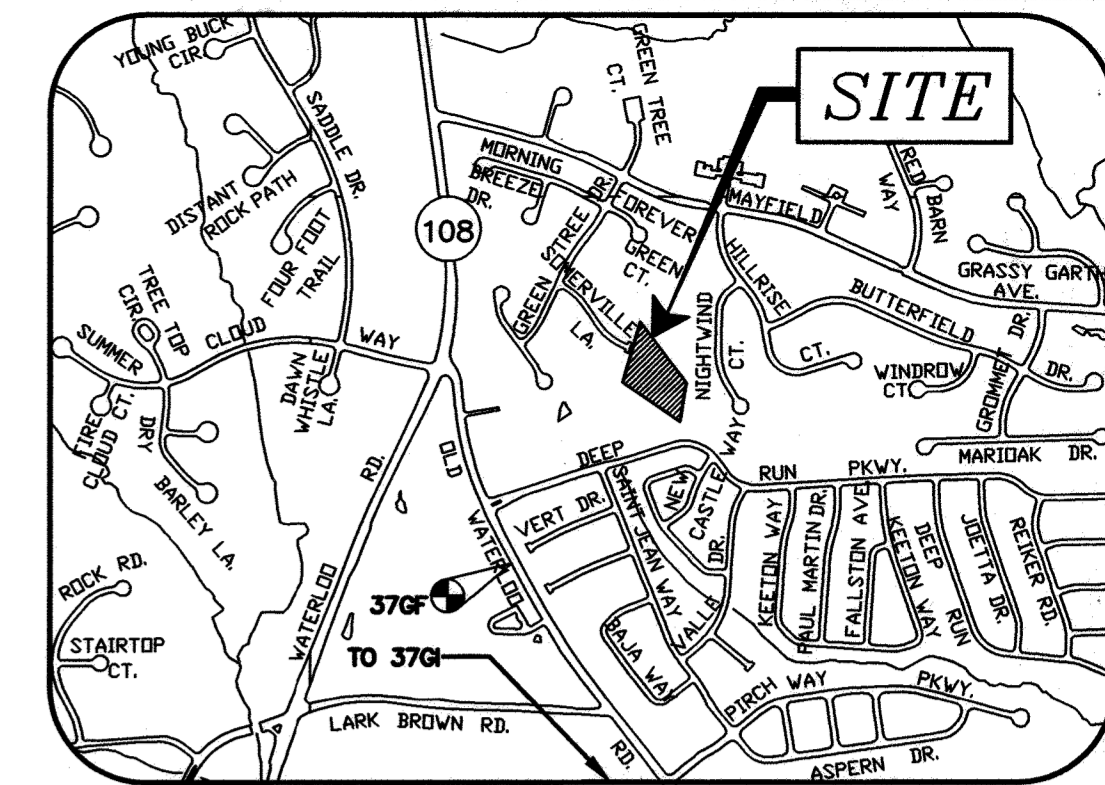


**QUANTITY TABLE**

ITEMS	QUANTITIES ESTIMATED	QUANTITIES	TYPE	MANUFACTURER/SUPPLIER
STANDARD MH (HO. CO. STD.G-5.12)	4 EACH	4 EA		CPC
8" SEWER MAIN (PVC)	342 LF	342 LF	SDR 35	NATIONAL PIPE / FERGUSON
4" SHC	105 LF	105 LF	SDR 35	NATIONAL PIPE / FERGUSON
# 4" SHC	7 EACH	7 EA		MULTI FITTINGS HORNE CONCRETE / FERGUSON
8" WATER MAIN (PVC C-900; DR-18)	90 LF	90 LF	C900 DR-18	NATIONAL PIPE / FERGUSON
6" WATER MAIN (PVC C-900; DR-18)	275 LF	275 LF	C900 DR-18	NATIONAL PIPE / FERGUSON
1 1/2" WATER HOUSE CONNECTION	90 LF	90 LF	K COPPER	MUELLER INDUSTRIES / FERGUSON
# 1 1/2" WHC	7 EACH	7 EA		AY McDONALD HORNE CONCRETE / FERGUSON
1/8 H.B. (6")	1 EACH	1 EA	MJ C153	TYLER / FERGUSON
1/32 H.B. (6")	2 EACH	2 EA	MJ C153	TYLER / FERGUSON
8"x6" F.H.T. & V.	1 EACH	1 EA	MJ GATE	MUELLER / FERGUSON
FIRE HYDRANT	1 EACH	1 EA	A 423	MUELLER / FERGUSON
8"x6" T	1 EACH	1 EA	MJ 153	TYLER / FERGUSON
8" V.	3 EACH	2 EA	MJ GATE	MUELLER / FERGUSON
6" V.	1 EACH	1 EA	MJ GATE	MUELLER / FERGUSON
8" CAP & BUTTRESS	2 EACH	1 EA	MJ 153	TYLER / FERGUSON
6" CAP			MJ 153	TYLER / FERGUSON
8" CAP			MJ 153	TYLER / FERGUSON
NAME OF UTILITY CONTRACTOR:	UTILITIES UNLIMITED INC.			
SURVEY AND DRAFTING DIVISION AS-BUILT DATE				

