

QUANTITY TABLE

ITEMS	QUANTITIES		TYPE	MANUFACTURER/SUPPLIER
	ESTIMATED	QUANTITIES		
STANDARD MH (HO. CO. STD.G-5.12)	5	5	---	CONTRACTOR'S PRECAST
8" SEWER MAIN (PVC)	656 LF	628	SDR-35	NATIONAL PIPE
4" SHC	120 LF	149	SDR-35	NATIONAL PIPE
# 4" SHC	8 EACH	8	---	PRISM PRECAST
6" WATER MAIN (PVC C-900, DR-18)	600 LF	570	C-900	NATIONAL PIPE
1 1/2" WATER HOUSE CONNECTION	100 LF	209	TYPE K	CAMBRIDGE LEE
# 1 1/2" WHC	8 EACH	8	C800	FORD METER BOX
6" T. S. & V	1 EACH	---	---	---
1/8 H.B. (6")	3 EACH	5	C153	TYLER UNION
1/16 H.B. (6")	3 EACH	3	C153	TYLER UNION
1/32 H.B. (6")	2 EACH	2	C153	TYLER UNION
6"x6" F.H.T. & V.	1 EACH	1	C515	AMERICAN FLOW CONTROL
FIRE HYDRANT	1 EACH	1	C502	AMERICAN DARLING
6" CAP & BUTTRESS	1 EACH	1	C153	TYLER UNION
NAME OF UTILITY CONTRACTOR: UTILITIES UNLIMITED				
SURVEY AND DRAFTING DIVISION AS-BUILT DATE 7/30/19				

SHEET INDEX

NO.	DESCRIPTION
1	TITLE SHEET
2	PRELIMINARY WATER & SEWER PLAN & PROFILES

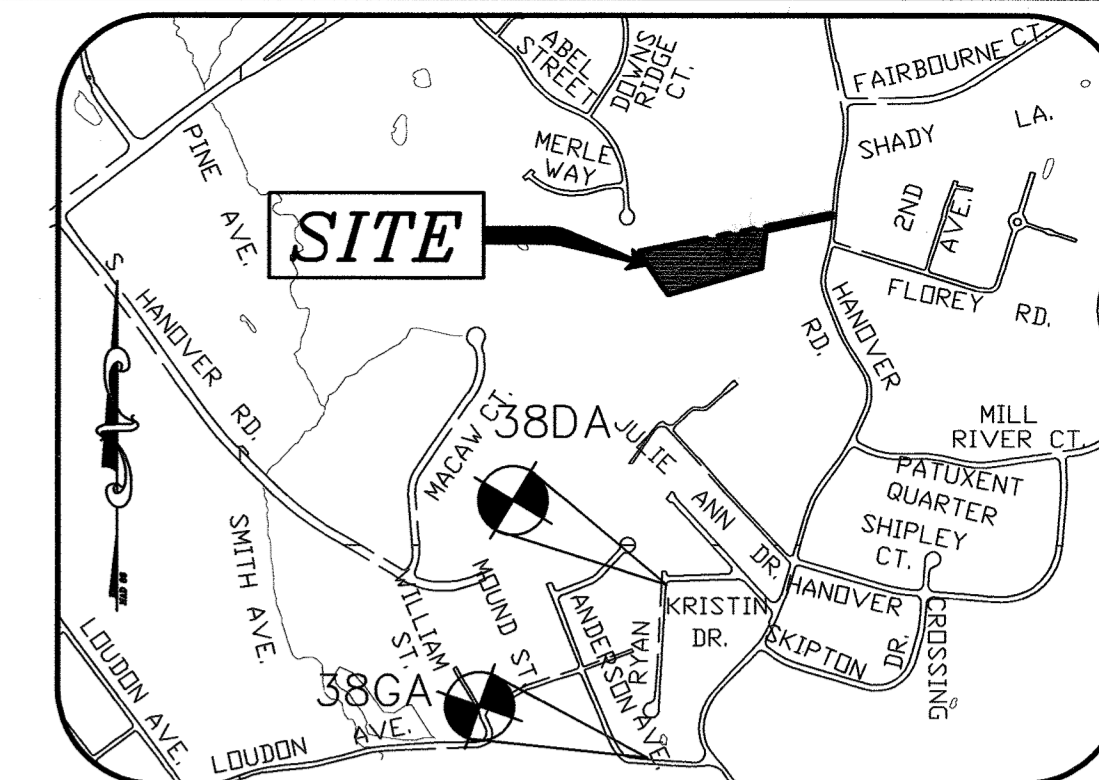
NOTE:
NO WATER METERS WILL BE ALLOWED TO BE INSTALLED PRIOR TO PROVIDING DOCUMENTATION FROM THE HEALTH DEPARTMENT THAT THE SEPTIC SYSTEM AT 6200 HANOVER ROAD WAS PROPERLY ABANDONED.

