

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 MAY, 2017 BY BENCHMARK ENGINEERING, 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. 38BA AND NO. 38AA.
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 SPECIFICATION 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.....	1-800-287-7777
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 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(g) OF THE HOWARD COUNTY CODE.

PART II WATER

- ALL WATER MAINS TO BE PVC C900 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 PVC C900 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 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 FILL 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 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.
- 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 (IPEX) 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 EBA IRON, INC. OR APPROVED EQUAL.

PART III SEWER

- ALL SEWER MAINS SHALL BE P.V.C. UNLESS OTHERWISE NOTED.
- ALL MANHOLES SHALL BE 4'-0" INSIDE DIAMETER UNLESS OTHERWISE NOTED.
- FORCE MAINS SHALL BE PVC ONLY.
- MANHOLES SHOWN WITH 12" AND 16" WALLS ARE FOR BRICK MANHOLES ONLY.
- MANHOLES DESIGNATED W.T. IN PLAN AND PROFILE SHALL HAVE WATERTIGHT FRAME AND COVER, STANDARD DETAIL 05-52. WHERE 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.

REVIEWED FOR HOWARD SCD AND MEETS TECHNICAL REQUIREMENTS
 THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.

 11/10/2020
 HOWARD SCD DATE

SEDIMENT CONTROL MEASURES FOR THIS CONTRACT WILL BE IMPLEMENTED IN ACCORDANCE WITH SECTION 308 OF THE HOWARD COUNTY STANDARD SPECIFICATIONS AND AS PER F-20-041.
 HARMONY BUILDERS INC
 4228 COLUMBIA ROAD
 ELLICOTT CITY, MD 21042
 410-461-0833

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. 43577, Expiration Date: 06-08-2022.