**CONTRACT NO.: 14-5028-D  
SOMERVILLE ESTATES  
LOTS 1-7 AND OPEN SPACE LOTS 8-10  
WATER AND SEWER  
CONSTRUCTION PLANS  
HOWARD COUNTY, MARYLAND  
DEPARTMENT OF PUBLIC WORKS**



**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 ON OR ABOUT FEBRUARY 2016 BY MILDENBERG, BOENDER & ASSOC. 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. 376F AND NO. 376G. ALL VERTICAL CONTROLS ARE BASED ON NAVD 88. MILDENBERG, BOENDER & ASSOCIATES, INC. SHALL PROVIDE DESCRIPTION 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 TO 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 LOCATION 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 OF WATER/SEWER MAINS OR HOUSE CONNECTIONS. THE APPROVAL OF THESE DRAWINGS WILL CONSTITUTE COMPLIANCE WITH DPW REQUIREMENTS PER SECTION 8.114(A) OF THE HOWARD COUNTY CODE.

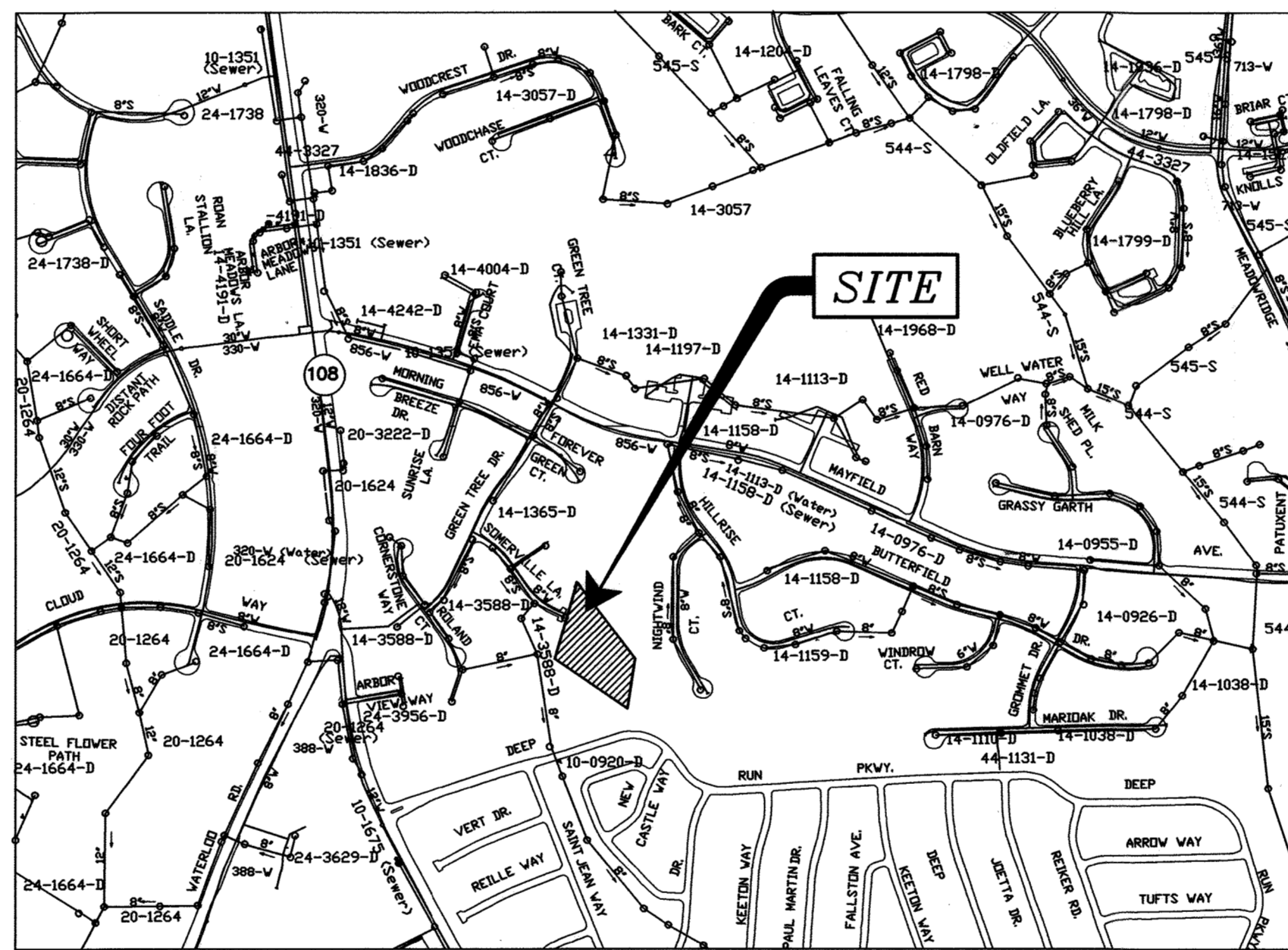
**PART II WATER**

- 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 5.17 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 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. 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 (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 EBAA IRON, INC. OR APPROVED EQUAL.
- FOR A MINIMUM 1.5" WHC FOR SINGLE FAMILY DWELLINGS, OUTSIDE METER SETTINGS FOR 1" METERS SHALL BE USED.

**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 G5.52. WHERE WATER TIGHT 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 THE CELLAR CANNOT BE SEWERED.

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



**LOCATION MAP**  
SCALE: 1" = 600'

TYPE OF BUILDING	RESIDENTIAL
No. OF UNITS	7
No. OF WATER HOUSE CONNECTION	7
No. OF SEWER HOUSE CONNECTIONS	7
DRAINAGE AREA	PATAPSCO
TREATMENT PLANT	PATAPSCO

**EROSION AND SEDIMENT CONTROL FOR THIS CONTRACT IS PROVIDED UNDER : F-18-070**

**OWNER**

HARMONY BUILDERS INC  
4228 COLUMBIA ROAD  
ELLCOTT CITY, MD 21042  
410-461-6042

PLAN REFERENCE NUMBERS:  
ECP-17-031, SP-17-011  
F-18-070

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

*John R. Roberts* 9/16/18  
HOWARD SOIL CONSERVATION DISTRICT 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, LICENCE NO. 17942, EXP. DATE 09/03/20

**MILDENBERG, BOENDER & ASSOC., INC.**  
Engineers Planners Surveyors  
7350-B Grace Drive, Columbia, Maryland 21044  
(410) 997-0296 Tel. (410) 997-0298 Fax

