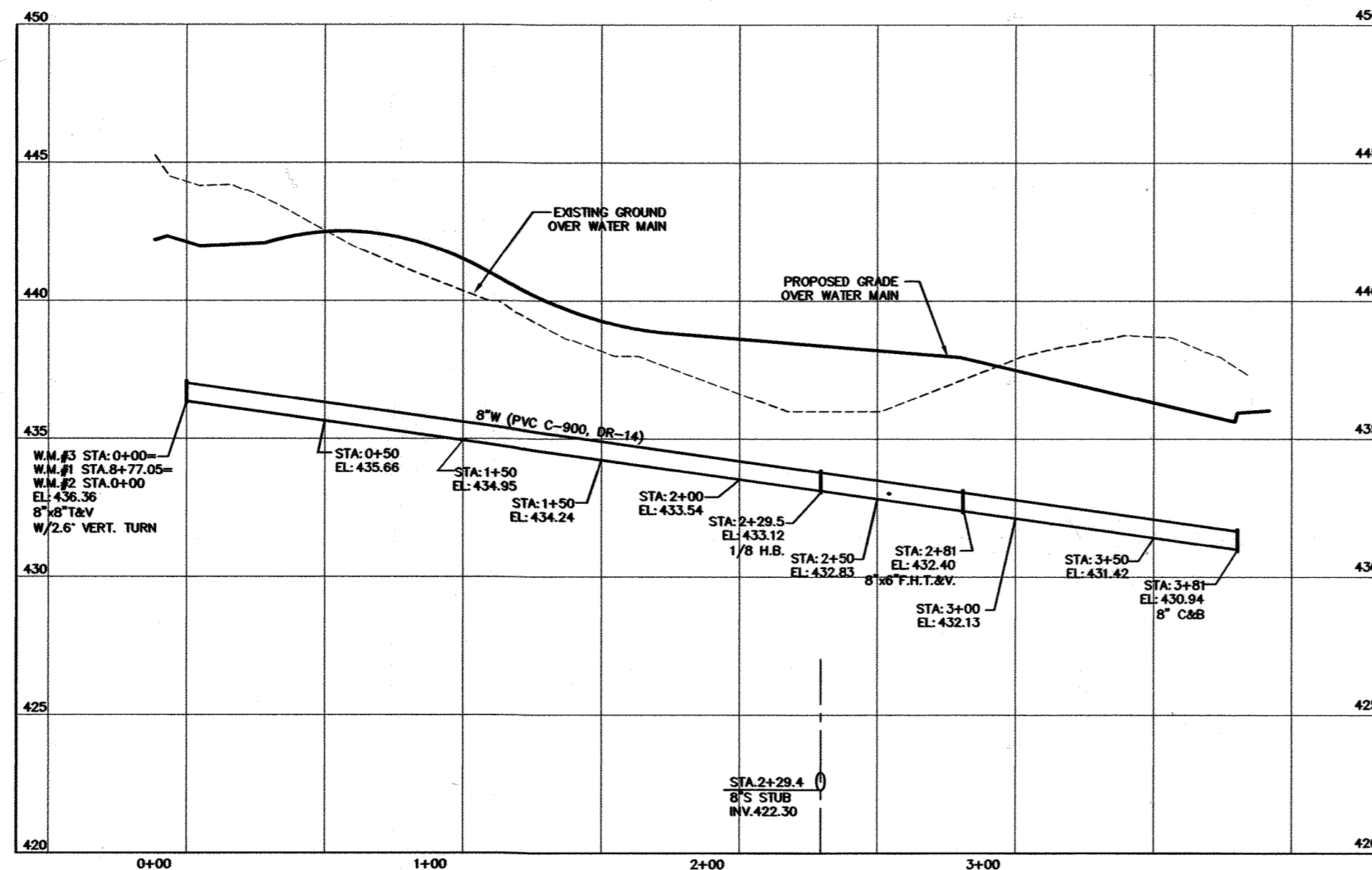
WATER MAIN #1 PROFILE ALONG GIBRAN LANE

SCALE: HOR. 1"=50'
VER. 1"=5'



WATER MAIN #2 PROFILE ALONG GIBRAN LANE

SCALE: HOR. 1"=50'
VER. 1"=5'