WATER & SEWER PLAN

ELKRISE HILL

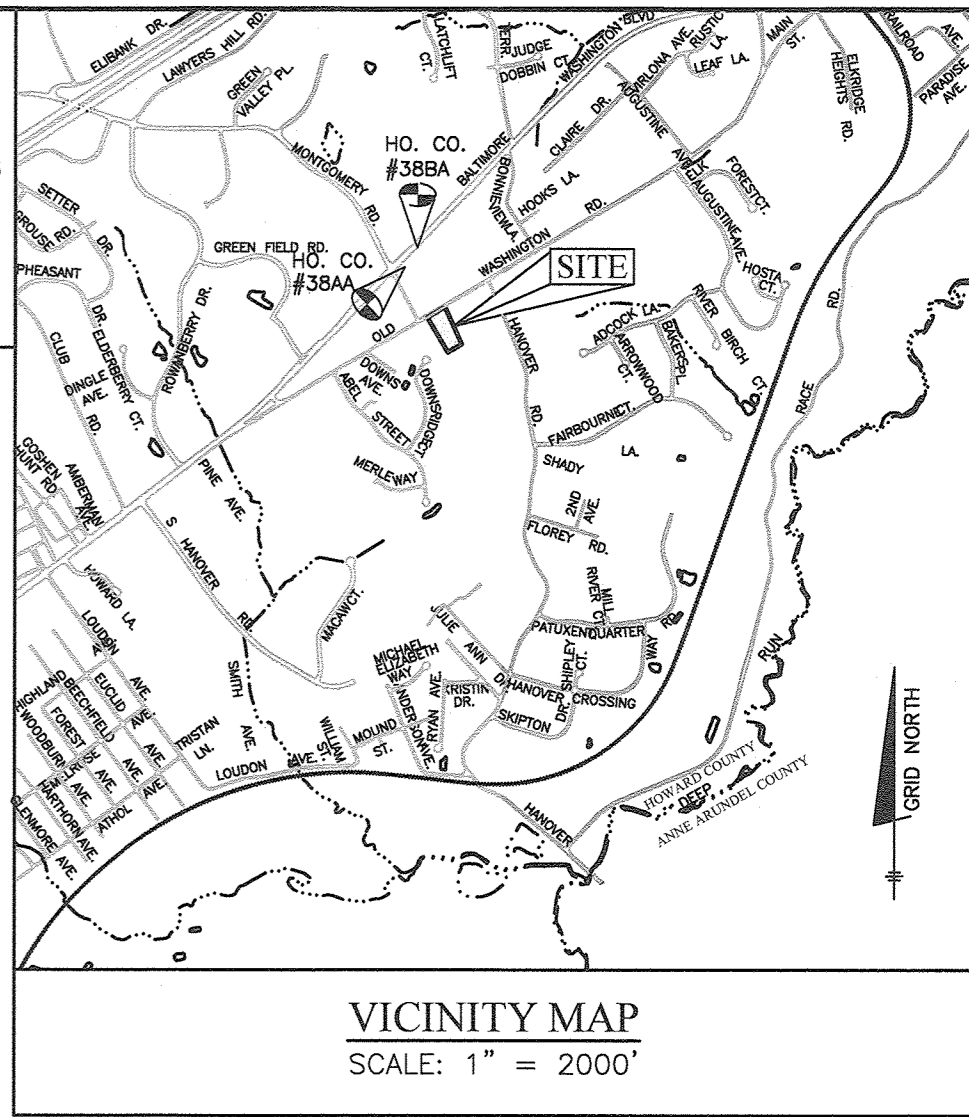
LOTS 1-7, OPEN SPACE LOT 8

1ST ELECTION DISTRICT

HOWARD COUNTY, MARYLAND

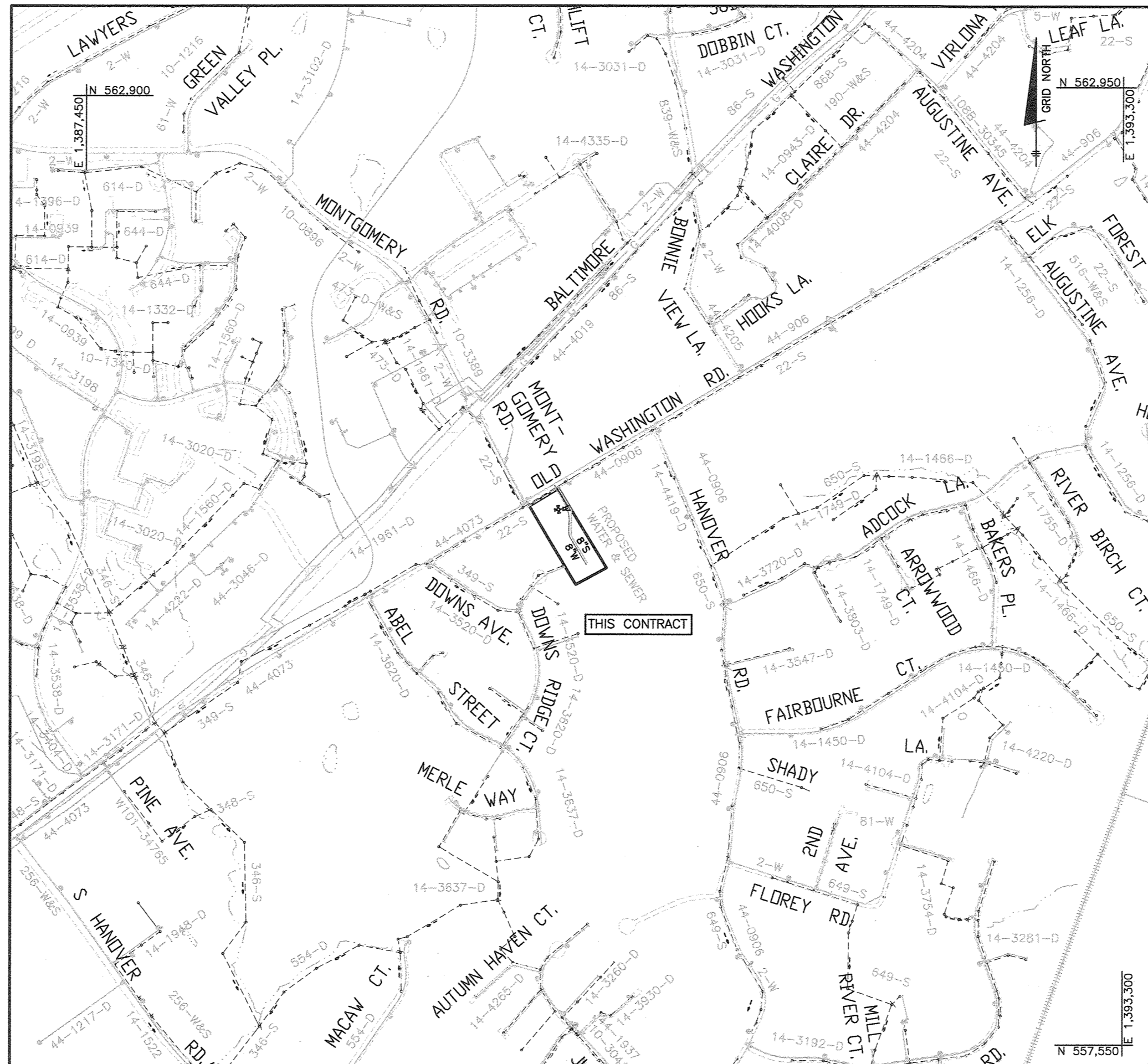
CONTRACT NO. 14-5100-D

BENCHMARK NAD'83
 HORIZONTAL
 HO. CO. #38AA
 STAMPED DISK SET ON TOP OF
 CONCRETE BASE:
 N 561158.817 E 1389726.33
 ELEVATION: 220.084
 HO. CO. #38BA
 STAMPED DISK SET ON TOP OF
 CONCRETE BASE:
 N 562553.31 E 1390967.86
 ELEVATION: 166.184