STATE OF MARYLAND  
PROFESSIONAL ENGINEER  
R. JACOB WIKMAY P.E. DATE: 8/1/18

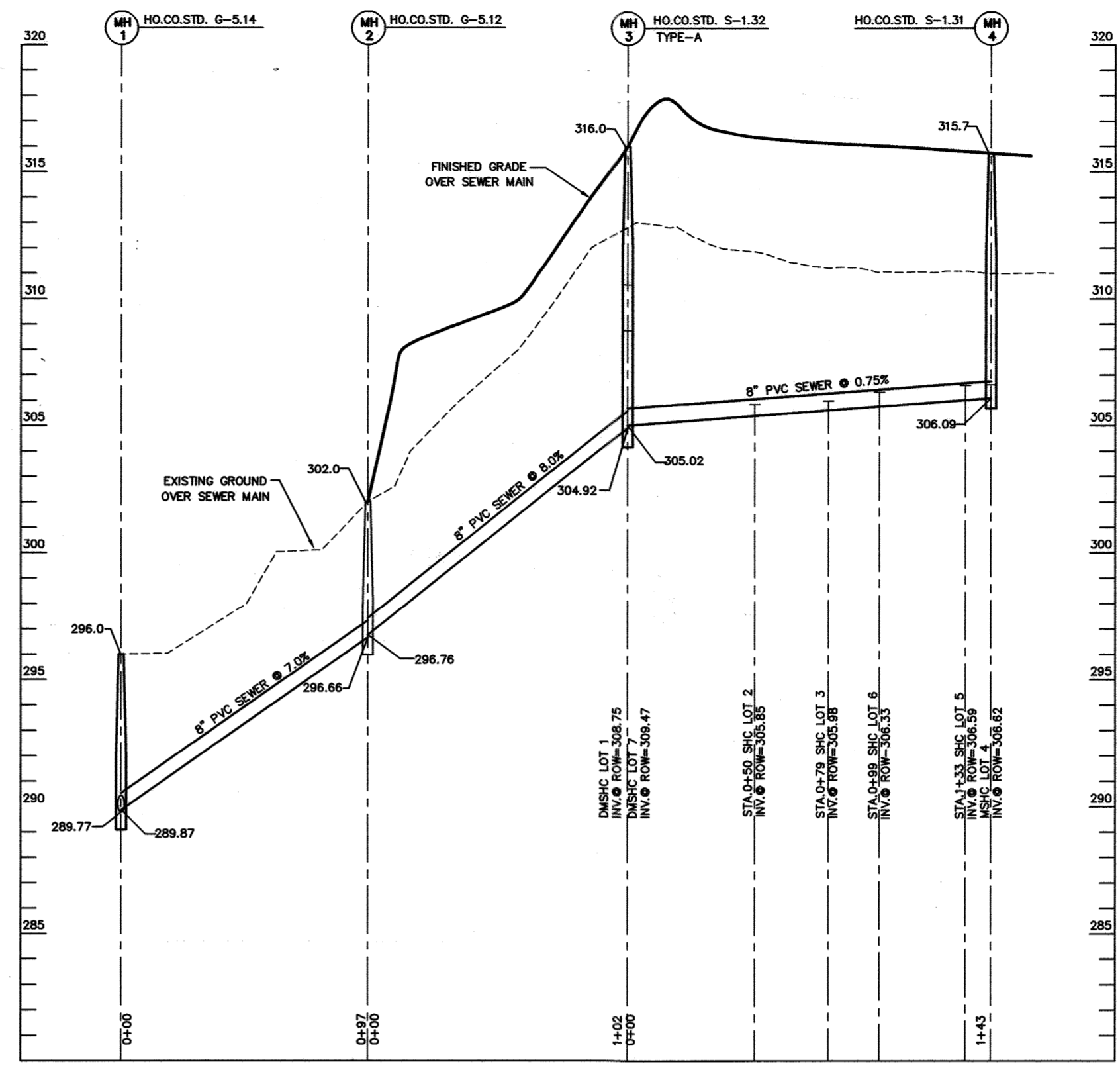
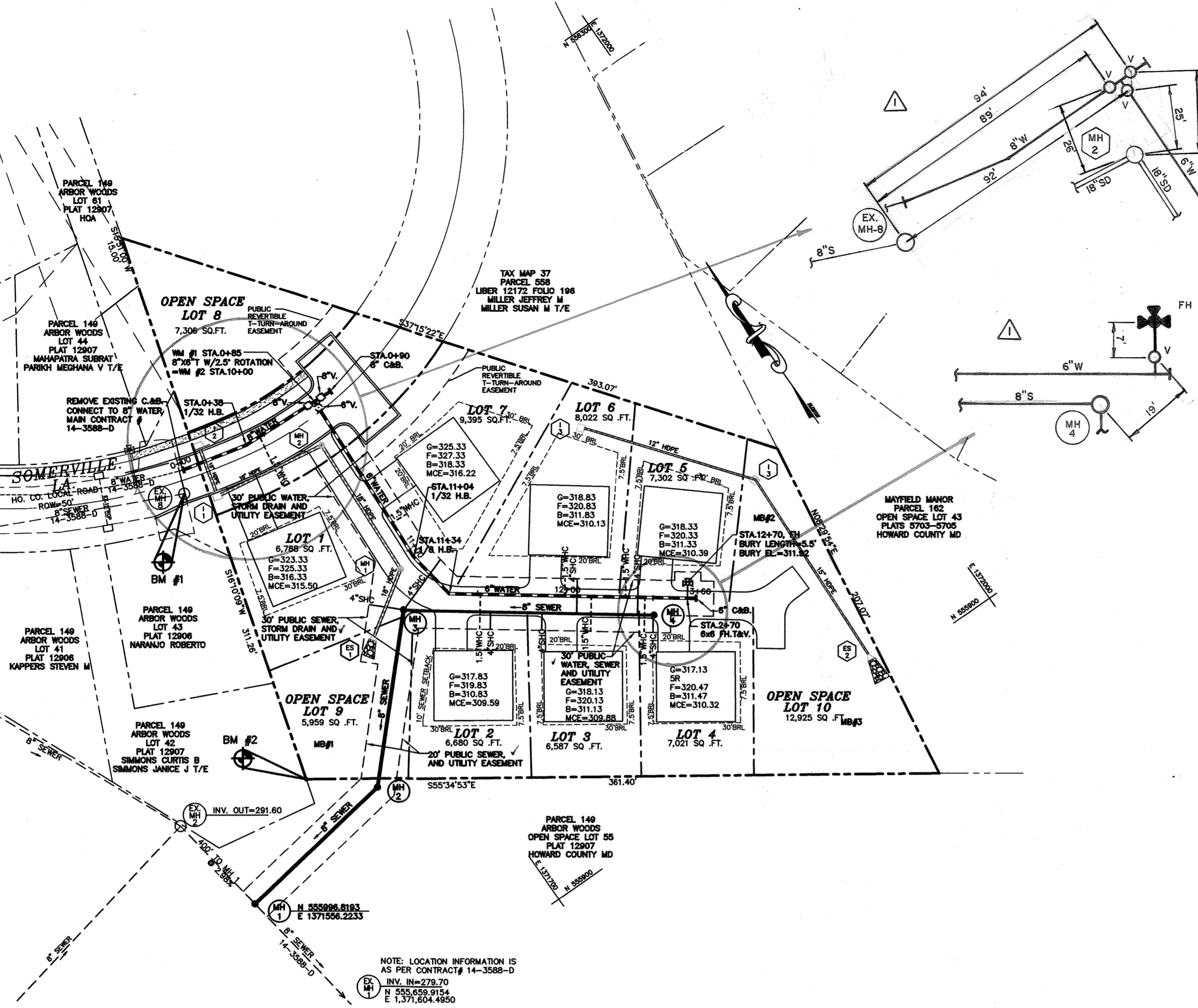
engineering	MMM				
illustration	MMM				
approval	RJH				
project	16-015	WRA	△	ADDED QUANTITIES	9-11-20
date	AUG. 2018	BY	NO.	REVISION	DATE