EROSION AND SEDIMENT CONTROL FOR THIS CONTRACT IS PROVIDED UNDER: F-17-107

PLAN REFERENCE NUMBERS:
ECP-16-063, SP-17-004
F-17-107

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

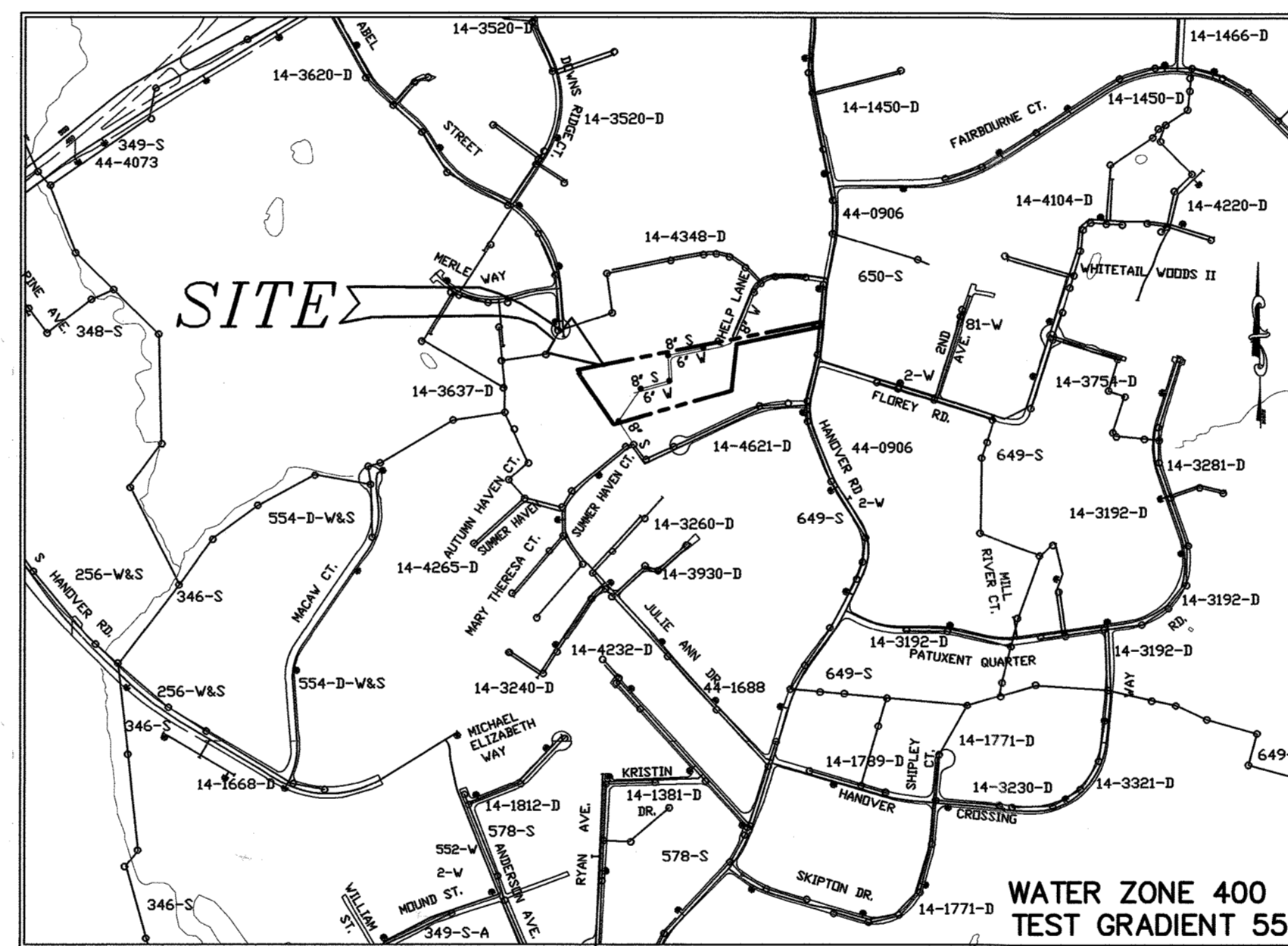
CONTRACT NO.: 14-5001-D
ELKDALE GLENN PROPERTY
LOTS 1-8 AND OPEN SPACE LOTS 9 & 10
FINAL WATER AND SEWER
CONSTRUCTION PLANS
HOWARD COUNTY, MARYLAND
DEPARTMENT OF PUBLIC WORKS