ITEMS	QUANTITIES ESTIMATED	AS-BUILT		
		QUANTITIES	TYPE	MANU / SUPPLIER
6" WATER (PVC900 DR18)	499 LF			
6" FIRE HYDRANT, TEE & VALVE	1			
1.5" WHC	91 LF			
8" VALVE	0			
1" METER VAULT	7			
TAPPING SLEEVE AND VALVE (TS&V)	1			
CONTINUITY TEST STATION	2			
8" PVC SDR-35 SEWER	474 LF			
MANHOLES	4			
4" SHC	133 LF			
6" WATER (DEP. CLASS 62)	12 LF			
2" BLOW OFF	1 SA			
NAME OF UTILITY CONTRACTOR				
SURVEY AND DRAFTING DIVISION AS-BUILT DATE:				

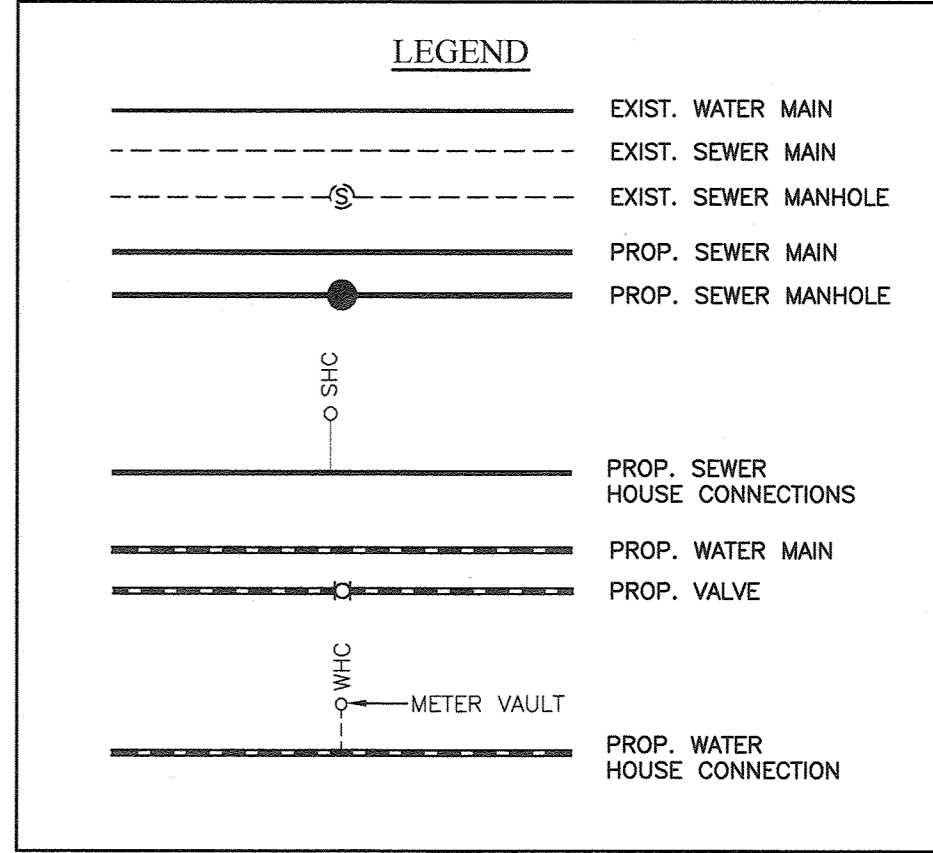
NOTE:
 ALL WATER HOUSE CONNECTIONS ARE TO BE 1.5" WITH A 1" METER (OUTSIDE SETTING).
 ALL SEWER HOUSE CONNECTIONS SHALL BE 4" PVC.



LOCATION MAP
 SCALE: 1" = 600'

(IN FEET)
 1 inch = 600 ft.