**TITLE SHEET**

600' SCALE MAP NO. 37 BLOCK NO. 14

**SOMERVILLE ESTATES**  
LOTS 1-7 AND OPEN SPACE LOTS 8-10  
CONTRACT NO.: 14-5028-D  
FIRST ELECTION DISTRICT  
HOWARD COUNTY

scale AS SHOWN  
1 of 2

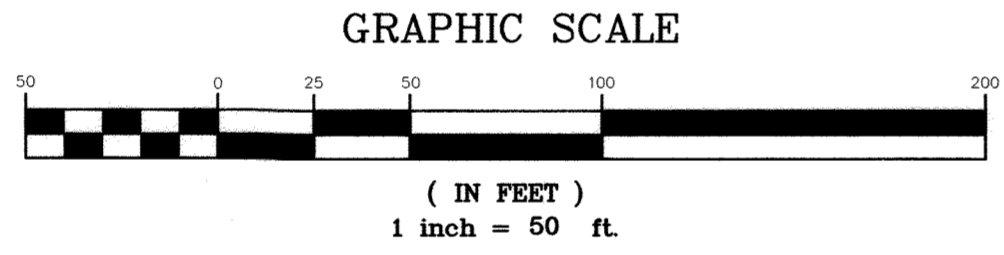


**SEWER PROFILE**  
SCALE: HOR. 1"=50'  
VER. 1"=5'

SEWER HOUSE CONNECTION TABLE					
LOT #	% SLOPE	INV. @ 8" S	INV. @ R.O.W.	MCE	BASEMENT EL.
1	5%	308.35	308.75	315.50	316.33
2	2%	305.65	305.85	309.59	310.83
3	2%	305.78	305.98	309.88	311.13
4	2%	306.42	306.62	310.32	311.47
5	2%	306.19	306.59	310.39	311.33
6	2%	305.93	306.33	310.13	311.83
7	5%	308.77	309.47	316.22	318.33

