

EUCLID CORNERS - PARCEL 'A'

LOTS 1276-1278, & OPEN SPACE LOT 1279


WATER AND SEWER MAIN EXTENSION

PART OF PARCEL 873, 1st ELECTION DISTRICT

HOWARD COUNTY, MARYLAND

GENERAL NOTES

PART 1 - GENERAL

- APPROXIMATE LOCATION OF EXISTING MAINS ARE SHOWN. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PROTECT EXISTING MAINS AND SERVICES AND MAINTAIN UNINTERRUPTED SUPPLY. ANY DAMAGE INCURRED SHALL BE REPAIRED IMMEDIATELY TO THE SATISFACTION OF THE ENGINEER AT THE CONTRACTOR'S EXPENSE.
- ALL HORIZONTAL CONTROLS ARE BASED ON MARYLAND STATE COORDINATES.
- ALL VERTICAL CONTROLS ARE BASED ON U.S.G.S. DATA.
- ALL PIPE ELEVATIONS SHOWN ARE INVERT ELEVATIONS.
- CLEAR ALL UTILITIES BY A MINIMUM OF 12". CLEAR ALL POLES BY 2'-0" MINIMUM OR TUNNEL AS REQUIRED. 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 BRACING OF ADDITIONAL POLES OR DAMAGES SHALL BE DEDUCTED FROM MONEY 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 DRAWINGS, AND FOR MATERIALS AND CONSTRUCTION METHODS USE HOWARD COUNTY DESIGN MANUAL VOLUME IV, STANDARD SPECIFICATIONS AND DETAIL 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 PIT. A NOTE OR NOTES CONTAINING THE RESULTS OF THE TEST OR PITS IS INCLUDED ON THE DRAWINGS. EXISTING UTILITIES IN THE VICINITY OF THE PROPOSED WORK FOR WHICH TEST PITS HAVE NOT BEEN MADE SHALL BE LOCATED BY THE CONTRACTOR TWO WEEKS IN ADVANCE OF CONSTRUCTION OPERATIONS AT HIS OWN EXPENSE.
- CONTRACTOR SHALL NOTIFY THE FOLLOWING UTILITY COMPANIES OR AGENCIES AT LEAST FIVE WORKING DAYS BEFORE STARTING WORK SHOWN ON THESE PLANS:
 - STATE HIGHWAY ADMINISTRATION.....531-5533
 - BALTIMORE GAS & ELECTRIC CO.....850-4620
 - BALTIMORE GAS & ELECTRIC CO.....850-4620
 - UNDERGROUND DAMAGE CONTROL.....787-9068
 - MISSES UTILITY.....1-800-257-7777
 - COLONIAL PIPELINE CO.....795-1390
 - HOWARD CO. DEPT. OF PUBLIC WORKS.....313-4900
 - BUREAU OF UTILITIES.....313-4900
- TREES AND SHRUBS ARE TO BE PROTECTED FROM DAMAGE TO MAXIMUM EXTENT. TREES AND SHRUBS LOCATED WITHIN THE CONSTRUCTION STRIP ARE NOT TO BE REMOVED OR DAMAGED BY THE CONTRACTOR.
- 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.
- PLACE REGULATION "MEN WORKING" AND WARNING SIGNS AS REQUIRED TO COMPLY WITH MARYLAND STATE HIGHWAY ADMINISTRATION MANUAL OF TRAFFIC CONTROL FOR HIGHWAY MAINTENANCE OPERATIONS.
- THE CONTRACTOR SHALL NOTIFY THE BUREAU OF HIGHWAYS, HOWARD COUNTY, AT (410) 513-2450, AT LEAST FIVE WORKING DAYS BEFORE ANY OPEN CUT OF ANY COUNTY ROAD OR BORING/JACKING OPERATION IN COUNTY ROADS FOR LAYING WATER/SEWER MAINS OR HOUSE CONNECTIONS. THE APPROXIMATE LOCATIONS OF THESE DRAWINGS WILL CONSTITUTE COMPLIANCE WITH THE REQUIREMENTS PER SECTION 18.114(g) OF THE HOWARD COUNTY CODE.