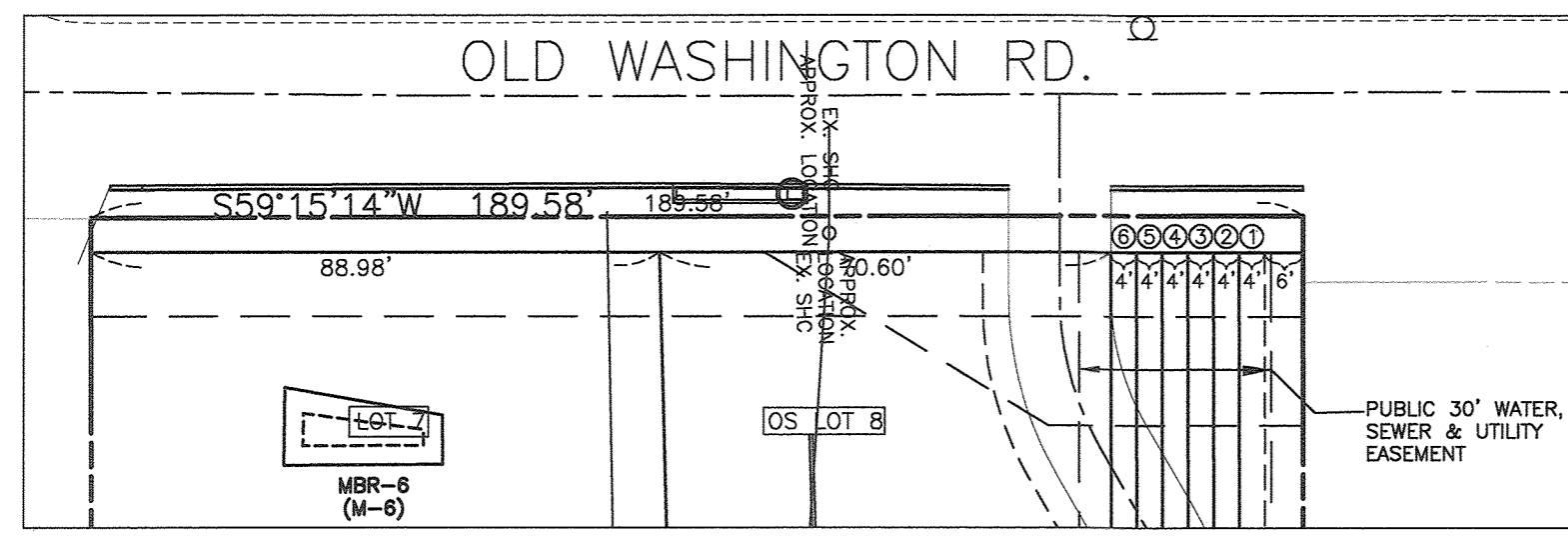
TYPE OF BUILDING	SINGLE FAMILY DETACHED
NUMBER OF SHCs	7
NUMBER OF WHCs	7
DRAINAGE AREA	PATAPSCO RIVER
TREATMENT PLANT	PATAPSCO WASTEWATER TREATMENT PLANT
WATER ZONE	400
TEST PRESSURE	202
TEST GRADIENT	678



SHEET INDEX

NO.	DESCRIPTION
1	TITLE SHEET
2	PUBLIC WATER AND SEWER PLAN
3	PUBLIC WATER AND SEWER PROFILES

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND 10/30/2020 CHIEF, BUREAU OF UTILITIES	DEPARTMENT OF PLANNING AND ZONING HOWARD COUNTY, MARYLAND 11/30/2020 CHIEF, DEVELOPMENT ENGINEERING DIVISION	BENCHMARK ENGINEERS & LAND SURVEYORS & PLANNERS ENGINEERING, INC. 8480 BALTIMORE NATIONAL PIKE & SUITE 315 & ELLICOTT CITY, MARYLAND 21043 (P) 410-465-8105 (F) 410-465-8844 WWW.BE-CVLENGINEERING.COM		DES: JC DRAFT: JC CHK: - DATE: 10/2020 BY: NO.	DATE: 10/2020 BY: NO.	FINAL PLAN TITLE SHEET WATER & SEWER ADC MAP 35, GRID E2	ELKRISE HILL LOTS 1-7 TAX MAP: 38 - GRID: 08 - PARCEL: 198 ZONED: R-12 - ELECTION DISTRICT 1 CONTRACT NO. 14-5100-D	SCALE: AS SHOWN SHEET NO. 1 OF 3
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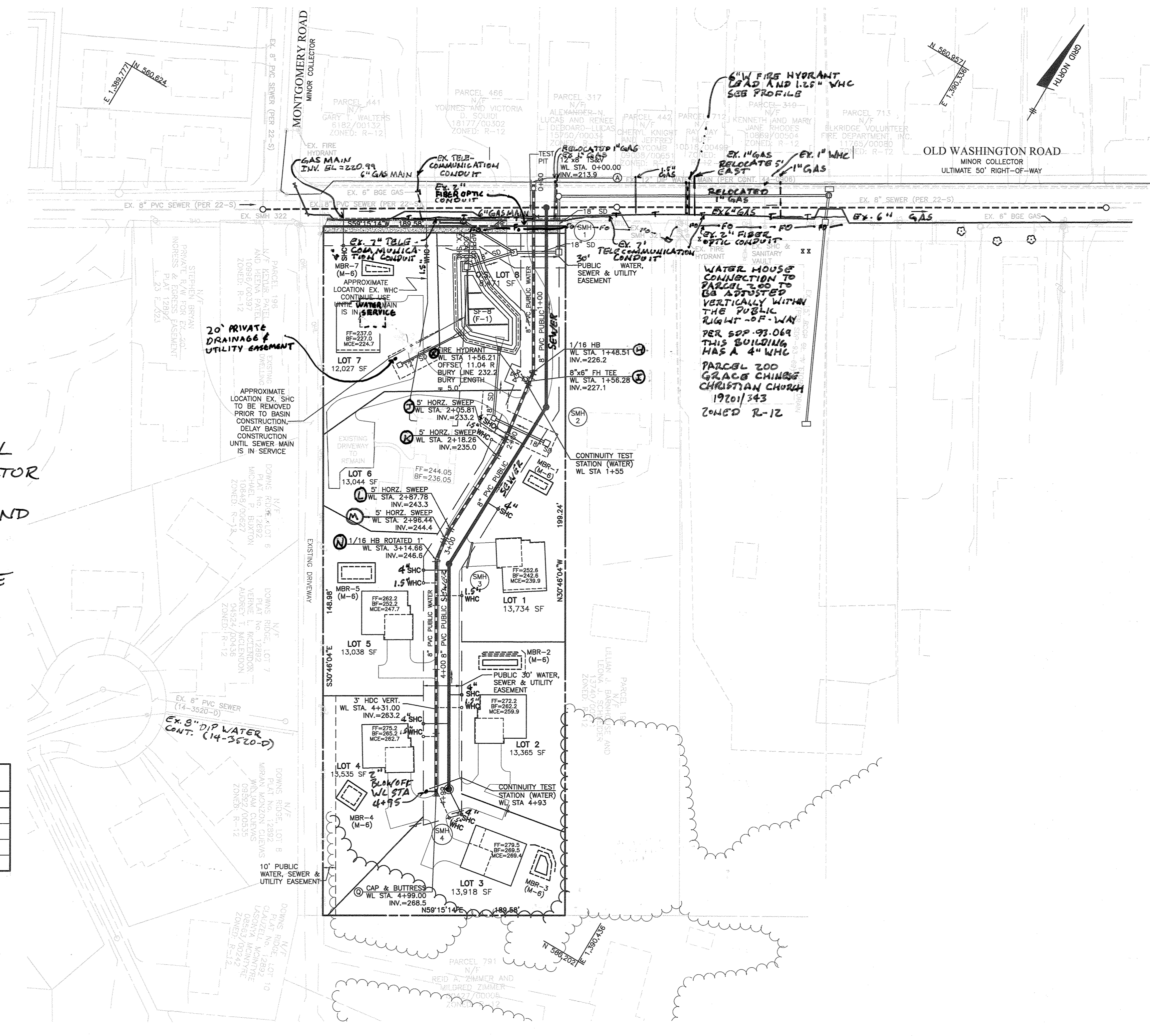
FRONT FOOT INSET
SCALE: 1"=30'