WATER HOUSE CONNECTION AS-BUILT LOCATION TABLE					
LOT	FROM	TO	FEET	TO	FEET
1	WHC	EX. MH-8	56.0	I-2	51.0
2	WHC	MH-3	46.5	MH-4	101.0
3	WHC	MH-3	108.0	MH-4	39.0
4	WHC	MH-3	139.0	MH-4	15.0
5	WHC	MH-3	128.0	MH-4	24.0
6	WHC	MH-3	93.0	MH-4	55.0
7	WHC	MH-3	34.0	MH-4	149.5

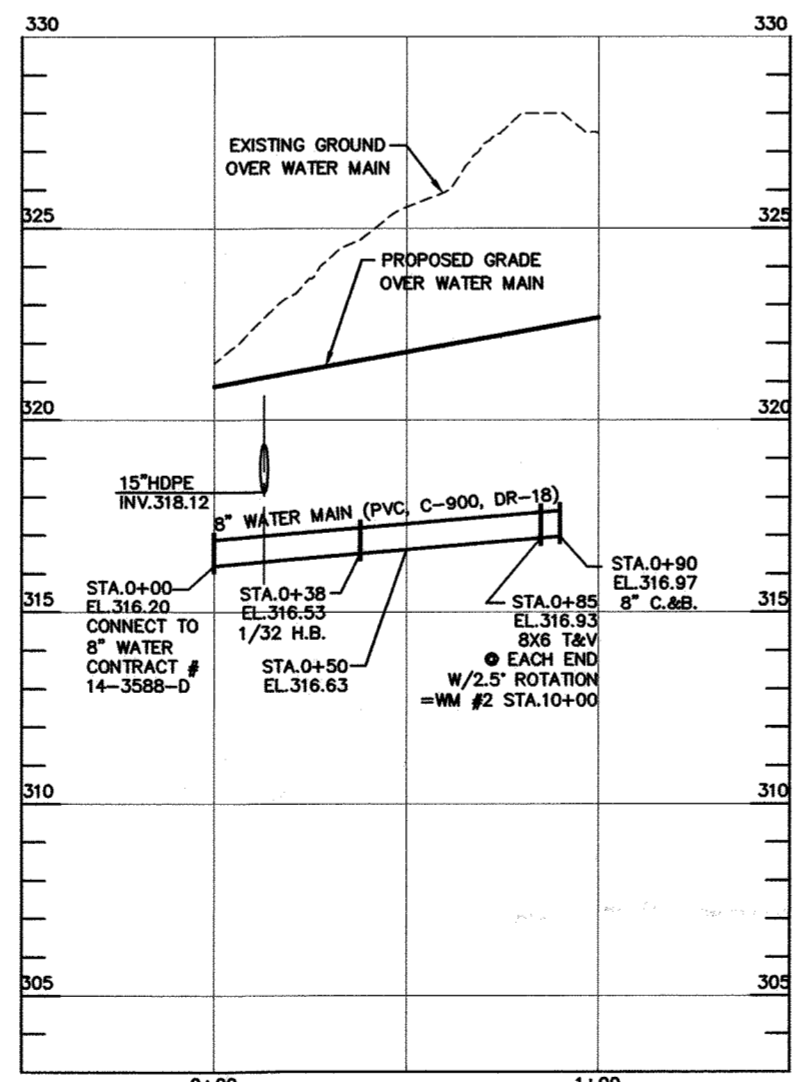
SEWER HOUSE CONNECTION AS-BUILT LOCATION TABLE					
LOT	FROM	TO	FEET	TO	FEET
1	SHC	MH-3	28.0	MH-4	166.0
2	SHC	MH-3	53.0	MH-4	95.5
3	SHC	MH-3	82.0	MH-4	65.0
4	SHC	MH-3	144.0	MH-4	15.0
5	SHC	MH-3	136.0	MH-4	21.5
6	SHC	MH-3	101.0	MH-4	48.0
7	SHC	MH-3	23.5	MH-4	127.0