VICINITY MAP
SCALE: 1"=1000'
ADC MAP: 35 GRID: E-4

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. 37-BA AND NO. 37BB. 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 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 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.



LOCATION MAP
SCALE: 1" = 600'

TYPE OF BUILDING	RESIDENTIAL
No. OF UNITS	8
No. OF WATER HOUSE CONNECTION	8
No. OF SEWER HOUSE CONNECTIONS	8
DRAINAGE AREA	PATAPSCO
TREATMENT PLANT	PATAPSCO

AS-BUILT
Date 7/14/19

ADDITIONAL NOTES:

- A DESIGN MANUAL WAIVER REQUEST FOR WAIVER OF BASEMENT GRAVITY SEWER SERVICE TO LOTS 4 THRU 8 WAS SUBMITTED TO THE DEPARTMENT OF PUBLIC WORKS. THE WAIVER WAS APPROVED ON AUGUST 14, 2017.
GRAVITY SERVICE TO LOTS 4 AND 8 CAN BE ACHIEVED.

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 HARNESSSES. 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 (1/4-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 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 18" WALLS ARE FOR BRICK MANHOLES ONLY.
- MANHOLES DESIGNATED W.T. IN PLAN AND PROFILE SHALL HAVE WATERTIGHT FRAME AND COVER, STANDARD DETAIL G5.52. 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 THE CELLAR CANNOT BE SERVED.

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

John R. Robertson 2/22/18
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 09/03/18