WATER APPURTENANCE SCHEDULE		
NAME	APPURTENANCE	WATER LINE STATION
A	12"x8" TAPPING SLEEVE & VALVE	WL STA. 0+00.00
B	1/8 Vertical Bend	WL STA. 0+22.3
C	1/8 Vertical Bend	WL STA. 0+24.4
D	1/8 Vertical Bend	WL STA. 0+26.7
E	1/8 Vertical Bend	WL STA. 0+29.0
F	1/32 VERTICAL BEND	WL STA. 0+57.89
G	5" VERTICAL SWEEP	WL STA. 0+71.87
H	1/16 HORIZONTAL BEND	WL STA. 1+48.51
I	FIRE HYDRANT TEE	WL STA. 1+56.28
J	5" HORIZONTAL SWEEP	WL STA. 2+05.81
K	5" HORIZONTAL SWEEP	WL STA. 2+19.95
L	5" HORIZONTAL SWEEP	WL STA. 2+87.78
M	5" HORIZONTAL SWEEP	WL STA. 2+96.44
N	1/16 HORIZONTAL BEND (ROTATED)	WL STA. 3+14.66
O	3" VERTICAL HDC	WL STA. 4+31.00
P	1" VERTICAL HDC	WL STA. 4+59.00
Q	8" PLUG AND BUTTRISS	WL STA. 4+99.00
R	FIRE HYDRANT	WL STA. 4+31.00
W	DIP 45° BEND M.J.	WL STA. 0+00.00
X	DIP 45° BEND M.J.	WL STA. 0+00.00
Y	DIP 45° BEND M.J.	WL STA. 0+00.00
Z	DIP 45° BEND M.J.	WL STA. 0+00.00

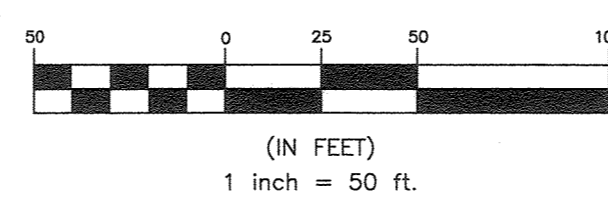
THE CONTRACTOR SHALL PROVIDE THE INSPECTOR THE DIAMETER OF THE FIBER LINE AND THE DIAMETER OF THE CONDUIT, IF PRESENT, FOR THE AS-BUILTS.