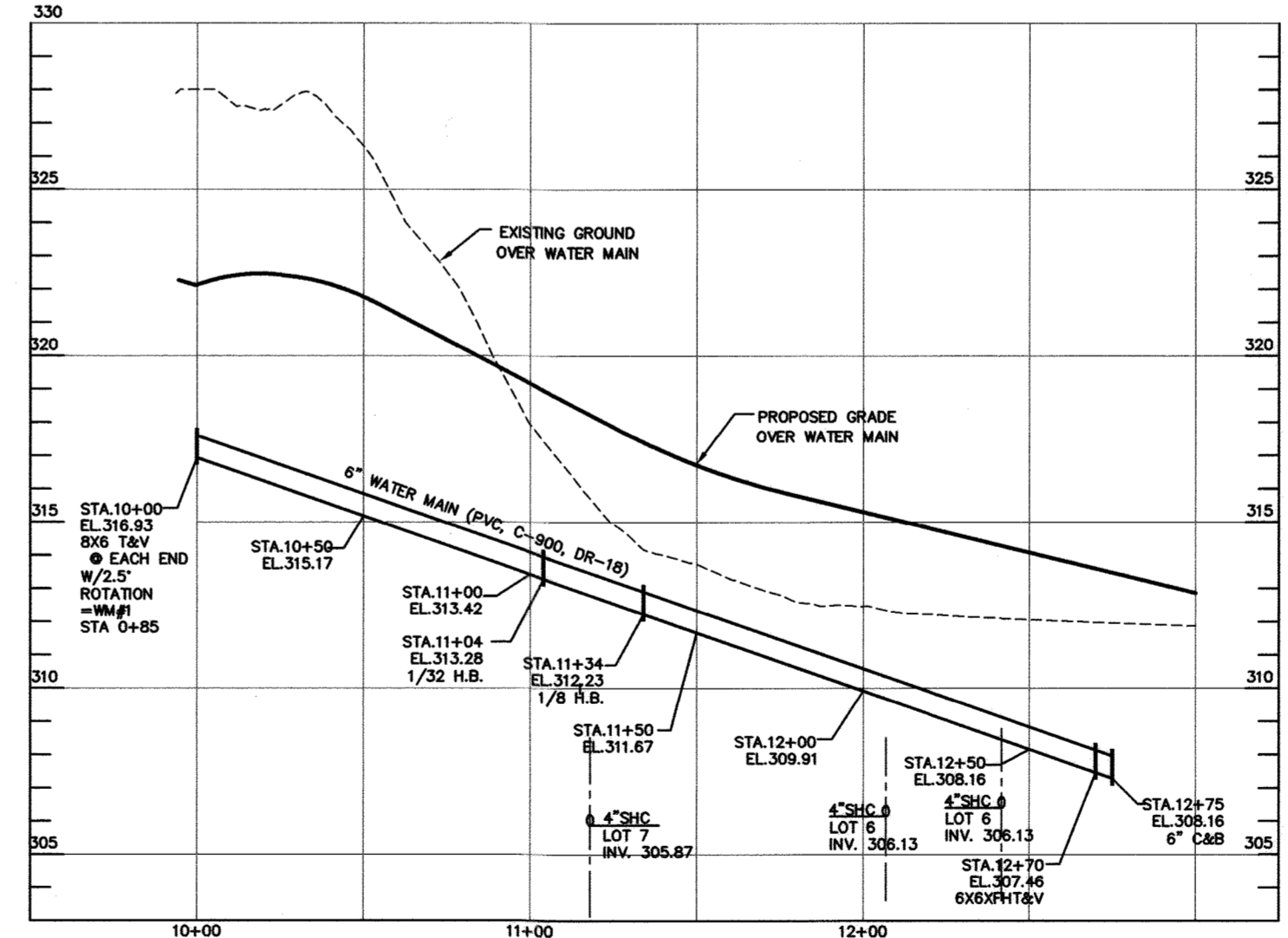
BM #1: N 556,212.1360 E 1,371,657.3730  
EL. 320.15  
BM #2: N 556,038.5333 E 1,371,620.9621  
EL. 302.92

MANHOLE LOCATION CHART		
MH #	LOCATION (NORTHING & EASTING)	
MH 1	N 555996.8193	E 1371556.2233
MH 2	N 556011.4787	E 1371651.7290
MH 3	N 556086.0783	E 1371721.9821
MH 4	N 556001.8289	E 1371837.5274