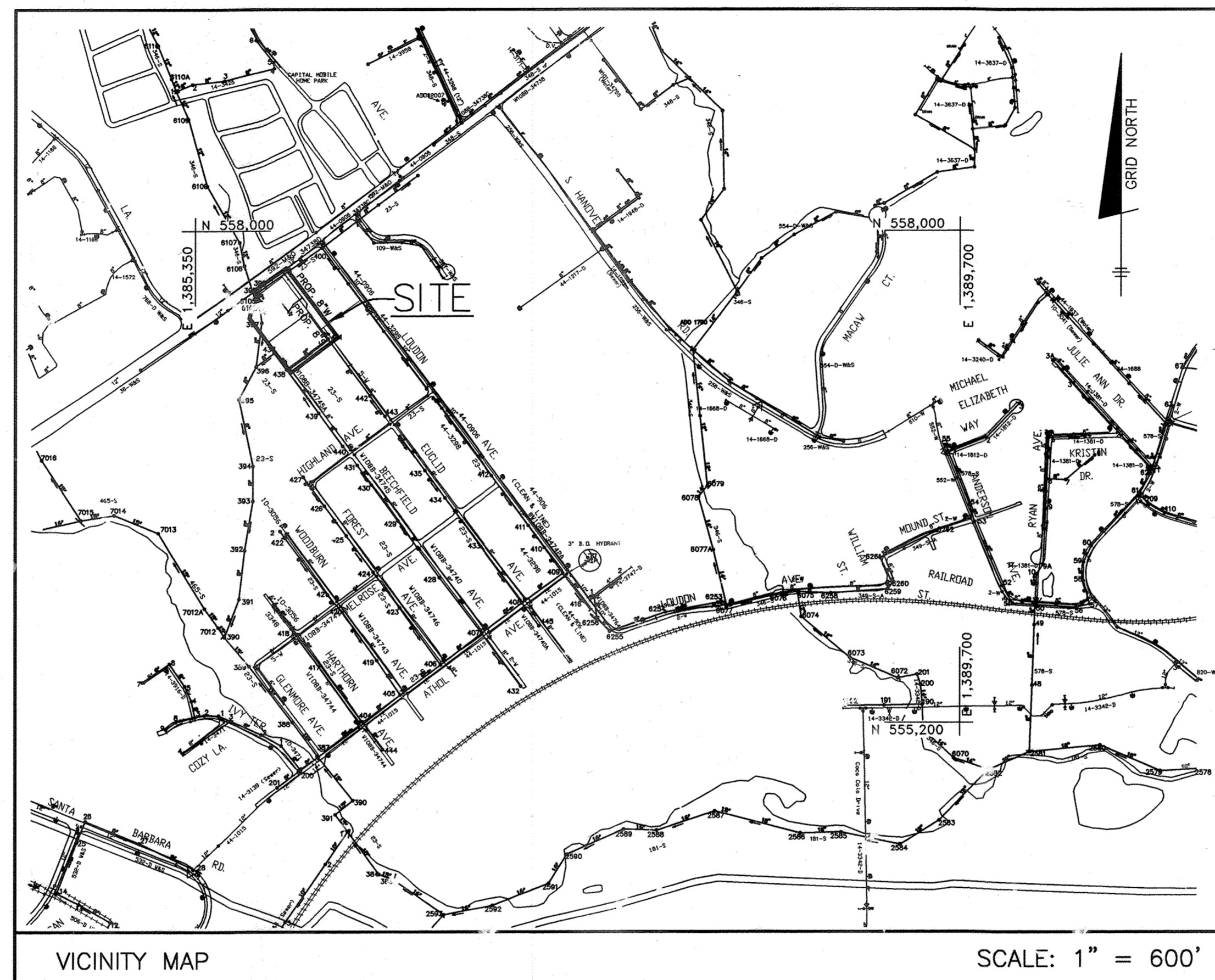
PART 2 - WATER

- TOPS OF ALL WATER MAINS TO HAVE A MINIMUM OF 3'-1/2" 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 THE STANDARD DETAILS UNLESS OTHERWISE PROVIDED FOR ON THE DRAWING.
- FIRE HYDRANTS SHALL BE SET TO THE BURY LINE ELEVATIONS SHOWN ON THE DRAWINGS. ALL FIRE HYDRANTS SHALL BE RESTRAINED AND BUTTRESSED WITH CONCRETE IN ACCORDANCE WITH STANDARD DETAILS. SOIL AROUND THE FIRE HYDRANT SHALL BE COMPACTED IN ACCORDANCE WITH SECTION 1000 AND 1005 OF THE STANDARD SPECIFICATIONS.
- THE CONTRACTOR SHALL NOT OPERATE ANY WATER MAIN VALVES ON THE EXISTING WATER SYSTEM.
- ALL WATER HOUSE CONNECTIONS SHALL BE FOR INSIDE METER SETTING UNLESS OTHERWISE NOTED ON PLANS OR IN SPECIFICATIONS.
- ALL WATER HOUSE CONNECTIONS SHALL BE COPPER MEETING THE REQUIREMENTS OF AND CONSTRUCTED IN ACCORDANCE WITH THE HOWARD COUNTY DESIGN MANUAL VOLUME IV - STANDARD SPECIFICATIONS AND DETAILS FOR CONSTRUCTION.
- ALL FIRE HYDRANT LEADS INCLUDING THE TEE SHALL BE DUCTILE IRON C.I.A.S. 5 - MEETING THE REQUIREMENTS OF AND CONSTRUCTED IN ACCORDANCE WITH THE HOWARD COUNTY DESIGN MANUAL VOLUME IV - STANDARD SPECIFICATIONS AND DETAILS FOR CONSTRUCTION.
- THE FOLLOWING NOTE IS ADDED TO HOWARD COUNTY STANDARD DETAIL W2.22, BUTTRESSES AND ANCHORAGE FOR VERTICAL BENS: "WHEN ANCHORING PVC PIPE, THE STRAPPING IN CONTACT WITH THE PIPE SURFACE SHALL BE 1/4-INCH THICK STEEL. THE REMAINING PORTION OF THE WRAP SHALL BE REINFORCING BAR SIZE N ACCORDANCE WITH THE PERTINENT CHART SHOWN ON THE DETAIL."
- EXCEPT AS INDICATED ON THE PLANS AND NOTED ABOVE, ALL PUBLIC WATER MAINS SHALL BE POLYVINYL CHLORIDE (PVC) PIPE MEETING THE REQUIREMENTS OF ANMA C900 DR18, PRESSURE CLASS 150 AND THE HOWARD COUNTY DESIGN MANUAL VOLUME IV - STANDARD SPECIFICATIONS AND DETAILS FOR CONSTRUCTION AND ALL SUBSEQUENT AMENDMENTS THERETO.
- SPRINKLER SYSTEMS FOR SINGLE FAMILY DWELLINGS SHALL HAVE A MINIMUM OF 1-1/2 INCH SERVICE CONNECTION WITH A 1" OUTSIDE METER SETTING.

PART 3 - SEWER

- ALL SEWER MAINS SHALL BE 8" P.V.C. UNLESS OTHERWISE NOTED.
- ALL MANHOLES SHALL BE 4' - 0" INSIDE DIAMETER UNLESS OTHERWISE NOTED.
- 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 COVERS, STANDARD DETAIL G5.52 WHERE WATER TIGHT MANHOLE FRAME AND COVER IS 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.

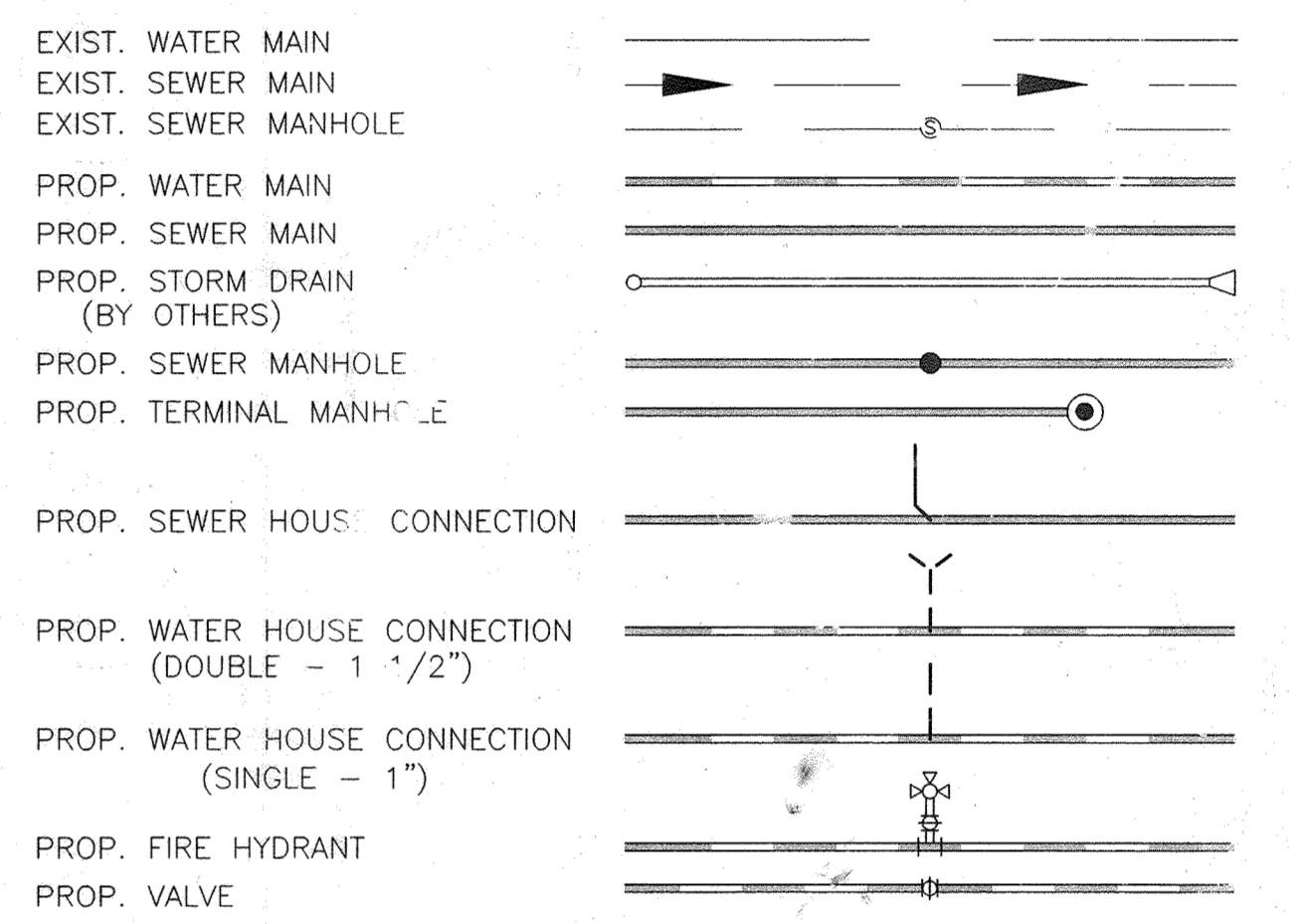
BENCH MARKS	
HO. CO. #3805 (NAD '83)	ELEV. 193.71
STAMPED DISC ON CONCRETE MONUMENT BEING 38.8 SOUTHEAST OF A FIRE HYDRANT, 5.6' NORTH OF THE EXISTING CONCRETE CURB ALONG NORTH SIDE OF WASHINGTON BLVD (RT.1)	
N 558,378.581	E 1,386,524.195
HO. CO. #3806 (NAD '83)	ELEV. 175.23
STAMPED DISC ON CONCRETE MONUMENT BEING 44' SOUTHWEST OF LIGHT POLE & 148' NORTH OF THE GATE AT ATLANTIC SUPPLY CO.	
N 557,155.459	E 1,384,992.262



(FOR COUNTY USE ONLY) WATER AND SEWER COUNTY CODE	TYPE OF BUILDING: _____ SINGLE FAMILY DETACHED COMMERCIAL
WATER CODE: _____ W-02	NUMBER OF LOTS: 3 RESIDENTIAL, 1 COMMERCIAL
SEWER CODE: _____ 2152209	NUMBER OF SHC'S: _____ 4*
TEST GRADIENT: _____ 550	NUMBER OF WHC'S: _____ 4
	DRAINAGE AREA: _____ PATAPSCO
	TREATMENT PLANT: _____ PATAPSCO
	WASTEWATER TREATMENT PLANT

*PARCEL "A" MUST ESTABLISH A SEWER HOUSE CONNECTION PRIOR TO FINAL BUILDING INSPECTION. SHC LOCATION MUST BE IDENTIFIED ON A SITE DEVELOPMENT PLAN. SEE SDP-22-056.