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

R. JACOB HIKMAT P.E. DATE: JAN. 2018

DATE	BY	NO.	REVISION	DATE
JAN. 2018				

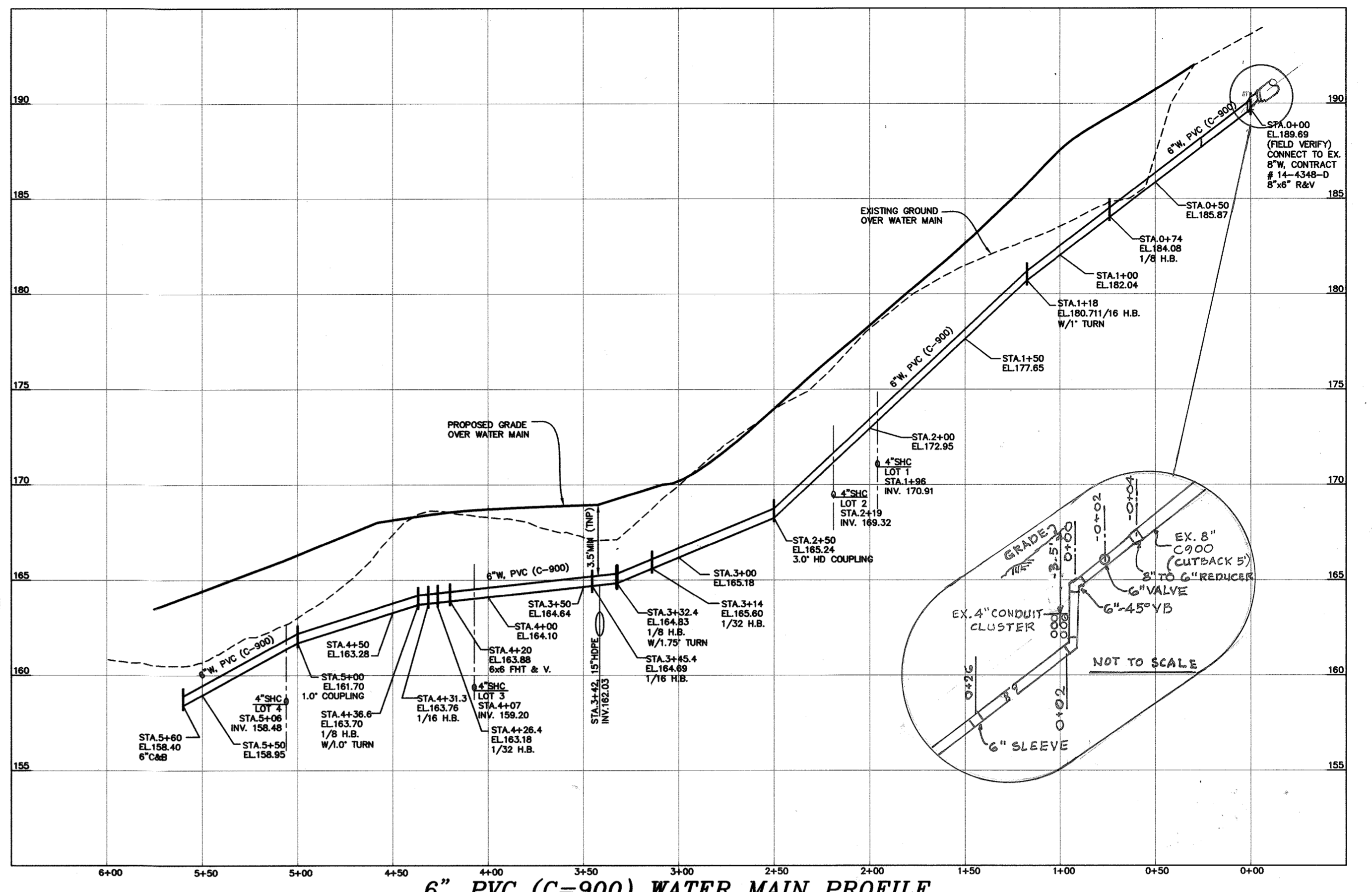
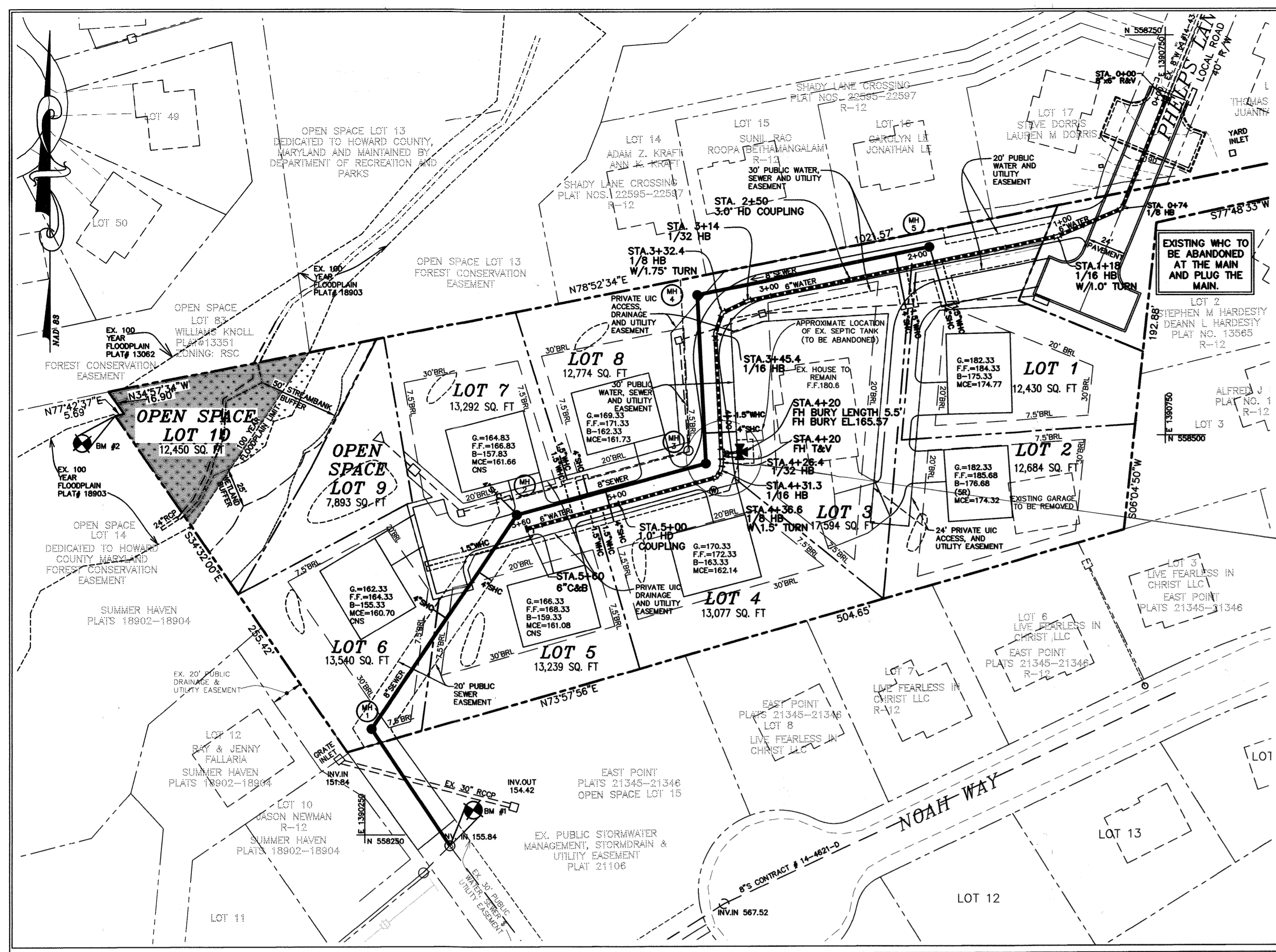
engineering	MMM
illustration	MMM
approval	RJH
project	15-011
date	JAN. 2018