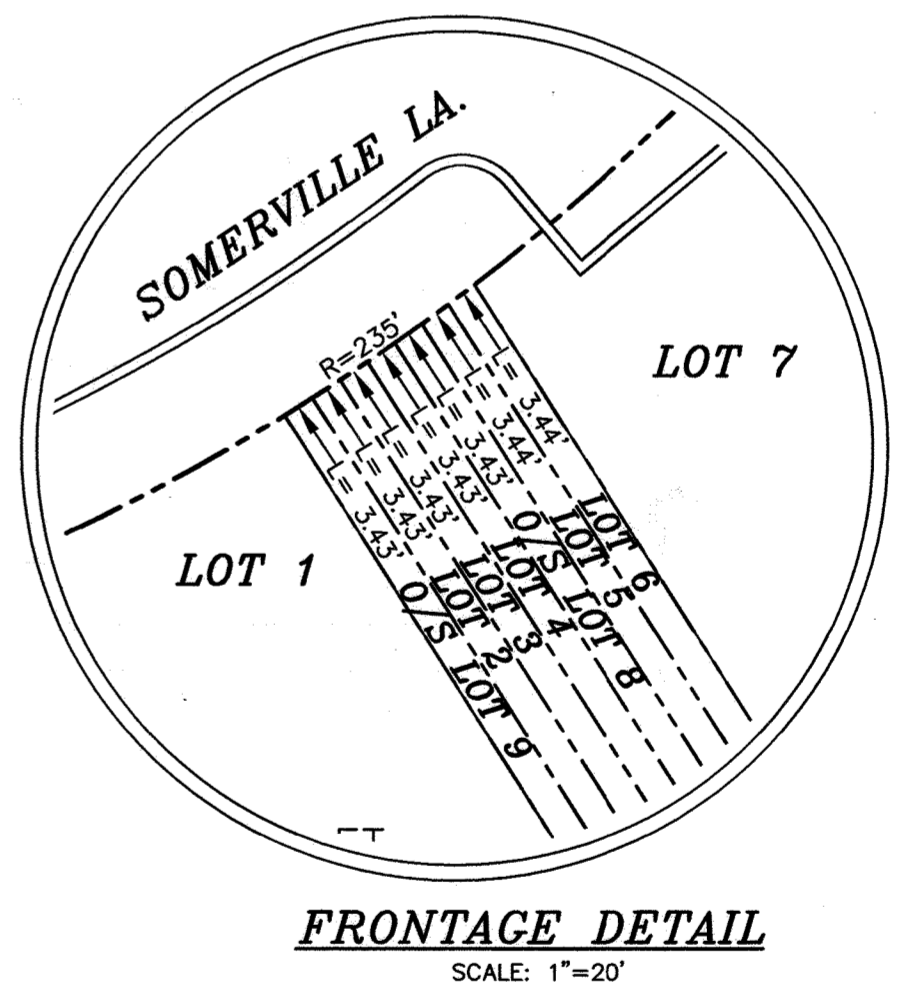
8" WATER MAIN TABULATION CHART		
APPURTENANCE	LOCATION (NORTHING & EASTING)	
1/32 H.B.	N 556214.5903	E 1371702.1989
8"X8" T	N 556212.6805	E 1371748.4369
8" CAP AND BUTTRESS	N 556212.6805	E 1371748.4369
1/32 H.B.	N 556108.4226	E 1371744.1306
1/8 H.B.	N 556079.3673	E 1371749.4318
8"X8" FH TS & V	N 556072.4153	E 1371757.6929
FH	N 556079.2143	E 1371762.6421
8" CAP AND BUTTRESS	N 556013.0430	E 1371839.1182



**WATER MAIN #1 PROFILE**  
SCALE: HOR. 1"=50'  
VER. 1"=5'



**WATER MAIN #2 PROFILE**  
SCALE: HOR. 1"=50'  
VER. 1"=5'



**FRONTAGE DETAIL**  
SCALE: 1"=20'

**OWNER**  
HARMONY BUILDERS INC  
4228 COLUMBIA ROAD  
ELLCOTT CITY, MD 21042  
410-461-6042

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. 17942, EXP. DATE 09/03/20

**MILDENBERG, BOENDER & ASSOC., INC.**  
Engineers Planners Surveyors  
7850-B Grace Drive, Columbia, Maryland 21044  
(410) 997-0286 Tel. (410) 997-0288 Fax.

R. JACOB HIKMAT P.E.  
DATE: 8/14/19

engineering	MMM				
illustration	MMM				
approval	RJH				
project	16-015	WRA	▲	ADDED ENLARGED PLAN AND AS-BUILT TABLE DATA	9-11-20
date	AUG. 2018	BY	NO.	REVISION	DATE

**WATER AND SEWER  
PLAN AND PROFILES**

**SOMERVILLE ESTATES**  
LOTS 1-7 AND OPEN SPACE LOTS 8-10  
CONTRACT NO.: 14-5028-D  
FIRST ELECTION DISTRICT  
HOWARD COUNTY

P: 200416-015 DWG: W-5