SEWER MANHOLE SCHEDULE							
NUMBER	LOCATION (NAD '83)	INVERT IN	INVERT OUT	TOP ELEV.	STD. DETAIL	OWNER	REMARKS
1	N 560695.3947 E 1390112.5793	208.20(8")	217.91	HO. CO. STD. 0-5.14	PUBLIC		
2	N 560561.3255 E 1390192.3986	225.00(8")	225.10(8")	233.62	HO. CO. STD. 0-5.14	PUBLIC	
3	N 560417.1608 E 1390189.9273	242.43(8")	242.53(8")	251.17	HO. CO. STD. 0-5.14	PUBLIC	
4	N 560265.8200 E 1390280.0294	266.00(8")	271.92	HO. CO. STD. 0-5.14	PUBLIC		

SHC CHART					
Lot Number	Invert @ main or manhole	Drop House	Invert @ RWV or 68ft Callar	Minimum	Notes
1	235.79	No	235.99	239.89	SHC @ 2.0%
2	255.60	No	255.80	259.90	SHC @ 2.0%
3	265.08	No	265.52	269.40	SHC @ 2.0%
4	258.46	No	258.85	262.70	SHC @ 2.0%
5	243.30	No	243.70	247.68	SHC @ 2.0%
6	229.35	No	229.75	233.65	SHC @ 2.0%
7	209.29	YES	220.40	224.70	TYPE "A", SHC @ 2.0%



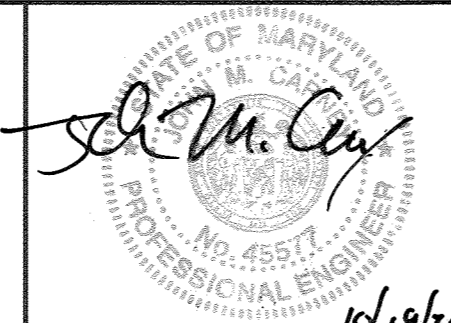
PLAN VIEW



HARMONY BUILDERS INC
4228 COLUMBIA ROAD
ELLCOTT CITY, MD 21042
410-461-0833

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. 45577, Expiration Date: 06-08-2022.

BENCHMARK ENGINEERING, INC.
ENGINEERS • LAND SURVEYORS • PLANNERS
8480 BALTIMORE NATIONAL PIKE & SUITE 315 • ELLCOTT CITY, MARYLAND 21043
(P) 410-465-8105 (F) 410-465-8944
WWW.BE-CVLENGINEERING.COM



DES:	JC
DRAFT:	JC
CHK:	-
DATE:	10/2020
BY:	NO.
REVISION:	DATE
1	8-12-22
2	6-8-21

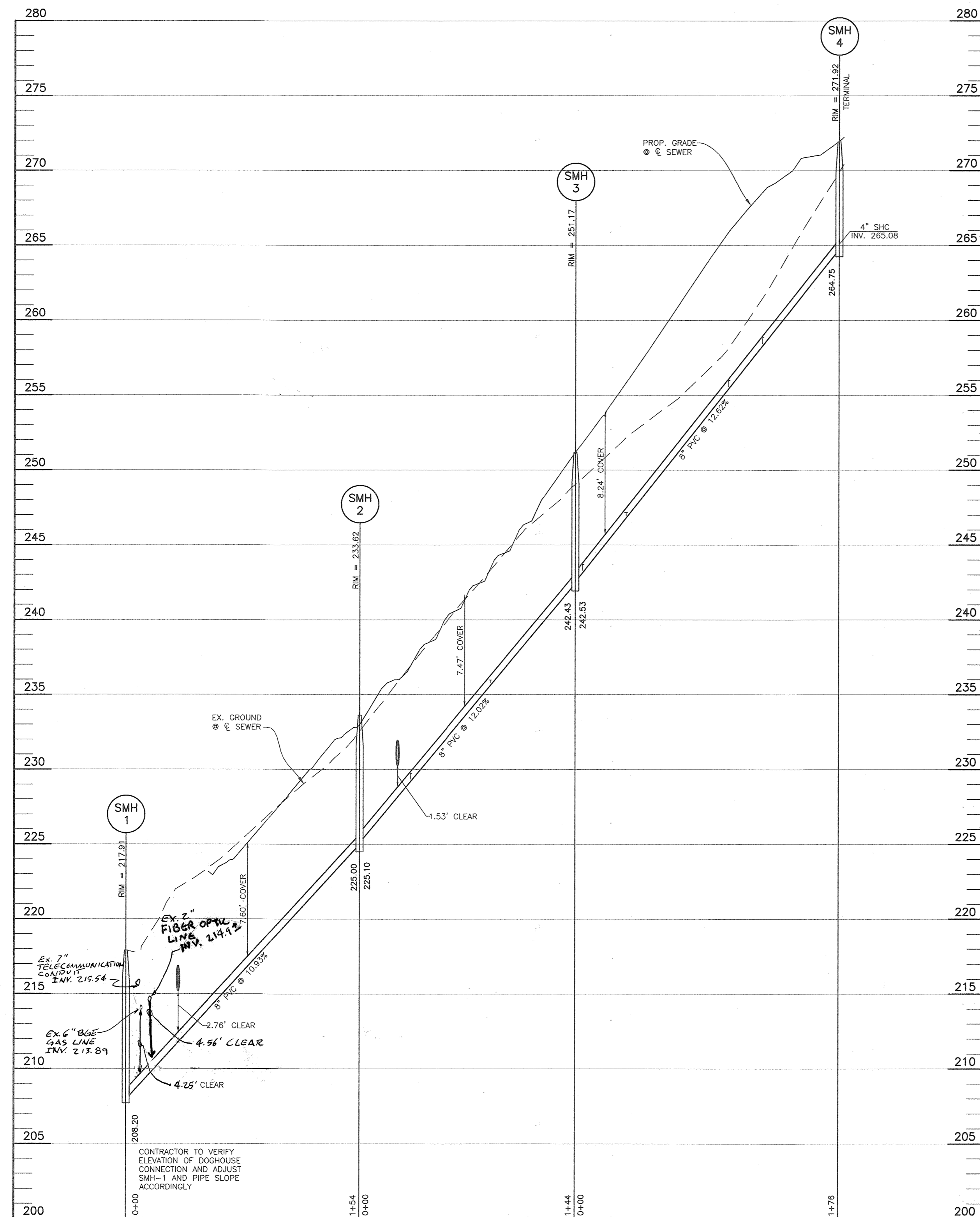
FINAL PLAN
PLAN VIEW
WATER & SEWER
ADC MAP 35, GRID E2