LEGEND



VALVE CLOSURE:
 VALVE AT US-1 AND EUCLID AVE. TO BE CLOSED DURING THE VERTICAL RE-ALIGNMENT OF THE MAIN.
 VALVE AT THE END OF THE PUBLIC PORTION OF EUCLID AVE. (IN THE TURNAROUND) TO BE CLOSED DURING THE VERTICAL RE-ALIGNMENT OF THE MAIN.
 VALVE NEAR THE TEE AT WATER LINE STATION 1470 TO BE CLOSED DURING THE VERTICAL RE-ALIGNMENT OF THE MAIN.
 VALVE NEAR THE TEE AT STATION 1470, THIS CONTRACT, IS TO BE CLOSED DURING THE FIRE HYDRANT AND MAIN HORIZONTAL RELOCATION.

ITEMS	QUANTITIES ESTIMATED	AS-BUILT		
		QUANTITIES	TYPE	MANUF./SUPPLIER
8" PVC C900 W	454 L.F.	441 L.F.	C900	NATIONAL
FIRE HYDRANT	1	1	A423	MUELLER
1.5" WHC	59 L.F.	59 L.F.	COPPER	
FH-RELOCATION	1 EACH	1		
8" PVC SEWER	162 L.F.	162 L.F.	SDR35	NATIONAL
MANHOLES	2 EACH	2 EACH	PRECAST	CONT. PRECAST
4" SHC	30 L.F.	30 L.F.	SDR35	NATIONAL
4" WHC	2 L.F.			


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

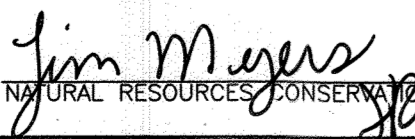
DURING THE VERTICAL RE-ALIGNMENT OF THE MAIN THE FOLLOWING ADDRESSES WILL HAVE A WATER SERVICE INTERRUPTION:
 6318 EUCLID AVE.;
 6319 EUCLID AVE.;
 6322 EUCLID AVE.;
 6326 EUCLID AVE.

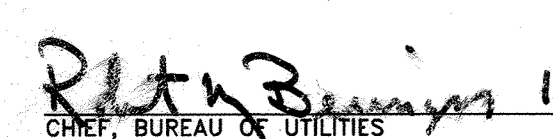
F-06-046 WITH CONTRACT NUMBER 14-4320-D ARE THE FILE NUMBERS FOR THE EXISTING DEVELOPER'S AGREEMENT FOR EUCLID CORNERS DEVELOPMENT.


SPECIAL NOTE:
 A KNOX BOX (FIRE DEPARTMENT ACCESS BOX) IS REQUIRED TO BE PLACED ON THE FRONT OF THE BUILDING. IT SHALL BE PLACED TO THE RIGHT OF THE MAIN ENTRANCE AT A RANGE OF 4'-5" IN HEIGHT AND NO MORE THAN 6' LATERALLY FOR THE DOOR. THE BOX SHALL BE ELECTRONICALLY SUPERVISED TO NOTIFY THE OWNER THAT IT IS BEING ACCESSSED (INTEGRATED WITH THE FIRE ALARM SYSTEM), NFPA-1.10.12.1.

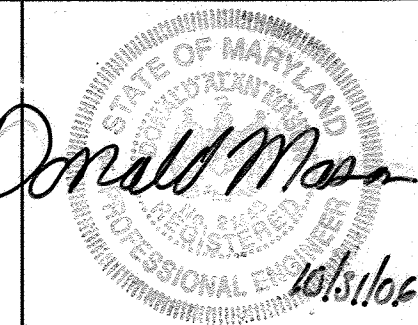
NOTE: EXISTING 8" V LOCATED AT THE INTERSECTION OF EUCLID AVENUE AND HIGHLAND AVENUE WILL NEED TO BE SHUT OFF AT THE TIME OF CONNECTION TO THE EXISTING WATERLINE.

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

 JOHN R. BLANTON
 HOWARD SOIL CONSERVATION DISTRICT
 DATE: 11/16/06

HOWARD SOIL CONSERVATION DISTRICT REVIEWED FOR HOWARD SOIL CONSERVATION DISTRICT AND MEETS TECHNICAL REQUIREMENTS.

 JIM MYERS
 NATURAL RESOURCES CONSERVATION SERVICE
 DATE: 11/16/06

DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND

 R. L. BENNETT
 CHIEF, BUREAU OF UTILITIES
 DATE: 11-9-06

DEPARTMENT OF PLANNING AND ZONING
 HOWARD COUNTY, MARYLAND

 [Name]
 CHIEF, DEVELOPMENT ENGINEERING DIVISION
 DATE: 11/21/06

BENCHMARK ENGINEERING, INC.
 ENGINEERS • LAND SURVEYORS • PLANNERS

 DONALD M. [Name]
 8480 BALTIMORE NATIONAL PIKE • SUITE 418 • JOYCE CITY, MARYLAND 21043
 PHONE: 410-465-6105 FAX: 410-465-6644

DES:	RPS		
DRN:	RPS	JC 4 ADJUST QUANTITIES + ADD NOTES	11-11-22
CHK:	DAW	JC 3 REMOVE SHC TO PARCEL 'A' UNTIL DEVELOPMENT	8-16-17
		JC 2 ADJUST WHC SIZE	7-8-17
DATE:	EDD	1 REVISE NAME FROM 'HARWOOD PARK' TO 'EUCLID CORNERS'	4-25-07
	BY	NC.	
		REVISIONS	DATE

TITLE SHEET
 600 SCALE MAP NO. 38
 BLOCK 13

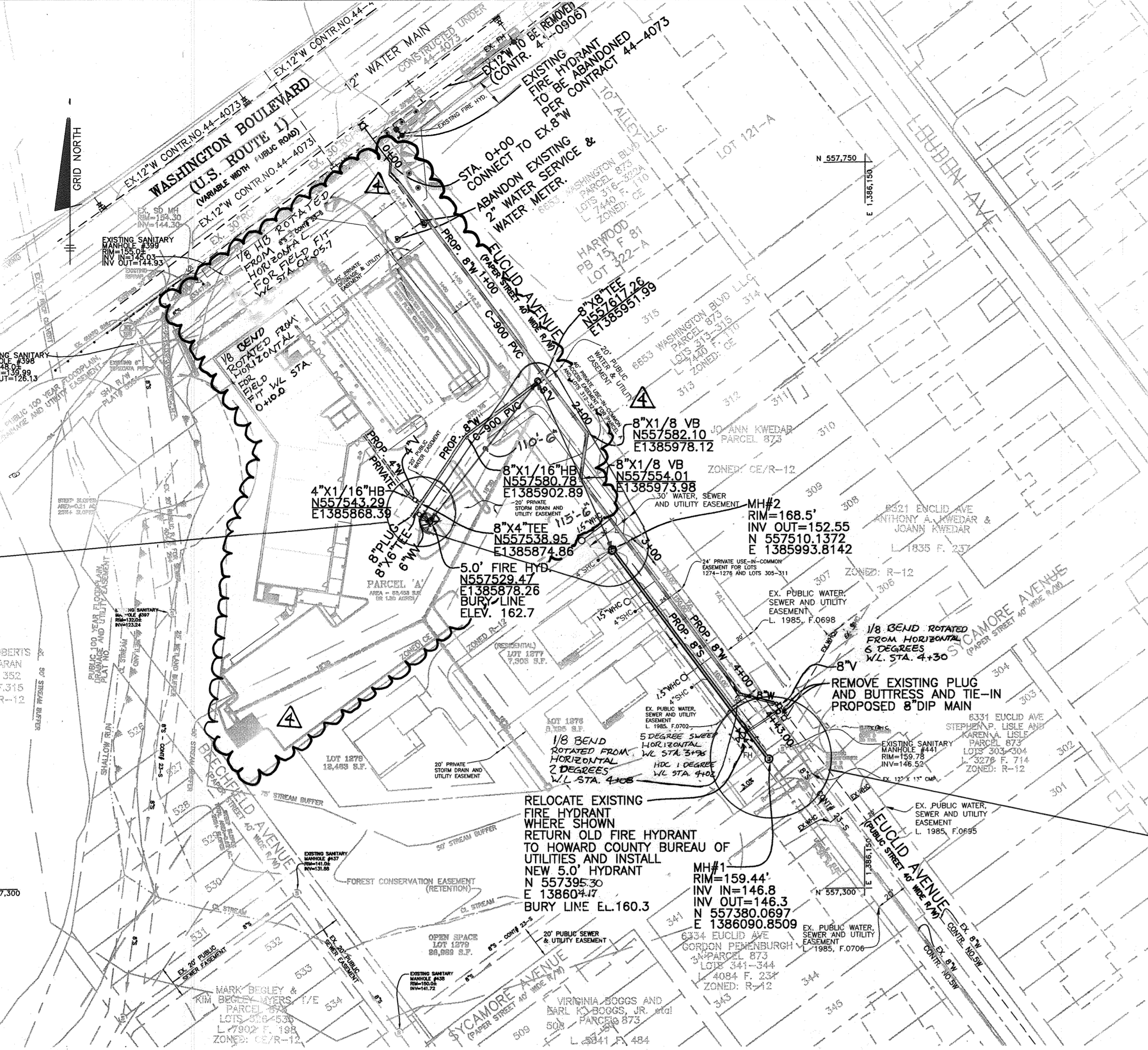
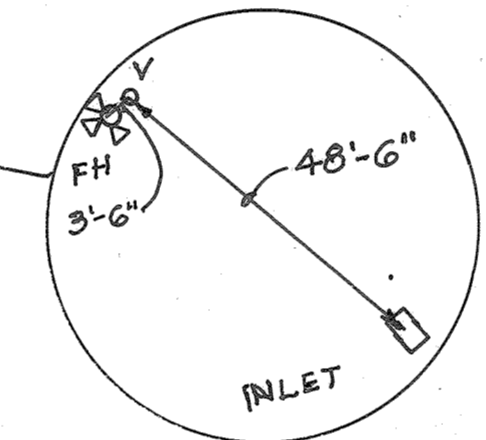
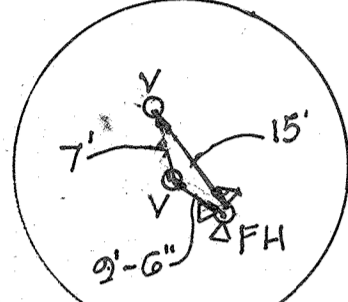
AS-BUILT