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND
Chris Slag 2-2-18
CHIEF, BUREAU OF UTILITIES DATE

DEPARTMENT OF PLANNING & ZONING
HOWARD COUNTY, MARYLAND
Chad Edmund 2-2-18
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

ELKDALE GLENN PROPERTY
LOTS 1-8 AND OPEN SPACE LOTS 9 & 10
CONTRACT NO.: 14-5001-D
FIRST ELECTION DISTRICT
HOWARD COUNTY

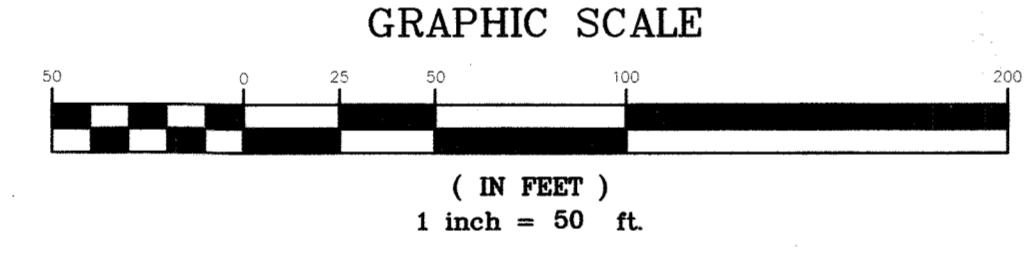
scale AS SHOWN
1 OF 2



6" PVC (C=900) WATER MAIN PROFILE

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

BM #1: N 558243.1590 E 1390303.1554
EL 164.45
BM #2: N 558512.1310 E 1390094.3119
EL 147.93



WATER HOUSE CONNECTION AS-BUILT LOCATION TABLE

LOT	ADDRESS	LOCATION DIMENSION 1	LOCATION DIMENSION 2
1	6151 Phelps Lane	MH-5: 39.0'	I-4: 54.0'
2	6155 Phelps Lane	MH-5: 37.5'	I-4: 81.0'
3	6159 Phelps Lane	MH-3: 22.5'	MH-4: 79.0'
4	6163 Phelps Lane	MH-2: 57.0'	MH-3: 73.5'
5	6167 Phelps Lane	MH-2: 49.5'	MH-3: 82.5'
6	6171 Phelps Lane	MH-2: 65.5'	I-1: 39.5'
7	6168 Phelps Lane	MH-2: 37.0'	MH-3: 91.0'
8	6164 Phelps Lane	MH-2: 45.0'	MH-3: 84.0'