ELKRIS HILL
LOTS 1-7
TAX MAP: 38 - GRID: 08 - PARCEL: 198
ZONED: R-12 - ELECTION DISTRICT 1
CONTRACT NO. 14-5100-D

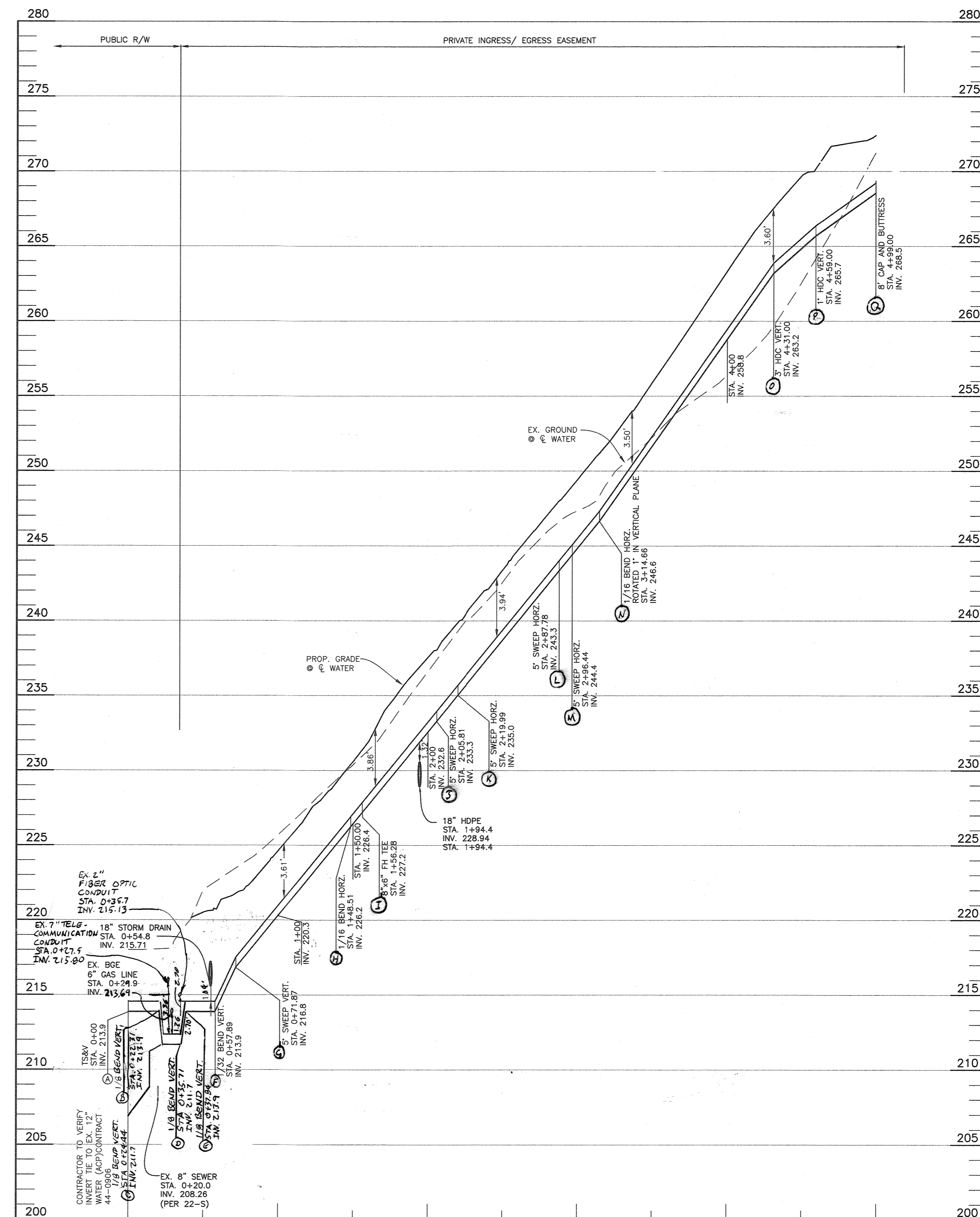
SCALE:
AS SHOWN
SHEET NO.
2 OF 3

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND
10/30/2020
CHIEF, BUREAU OF UTILITIES