EUCLID CORNERS
 PARCEL 'A', LOTS 1276 - 1278 & OPEN SPACE LOT 1279
 1st ELECTION DISTRICT
 HOWARD COUNTY, MARYLAND
CONTRACT No. 14-4320-D

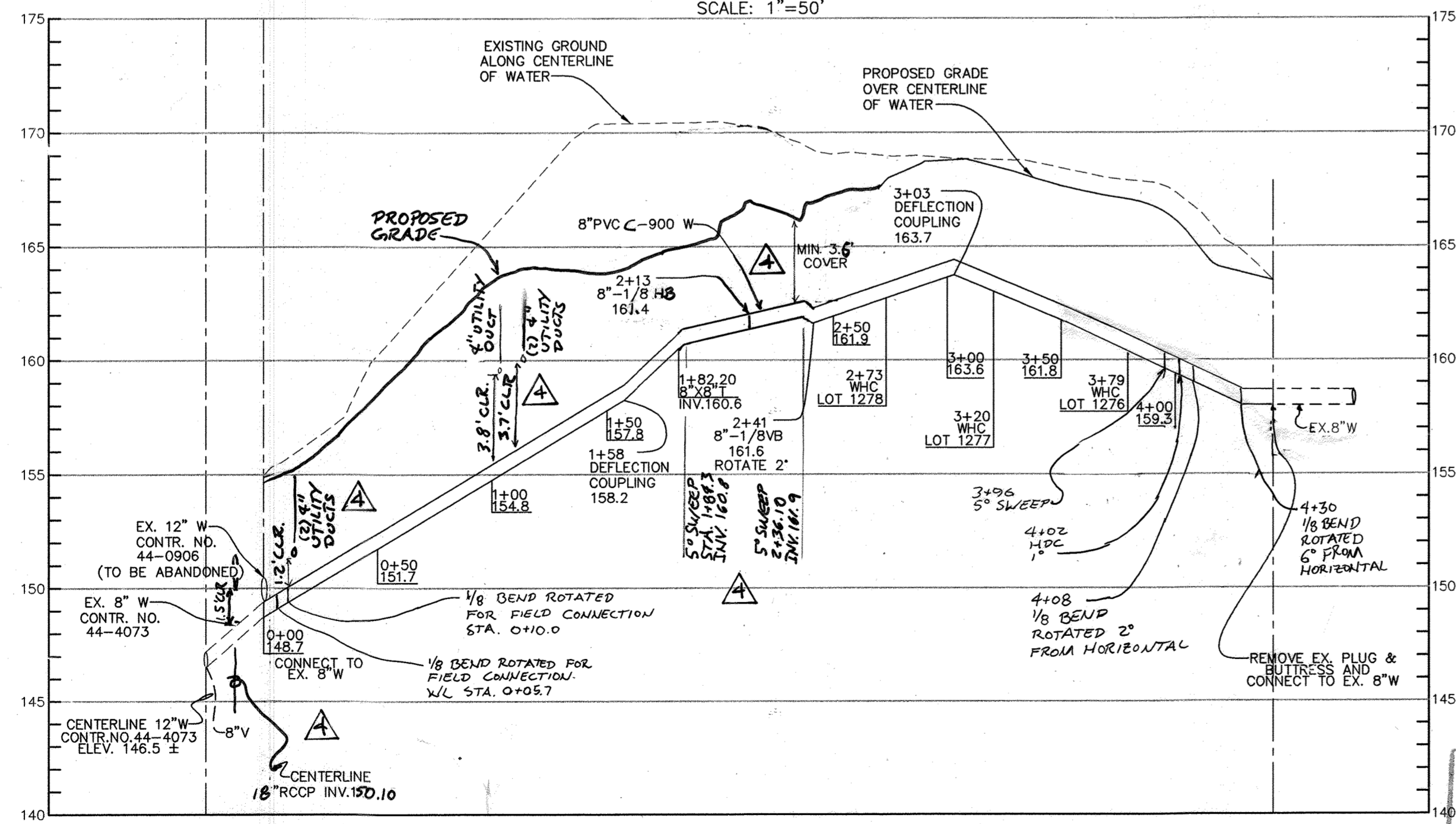
SCALE:	AS SHOW
SHEET NO.	1 OF 4

SHEET INDEX	
NO.	TITLE
1	TITLE SHEET
2	WATER AND SEWER PLAN AND PROFILES
3	WATER AND SEWER DETAILS
4	SHEET ADDITION WATER AND SEWER PLAN

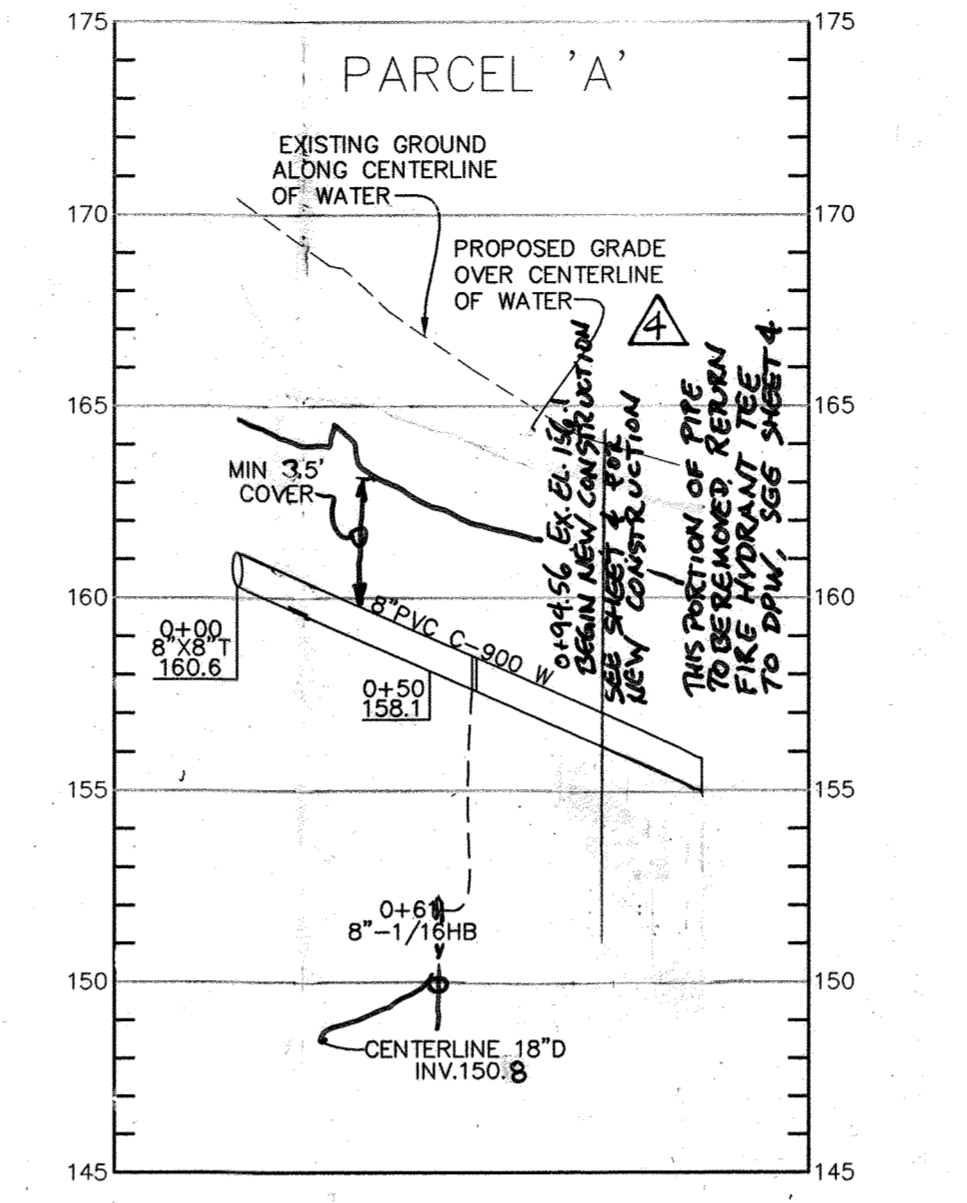
SEE SHEET 4 FOR NEW PARCEL 'A' LAYOUT PORTIONS OF THE EXISTING WATER MAIN AND EXISTING APPURTENANCES ARE TO BE REMOVED.