SEWER HOUSE CONNECTION AS-BUILT LOCATION TABLE

LOT	ADDRESS	LOCATION DIMENSION 1	LOCATION DIMENSION 2
1	6151 Phelps Lane	MH-5: 44.0'	I-4: 61.0'
2	6155 Phelps Lane	MH-5: 39.0'	I-4: 86.5'
3	6159 Phelps Lane	MH-3: 27.0'	FH Sta. 4+20: 12.5'
4	6163 Phelps Lane	MH-2: 63.0'	MH-3: 67.0'
5	6167 Phelps Lane	MH-2: 44.0'	I-1: 47.0'
6	6171 Phelps Lane	MH-1: 85.0'	MH-2: 78.5'
7	6168 Phelps Lane	MH-2: 17.0'	I-1: 26.0'
8	6164 Phelps Lane	MH-2: 49.5'	MH-3: 79.0'

MANHOLE LOCATION CHART

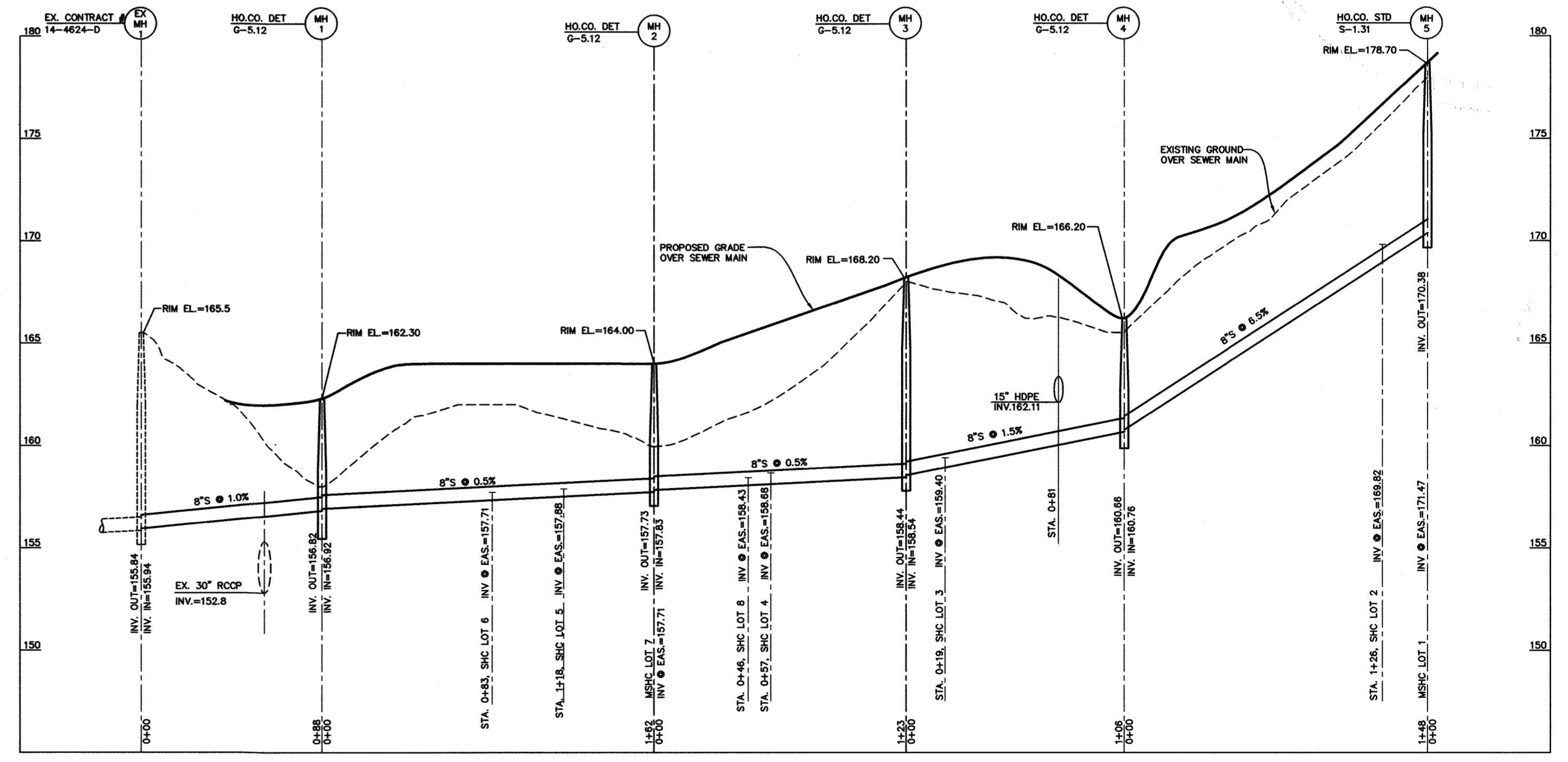
MH #	LOCATION (NORTHING & EASTING)	RIM ELEVATION
MH-1	N 558,316.21 E 1,390,254.22	162.30
MH-2	N 558,450.39 E 1,390,344.92	164.00
MH-3	N 558,482.45 E 1,390,463.13	168.20
MH-4	N 558,587.87 E 1,390,457.78	166.20
MH-5	N 558,618.01 E 1,390,602.68	178.70