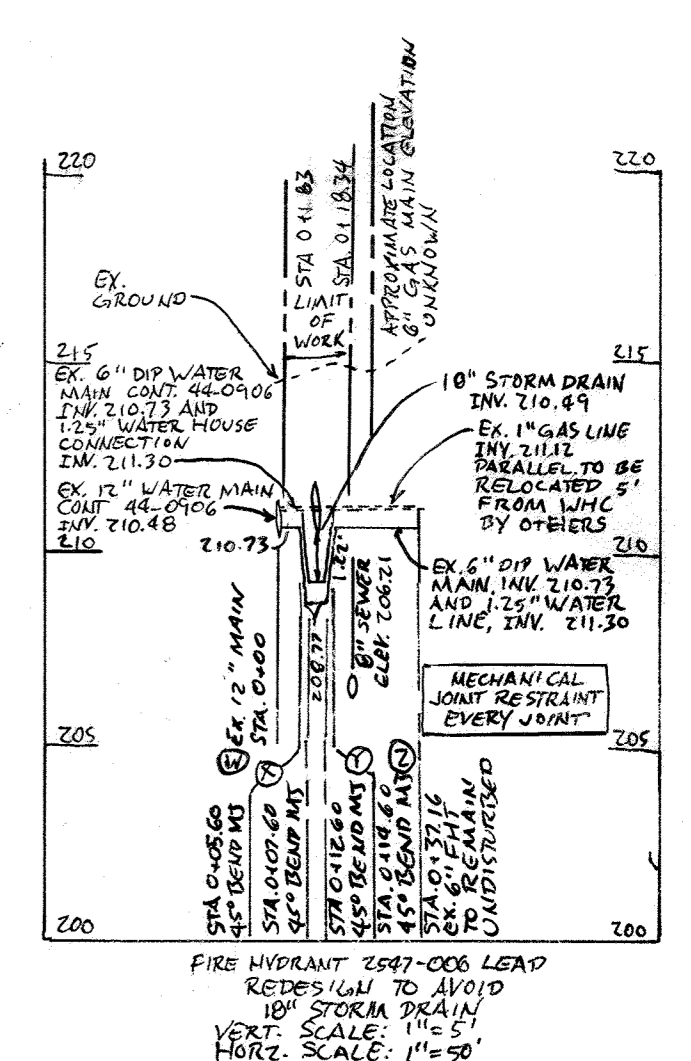
DEPARTMENT OF PLANNING AND ZONING
HOWARD COUNTY, MARYLAND
11-30-20
CHIEF, DEVELOPMENT ENGINEERING DIVISION



PROPOSED SEWER PROFILE VIEW
 VERTICAL SCALE: 1" = 5'
 HORIZONTAL SCALE: 1" = 50'



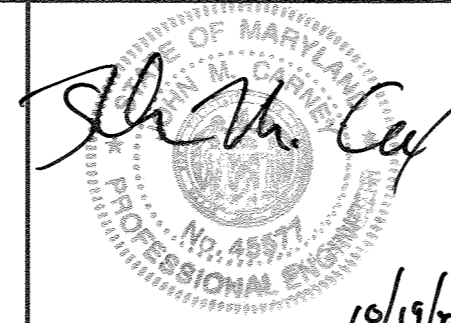
PROPOSED WATER PROFILE VIEW
 VERTICAL SCALE: 1" = 5'
 HORIZONTAL SCALE: 1" = 50'



HARMONY BUILDERS INC
 4228 COLUMBIA ROAD
 ELLICOTT CITY, MD 21042
 410-461-0833

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 ENGINEERS & LAND SURVEYORS & PLANNERS
ENGINEERING, INC.
 8480 BALTIMORE NATIONAL PINE & SUITE 3154 ELLICOTT CITY, MARYLAND 21043
 (P) 410-465-8105 (F) 410-465-5844
 WWW.BEI-CIVILENGINEERING.COM



DES: JC
 DRAFT: JC
 CHK: -
 DATE: 10/2020

BY	NO.	REVISION	DATE
BEJ	2	SHOW CROSSINGS PER TEST PITS + REVISE WATER	8/14/22
BEJ	1	ADJUST GAS LINE ELEVATION JUST WATER, ADD FIBER OPTIC	6-8-21

FINAL PLAN
PROFILE VIEW
 WATER & SEWER
 ADC MAP 35, GRID E2

ELKRIS HILL
 LOTS 1-7
 TAX MAP: 38 - GRID: 08 - PARCEL: 198
 ZONED: R-12 - ELECTION DISTRICT 1
CONTRACT NO. 14-5100-D

SCALE:
 AS SHOWN
 SHEET NO.
 3 OF 3

DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND
 DEPARTMENT OF PLANNING AND ZONING
 HOWARD COUNTY, MARYLAND
 CHIEF, BUREAU OF UTILITIES
 CHIEF, DEVELOPMENT ENGINEERING DIVISION