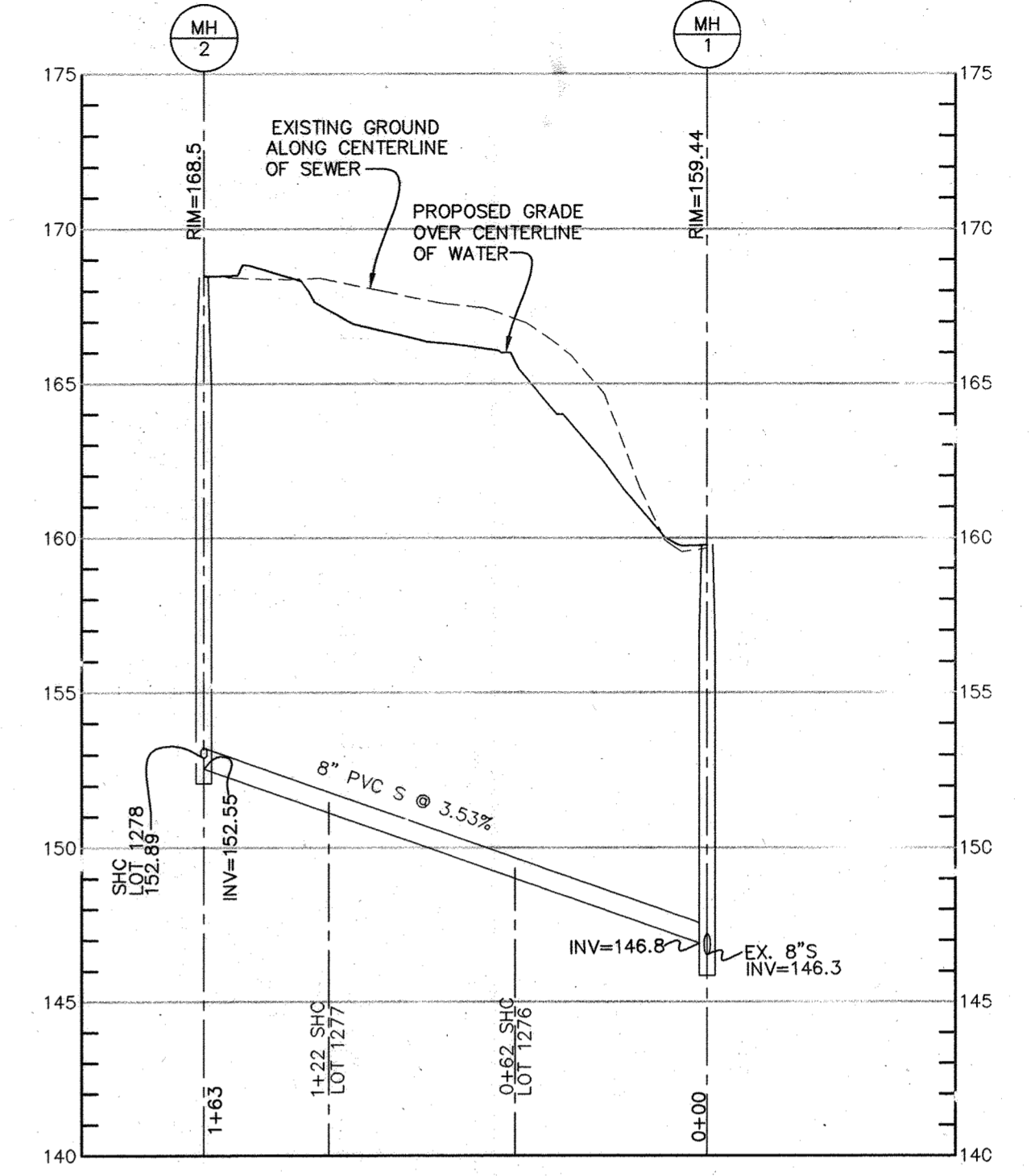
PLAN VIEW
SCALE: 1"=50'



WATER MAIN PROFILE ALONG EUCLID AVE.
SCALE: HORZ.: 1"=50', VERT.: 1"=5'



WATER MAIN PROFILE TO PARCEL 'A'
SCALE: HORZ.: 1"=50', VERT.: 1"=5'



SEWER MAIN PROFILE ALONG EUCLID AVE.
SCALE: HORZ.: 1"=50', VERT.: 1"=5'

EUCLID CORNERS				
Item - Address	Location 1	Measurement	Location 2	Measurement
SHC 6326 Euclid Ave Lot 1276	FH 1	42'	SMH 441	67'
WHC 6326 Euclid Ave Lot 1276	FH 1	49'-6"	SMH 441	73'-6"
SHC 6322 Euclid Ave Lot 1277	MH 2	38'-6"	WHC	5'-6"
WHC 6322 Euclid Ave Lot 1277	MH 2	32'	SHC	5'-6"
SHC 6318 Euclid Ave Lot 1278	MH 2	9'-6"	WHC	17'
WHC 6318 Euclid Ave Lot 1278	MH 2	19'-6"	SHC	17'

Name of Utility Contractor: Diversified Site Works

SANITARY SEWER LOT LATERAL DATA						
LOT NO.	STA. @ MAIN	INV @ MAIN	INV @ R/W	M.C.E.	HD. CO. STD. SEWER HOUSE CONNECTION, S-2.11	COMMENT
LOT 1276	0+62	148.99	149.22	153.12		
LOT 1277	1+22	151.11	151.34	155.12		
LOT 1278	1+63 MH 2	152.89	153.09	159.13		

STATION AT SEWER MAIN IS BASED ON 0+00 AT THE DOWNSTREAM MANHOLE WITH INCREASING STATION TO UPSTREAM MANHOLE
M.C.E. REPRESENTS MINIMUM CELLAR ELEVATION.
NOTE: SEE SHEET 4 FOR NEW PARCEL 'A' SANITARY SEWER LOT LATERAL DATA.

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 06-08-2024

AS-BUILT
Date 3/27/17

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND
R. H. B...
CHIEF, BUREAU OF UTILITIES

DEPARTMENT OF PLANNING AND ZONING
HOWARD COUNTY, MARYLAND
...
CHIEF, DEVELOPMENT ENGINEERING DIVISION

BENCHMARK ENGINEERING, INC.
ENGINEERS • LAND SURVEYORS • PLANNERS
8480 BALTIMORE NATIONAL PIKE • SUITE 418 • ELLICOTT CITY, MARYLAND 21143
PHONE: 410-485-6105 FAX: 410-485-6844

STATE OF MARYLAND
DONALD MA...
PROFESSIONAL ENGINEER

DES:	DAM		
DRN:	RPS	BEI 4	UPDATE PARCEL 'A' FOR NEW LAYOUT 12/6/22
CHK:	DAM	JC 3	REMOVE SHC TO PARCEL 'A' UNTIL DEVELOPMENT 8/16/17
		JC 2	REVISE WATERLINE PER AS-BUILT LOCATIONS 7/8/17
		EDD 1	REVISE NAME FROM 'HARWOOD PARK' TO 'EUCLID CORNERS' 4-23-07
DATE:	BY NO.	REVISIONS	DATE

WATER AND SEWER PLAN AND PROFILES
600 SCALE MAP NO. 38 BLOCK 13

EUCLID CORNERS
PARCEL 'A', LOTS 1276 - 1278 & OPEN SPACE LOT 1279
1st ELECTION DISTRICT
HOWARD COUNTY, MARYLAND
CONTRACT No. 14-4320-D

SCALE: AS SHOWN
SHEET NO. 2 OF 4

AMENDMENT TO THE HOWARD COUNTY DESIGN MANUAL VOLUME IV - STANDARD SPECIFICATIONS AND DETAILS FOR CONSTRUCTION

Except as indicated herein, all work shall be in accordance with the pertinent sections of the Howard County Design Manual Volume IV - Standard Specifications and Details for Construction. Article 9, Sections 908 Nonmetallic Pipes and Drainage Tiles and Article 10, Section 1002 Water Mains of the Howard County Standard Specifications are amended to include the following requirements.