WATER MAIN #3 PROFILE ALONG ALMITRA LANE

SCALE: HOR. 1"=50'
VER. 1"=5'

WATER MAIN TABULATION CHART

APPURTENANCE	NORTHING	EASTING
12"x8" T. S. & V. (WM #1)	589,684.321	1,342,253.129
1.3" HOR. COUPLING (WM #1)	589,697.766	1,342,254.677
1/16 H.B. (WM #1)	589,722.339	1,342,256.906
1/32 H.B. (WM #1)	589,747.849	1,342,270.568
8"x6" F.H.T. & V. (WM #1)	589,966.739	1,342,449.733
0.7" HOR. COUPLING *WM #1)	590,201.418	1,342,642.230
8"x6" F.H.T. & V. (WM #1)	590,237.069	1,342,672.180
2.5" VERT. COUPLING (WM #1)	590,302.284	1,342,726.958
8"x8" T. & V. (WM #1, 2 & 3)	590,372.667	1,342,786.0811
1/8 V.B. (WM#2)	590,368.833	1,342,790.685
1/8 V.B. (WM#2)	590,369.508	1,342,798.685
3" VERT. COUPLING (WM #2)	590,389.976	1,342,816.787
8" C. & B.	590,452.507	1,342,868.333
1/8 H.B. (WM #3)	590,520.316	1,342,610.308
8"x6" F.H.T. & V. (WM #3)	590,571.746	1,342,605.746
8" C. & B. (WM #3)	590,671.148	1,342,597.148

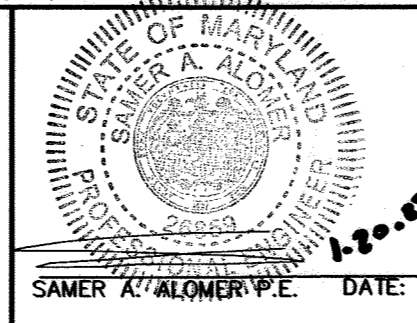
DEVELOPER

GREENBERRY INC
8318 FORREST ST. SUITE 300
ELLCOTT CITY, MD 21043
(410)997-0296

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LICENCE NO. 26859, EXP. DATE 08/08/23

MILDENBERG, BOENDER & ASSOC., INC.
Engineers Planners Surveyors

8318 Forrest Street, Suite 300, Ellicott City, Maryland 21043
(410) 997-0296 Bulk (410) 997-0298 Fax



engineering	MMM				
illustration	MMM				
approval	SA				
project	09-004				
date	JAN. 2022	BY	NO.	REVISION	DATE

FINAL WATER PROFILE

600' SCALE MAP NO. 16 BLOCK NO. 23

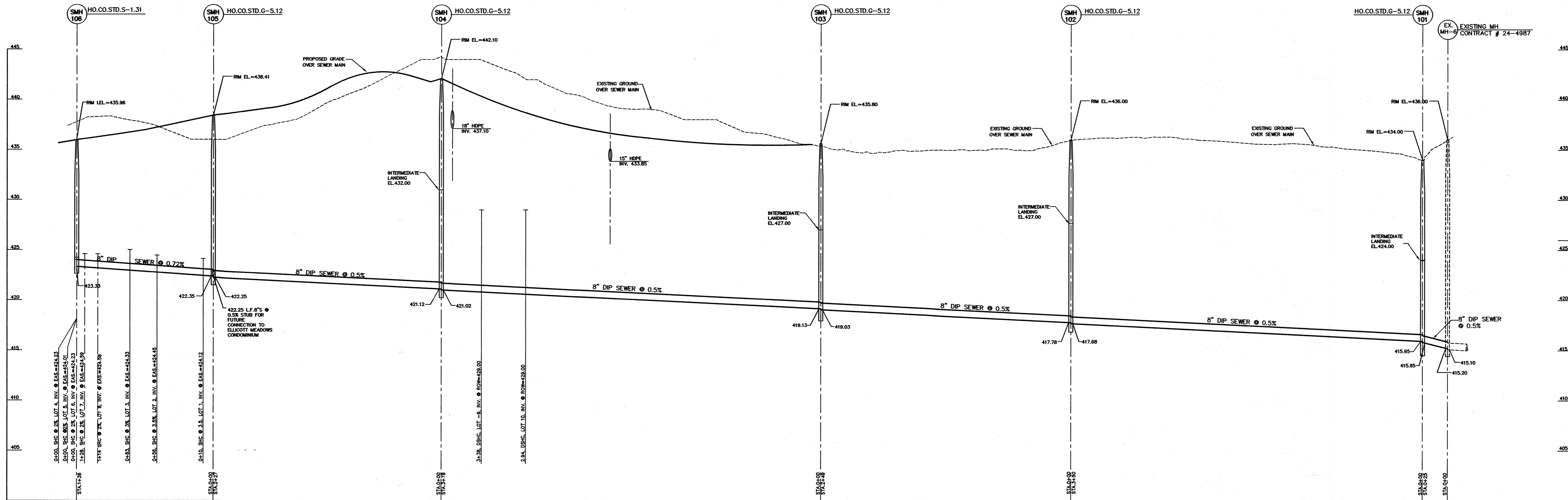
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CONTRACT NO.: 24-4901-D
THIRD ELECTION DISTRICT
HOWARD COUNTY