8" WATER MAIN TABULATION CHART

APPURTENANCE	LOCATION (NORTHING & EASTING)
1/8 H.B.	N 558,641.55 E 1,390,722.86
1/16 H.B.	N 558,624.38 E 1,390,682.40
6" 3" HD COUPLING	N 558,597.44 E 1,390,552.96
1/32 H.B.	N 558,584.25 E 1,390,489.46
1/8 H.B.	N 558,576.66 E 1,390,473.49
1/16 H.B.	N 558,564.06 E 1,390,469.00
6"x6" FH T & V	N 558,489.21 E 1,390,472.95
FH	N 558,489.78 E 1,390,484.25
1/32 H.B.	N 558,482.95 E 1,390,473.12
1/16 H.B.	N 558,478.23 E 1,390,472.57
1/8 H.B.	N 558,473.88 E 1,390,469.89
6" 1" HD COUPLING	N 558,457.30 E 1,390,408.70
6" CAP AND BUTTRISS	N 558,692.43 E 1,390,374.86

SEWER HOUSE CONNECTION TABLE

LOT #	% SLOPE	INV. @ 8'S	INV. @ R.O.W.	MCE	BASEMENT EL.
1	1.0%	170.71	171.47	174.77	175.33
2	2.0%	169.12	169.82	174.32	176.68
3	1.0%	159.00	159.40	163.90	171.16
4	1.0%	158.28	158.68	162.14	163.33
5	1.0%	157.68	157.88	161.08	159.33
6	1.0%	157.51	157.71	160.70	155.33
7	1.0%	158.16	158.36	161.66	157.83
8	1.0%	158.23	158.43	161.37	162.33



8" SEWER MAIN PROFILE

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

AS-BUILT

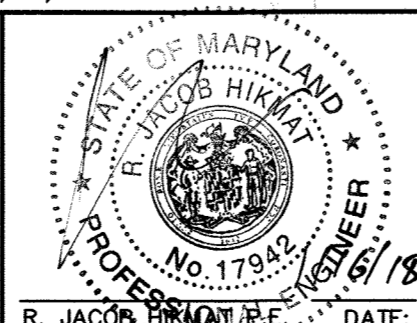
8/14/19

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

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND
2-2-18

DEPARTMENT OF PLANNING & ZONING
HOWARD COUNTY, MARYLAND
2-27-18

MILDENBERG, BOENDER & ASSOC., INC.
Engineers Planners Surveyors
7850-B Grace Drive, Columbia, Maryland 21044
(410) 997-0296 Tel. (410) 997-0298 Fax



engineering
illustration
approval
project
date
JAN. 2018

FINAL WATER & SEWER PLAN AND PROFILES

ELKDALE GLENN PROPERTY
LOTS 1-8 AND OPEN SPACE LOTS 9 & 10
CONTRACT NO.: 14-5001-D
FIRST ELECTION DISTRICT
HOWARD COUNTY