GENERAL

1. Polyvinyl chloride (PVC) pipe and couplings shall be homogeneous throughout and free from visible cracks, bubbles, blisters, holes, foreign inclusions, cuts, or scrapes on the inside or outside surfaces, or other imperfections, which may impair the performance or life of the pipe. Each pipe shall be straight to within 1/4-inch per 20-foot length of pipe when uniformly supported along its entire length, and shall have a true circular cross-section to within +/- 1/64 inch.
2. PVC pipe manufactured more than six months prior to work site inspection will not be accepted.
3. Loading, unloading, handling, inspection and storage of PVC pipe and fittings shall be in accordance with AWWA C605. PVC pipe shall be stored such that it does not deform or bend.
4. Submittals: The following items shall be submitted for review and approval prior to installation. Materials not approved will not be accepted.
 - a. PVC Pipe: Submit manufacturer's literature and certificates of compliance for PVC pipe along with the manufacturer's identification codes for nominal size, dimension ratio, pressure class, production record code and date of manufacture. Submit manufacturer's written transcript of test results for sustained pressure, pipe dimension, burst pressure, flattening resistance, and extrusion quality test. Frequency of performing the tests and the methods of selecting test specimens shall be in accordance with AWWA C900.
 - b. PVC Pipe Fittings: Submit manufacturer's literature and certificates of compliance for PVC pipe fittings along with the manufacturer's identification codes for nominal size, pressure class, production record code and date of manufacture. Submit manufacturer's written transcript of results for accelerated regression test, burst pressure and heat-reversion test in accordance with AWWA C907.
 - c. Miscellaneous for PVC water pipe: Submit manufacturer's literature and certificates of compliance, for joint restraint devices, pipe couplings, tracer wire, wire connector splice kits, detection tape, and service saddles.
 - d. Submit manufacturer's installation instructions for PVC pipe and fittings, joint restraint devices, pipe couplings, wire connector splice kits, service saddles, and manufacturer's instructions for tapping pipe.

MATERIALS

The Engineer will inspect all materials before, during and after installation to ensure compliance with the Contract Documents. When specific tests of materials are called for in referenced standards and specifications, the Engineer has the option of requiring that any or all of these tests be performed for the specified materials.

1. PVC pipe and fittings:
 - a. PVC pipe 4 inches through 12 inches in diameter shall be manufactured in 20-foot lengths in accordance with AWWA C900 with cast/ductile iron pipe equivalent outside diameters. Pipe shall have a dimension ratio (DR) of 18, pressure class of 150psi, and shall utilize elastomeric-gasketed push-on joints for joining pipes in accordance with AWWA C900. Pipe, gaskets, and gasket lubricant shall be suitable for potable water systems and shall meet NSF 61. All PVC pipe shall be factory marked on the spigot end for depth of insertion into the bell and factory tested in accordance with AWWA C900. PVC pipe shall be manufactured by one of the following:
 1. Uponor ETI
 2. J-M Pipe
 3. Diamond Plastics Corp.
 4. National Pipe and Plastics
 - b. Fittings for use with PVC water mains shall be ductile iron in accordance with the Standard Specifications or PVC fittings. PVC fittings shall have push-on rubber gasketed joints, be injection-molded meeting AWWA C907, pressure class 150; or fabricated meeting AWWA C900, Class 200. PVC fittings shall be manufactured by the Harrington Corporation (Harco) or approved equal. Pipe joints shall be in accordance with the standards specified for the pipe and fittings.
 - c. Pipe couplings for PVC and ductile iron water mains shall be suitable for potable water service and shall have epoxy or nylon coated ductile iron center and end rings. Pipe couplings shall be Romac Style 501, Ford FC2W or approved equal.
2. Joint restraint materials for PVC pipe:
 Horizontal and vertical bends, tees, caps, and fittings shall be buttressed or anchored in accordance with the Plans, the Standard Specifications and Details for Construction, or as directed by the Engineer. Valves, when connected to PVC pipe, shall be iron body resilient seat gate valves and anchored in accordance with the detail shown on the plans and shall have one full length of pipe on each side of the valve.

3. Tracer Wire for Non Metallic Pipelines: Tracer wire shall be 6-gauge, 7-strand continuous copper wire with a 45-mil polyethylene insulation. The wire shall be blue, have "UL" markings and suitable for direct bury applications.
4. Continuity Test Station: Continuity test stations shall be located adjacent to each fire hydrant within the public easement for locating PVC water mains. The test station shall be housed in a standard Howard County 18-inch diameter meter vault with an 18"x12" metal frame and cover as shown in the details on the Plans. A 1-inch diameter by 30-inch long copper grounding rod imbedded a minimum of 12 inches into the ground shall be used for the attachment of the tracer wire. The tracer wire shall be fastened to the copper rod using two copper clamps.
5. Detection Tape: Visual Detection Tape shall be 3 inches wide (minimum) metallic blue plastic tape lettered "water" in black graphics.
6. Connection to PVC waterlines:
 - a. Connections to PVC waterlines shall be by using fittings, such as tees, indicated on the Plans.
 - b. Saddles may be used for 2-inch and smaller connections to PVC waterlines. Saddles with clamps shall provide full support around the circumference of the pipe and shall not distort, scratch, or damage the pipe when tightened. Only tapping saddles manufactured specifically for AWWA C900 PVC pipe shall be used. Saddles and clamps/straps shall be formed to meet the curvature of the pipe. Saddles with clamps shall be manufactured for underground service, shall be rated for a minimum service of 150 psi and shall be brass or bronze alloy meeting ASTM B62 or B584 and AWWA C800 or ductile iron saddles meeting ASTM A536 or A395 with two 18-8 stainless steel straps and shall be epoxy or nylon coated. Saddles shall have watertight gaskets of Buna-N rubber meeting ASTM D2000 or nitrile around the top hole. Saddles shall be one of the following:
 1. Ford FC-202
 2. Mueller Series DR2S
 3. Romac 202H
 4. Smith Blair 317 Nylon Coated
 5. JCM 406

EXECUTION

All construction methods and details shall be in accordance with the Howard County Design Manual Volume IV - Standard Specifications and Details for Construction and the following Criteria.

1. Installation of PVC Water Mains:
 - a. PVC pipe and fittings shall be handled in accordance with AWWA C605.
 - b. Bedding: Provide 6 inches of stone bedding under the pipe in accordance Standard Detail G2.01 and the detail shown on the Plans for Trench for PVC Pipe using AASHTO M 43, size number 57 aggregate. The stone bedding shall be installed to grade prior to laying pipe. Excavate bell holes in bedding at each joint to assemble the joint and to insure that the entire length of each pipe barrel, fitting and valve is supported on firm bedding.
 - c. Install PVC AWWA C900 pressure pipe: Installation shall be in accordance with the Standard Specifications and the manufacturer's installation instructions and recommendations except as modified herein. Changes in horizontal, and vertical alignment and curved alignments shown on the Plans shall be made by using fittings or high-deflection couplings. Deflecting PVC pipe joints or bending PVC pipe will not be permitted.

Whenever a pipe requires cutting, the work shall be done in a manner that leaves a smooth, square end. Cut PVC pipe ends shall have burrs removed and the end beveled to match factory bevel. To ensure the proper length of insertion of the spigot into the bell, PVC pipe cut in the field shall be beveled and marked on the spigot end to the dimensions specified by the manufacturer prior to assembly.

Prior to making gasketed joints, both mating pipe ends and the gasket shall be cleaned of all foreign material. The rubber gasket shall then be inserted in or stretched over the clean gasket seat and lubricant applied to the gasket and mating pipe end. The method for inserting the spigot into the bell shall be as recommended by the manufacturer and approved by the County. The pipe ends shall be carefully aligned and pushed together to meet the required manufacturer's insertion depth. Insertion of the spigot end of the pipe shall be made to a point where the factory mark is even with the face of the bell.