scale
1"=50'
3 OF 4

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DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND
[Signature] 2-7-22
CHIEF, BUREAU OF UTILITIES DATE

DEPARTMENT OF PLANNING & ZONING
HOWARD COUNTY, MARYLAND
[Signature] 5.18.22
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE



8" SEWER MAIN PROFILE
SCALE: HOR. 1"=50'
VER. 1"=5'

SHC CHART

LOT #	SHC INV. @ MAIN	SHC INV. @ R/W (OR EASMT)	MCE	SLOPE	DROP ELEV.	DROP DEPTH	BASEMENT ELEV.
LOT 1, SHC	422.59	423.36	429.86	4.0%	-	-	430.83
LOT 2, SHC	422.92	423.55	429.45	4.0%	-	-	430.83
LOT 3, SHC	423.22	423.87	429.37	3.0%	-	-	430.33
LOT 4, SHC	423.50	424.16	428.36	2.0%	-	-	430.33
LOT 5, SHC	423.50	423.95	428.35	2.0%	-	-	430.33
LOT 6, SHC	423.50	424.16	428.36	2.0%	-	-	430.33
LOT 7, SHC	423.54	424.69	428.99	2.0%	-	-	430.33
LOT 8, SHC	423.34	424.68	429.88	2.0%	-	-	430.33
LOT 9, DSHC	420.82	429.00	433.50	2.0%	428.60	7.78'	434.00
LOT 10, DSHC	420.60	429.00	433.50	2.0%	428.60	8.00'	434.00

SEWER MAIN TABULATION CHART

SMH #	NORTHING	EASTING
SMH 101	591,111.387	1,343,437.850
SMH 102	592,868.295	1,343,185.502
SMH 103	590,673.289	1,343,031.128
SMH 104	590,380.494	1,342,793.477
SMH 105	590,526.366	1,342,619.820
SMH 106	590,661.631	1,342,608.059
EX SMH 7	591,101.770	1,343,461.620

DEVELOPER

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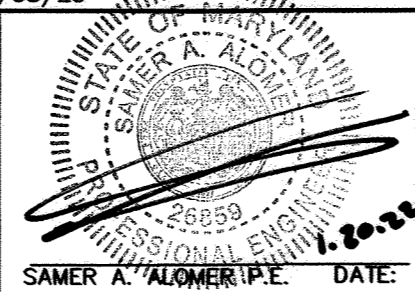
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DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DEPARTMENT OF PLANNING & ZONING
HOWARD COUNTY, MARYLAND

MILDENBERG, BOENDER & ASSOC., INC.
Engineers Planners Surveyors

8318 Forrest Street, Suite 300, Ellicott City, Maryland 21043
(410) 997-0296 Cell (410) 997-0296 Fax



engineering	MMM				
illustration	MMM				
approval	SA				
project	09-004				
date	JAN. 2022	BY	NO.	REVISION	DATE

FINAL SEWER PROFILE

600' SCALE MAP NO. 16 BLOCK NO. 23

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