- d. Tracer Wires: Install tracer wires with the pipe. Tape wire to the top of the pipe with minimum 2-inch wide x 1/2-inch-circumference long PVC tape every 4 feet along the pipe. The copper wire shall be continuous for the full length of the pipeline including all fire hydrant leads and shall terminate at continuity test stations. Continuity test stations shall be located adjacent to fire hydrants. There shall be no buried splices. Connections to continuity test stations shall be in accordance with the details shown on the Plans.

After backfilling, the Contractor shall test the tracer wire in the presence of the County to demonstrate electrical continuity between test stations through the length of the PVC pipeline installed. The Contractor shall notify the County 48 hours in advance of the tests. Any discontinuity shall be located, repaired and retested at the Contractor's expense until continuity is achieved.

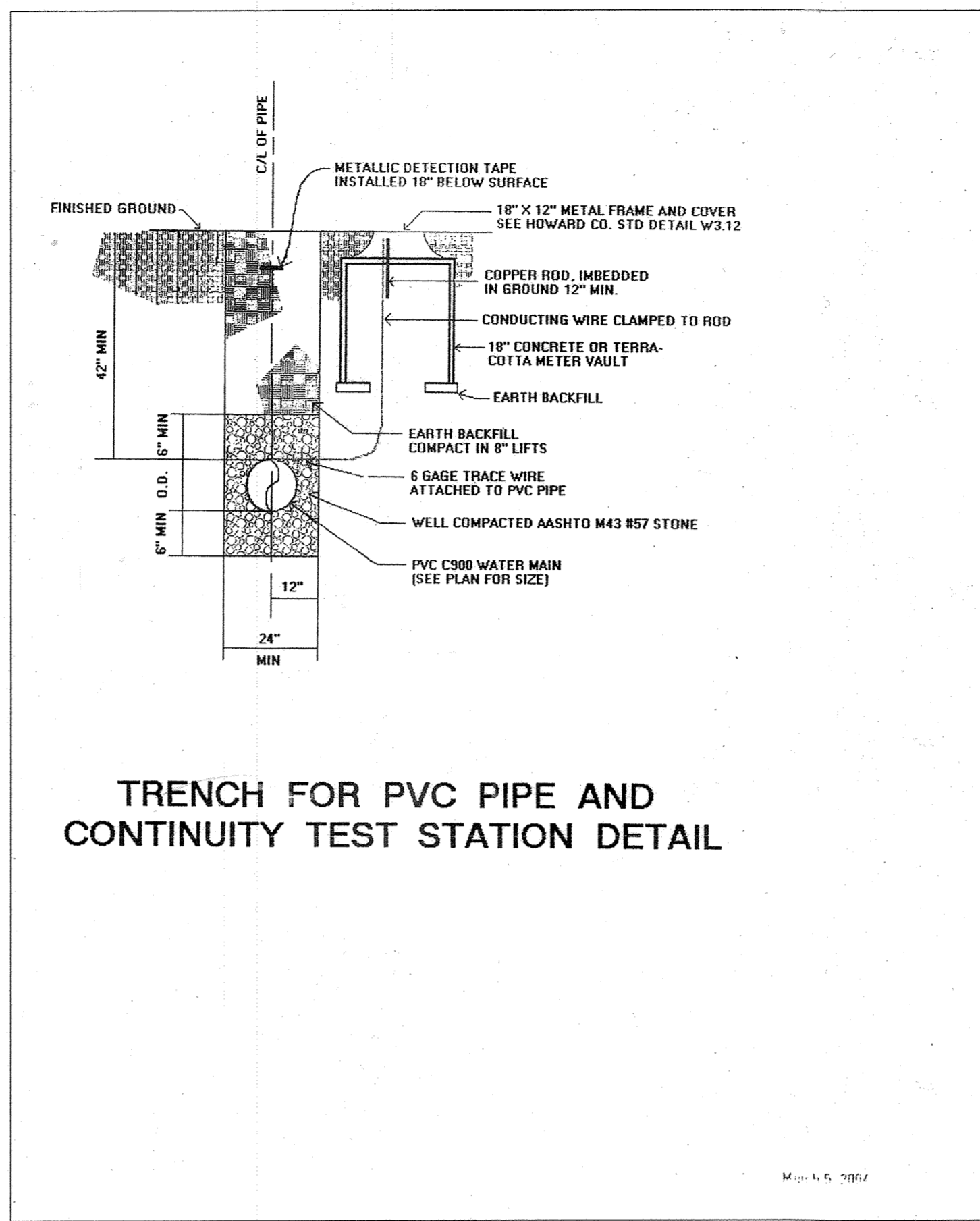
- e. Backfill: Backfill over the PVC pipe in accordance with Standard Detail G2.01 and the detail shown on the Plans for Trench for PVC Pipe using well-compacted AASHTO M 43, size number 57 aggregate to a minimum of 6 inches over the crown of the pipe. Trench backfill shall proceed thereafter in 8-inch layers. Contractor shall provide full trench compaction density of 95% as determined by AASHTO T-180-A.

- f. Detection Tape: Install detection tape directly over the centerline of the water mains on compacted backfill not less than 18 inches of more than 24 inches below finished surface. Tape shall be installed with minimal splices. Splices shall overlap a minimum of 6 inches.

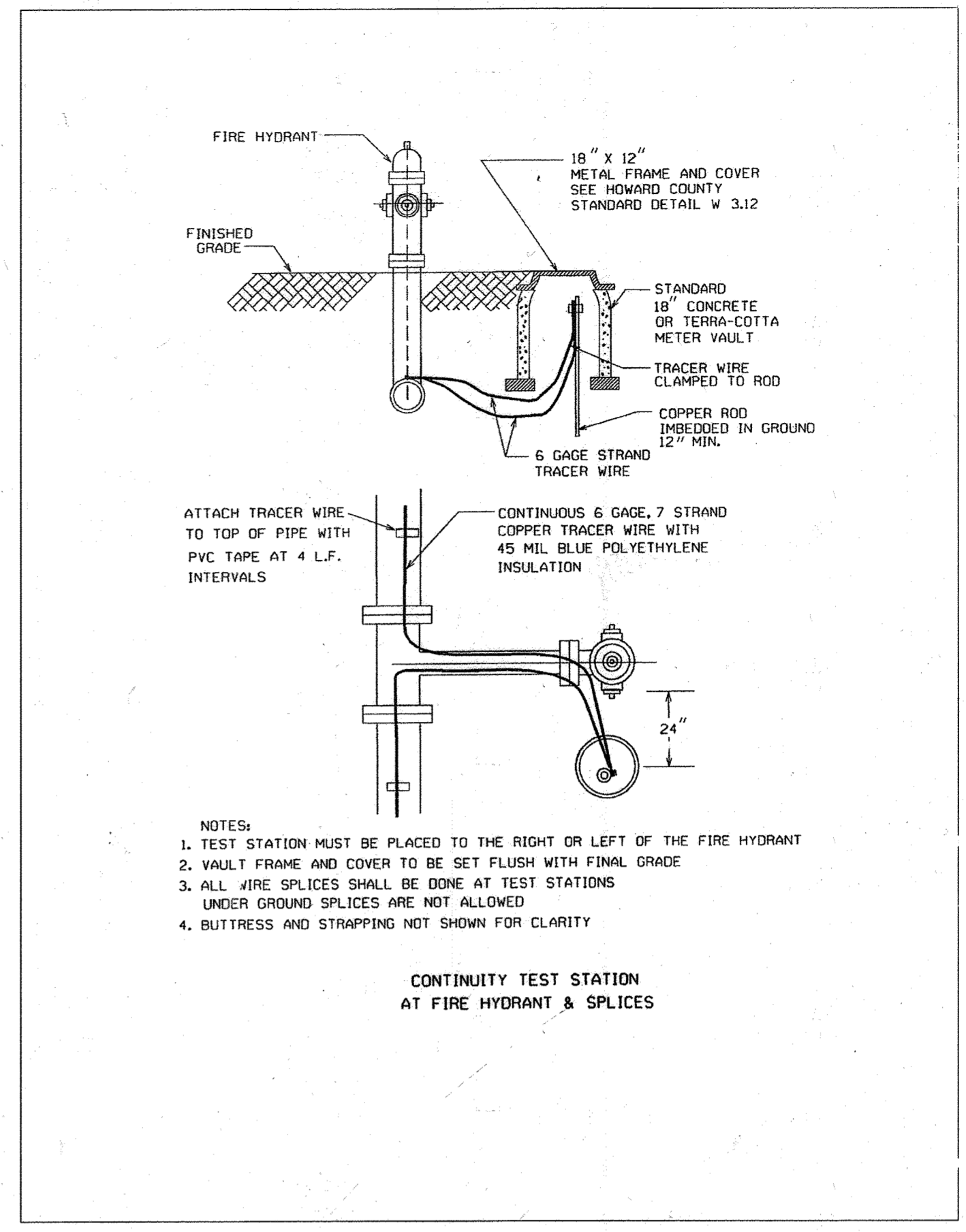
Joints:

- a. Mechanical Joints: For PVC plain-end to be connected to ductile iron mechanical joint bell, assemble the joint in accordance with the Standard Specifications, as modified in AWWA C605, the pipe manufacturer's recommendations and as specified herein. For PVC pipe plain ends to be inserted into mechanical joint bells, cut off the bevel so the plain-end is square cut. Do not deflect PVC pipe at connection to cast or ductile iron pipe or fittings.
- b. Push-on Joints: For PVC pipe plain ends to be inserted in ductile iron or cast iron push-on bell, the spigot taper shall be cut to 1/4-inch. Place an identifying mark on pipe that is not furnished with a depth mark on the plain end to show the depth of the socket and to verify that pipe is properly set in the bell. Assemble joints in accordance with AWWA C600 and C605, the manufacturer's recommendations, and as specified herein. Do not deflect PVC pipe at connection to cast or ductile iron pipe or fittings. The Contractor shall achieve change in alignment as indicated elsewhere herein. Assembly of the plain end into the bell shall be done in accordance with manufacturer's recommendations. Install push-on restrained joints in accordance with manufacturer's recommendations.
- c. Restrained Joint: In a restrained joint, PVC pipe shall not be deflected. If deflection is required in a restrained joint, use restrained ductile iron pipe.

3. Where the Contractor chooses to use PVC fittings, the pressure class of the fitting shall be the same as, or greater than, the pressure class of the pipe to which it connects. If the pressure class is not available, the Contractor shall use a ductile iron fitting. Where a fitting with restrained joints is required, a ductile iron mechanical joint shall be used.
4. Fire Hydrant lead, including mainline tee, shall be ductile iron only.
5. Connections to PVC pipe for Water House Connections:
 - a. Perform taps on PVC pipe in accordance with AWWA C605, the pipe manufacturer's recommendations, and as indicated herein.
 - b. Install a service saddle when tapping a PVC water main. Maintain a minimum of 24 inches between taps and PVC pipe bells.
 - c. For PVC water pipe, use only cutting/tapping tools and machines made specifically for cutting AWWA C900 pipe and as described in AWWA C605. The cutting/tapping machine shall be installed so that it does not distort the pipe. The machine shall be supported so that its weight is not carried by the pipe. When tapping PVC pipe, follow the manufacturer's safety precautions and the safety precautions cited in AWWA C605.
 - d. Multiple taps in a single pipe shall be staggered around the pipe circumference so they are not on a common line parallel to the longitudinal axis of the pipe and be at least 18-inches apart when measured longitudinally.

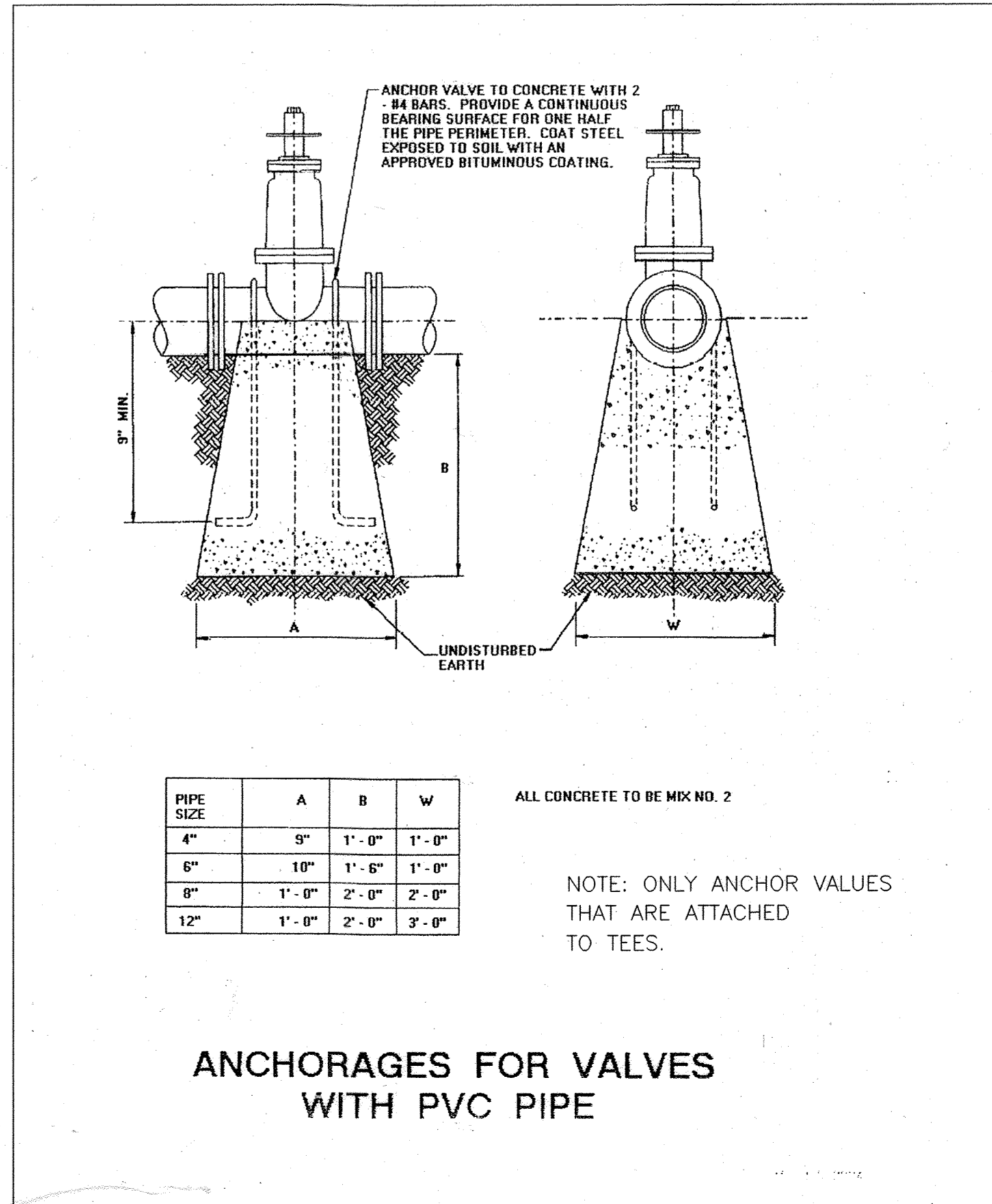


TRENCH FOR PVC PIPE AND CONTINUITY TEST STATION DETAIL



- NOTES:
1. TEST STATION MUST BE PLACED TO THE RIGHT OR LEFT OF THE FIRE HYDRANT
 2. VAULT FRAME AND COVER TO BE SET FLUSH WITH FINAL GRADE
 3. ALL WIRE SPLICES SHALL BE DONE AT TEST STATIONS UNDER GROUND SPLICES ARE NOT ALLOWED
 4. BUTTRESS AND STRAPPING NOT SHOWN FOR CLARITY

CONTINUITY TEST STATION AT FIRE HYDRANT & SPLICES



PIPE SIZE	A	B	W
4"	9"	1'-0"	1'-0"
6"	10"	1'-6"	1'-0"
8"	1'-0"	2'-0"	2'-0"
12"	1'-0"	2'-0"	3'-0"

ALL CONCRETE TO BE MK NO. 2
NOTE: ONLY ANCHOR VALUES THAT ARE ATTACHED TO TEES.

ANCHORAGES FOR VALVES WITH PVC PIPE

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DEPARTMENT OF PLANNING AND ZONING
HOWARD COUNTY, MARYLAND

BENCHMARK
ENGINEERS • LAND SURVEYORS • PLANNERS
ENGINEERING, INC.

STATE OF MARYLAND
Donald M. Mason
PROFESSIONAL ENGINEER
10/31/04

DES:	RPS				
DRN:	RPS				
CHK:	DAM				
DATE:	EDD	1	REVISE NAME FROM 'HARWOOD PARK' TO 'EUCLID CORNERS'	4-25-07	
	BY	NO.	REVISIONS	DATE	

WATER AND SEWER DETAILS
600 SCALE MAP NO. 38
BLOCK 13

EUCLID CORNERS
PARCEL 'A', LOTS 1276 - 1278 & OPEN SPACE LOT 1279
1st ELECTION DISTRICT
HOWARD COUNTY, MARYLAND
CONTRACT No. 14-4320-D

SCALE:
N.T.S.
SHEET NO.
3 of 4

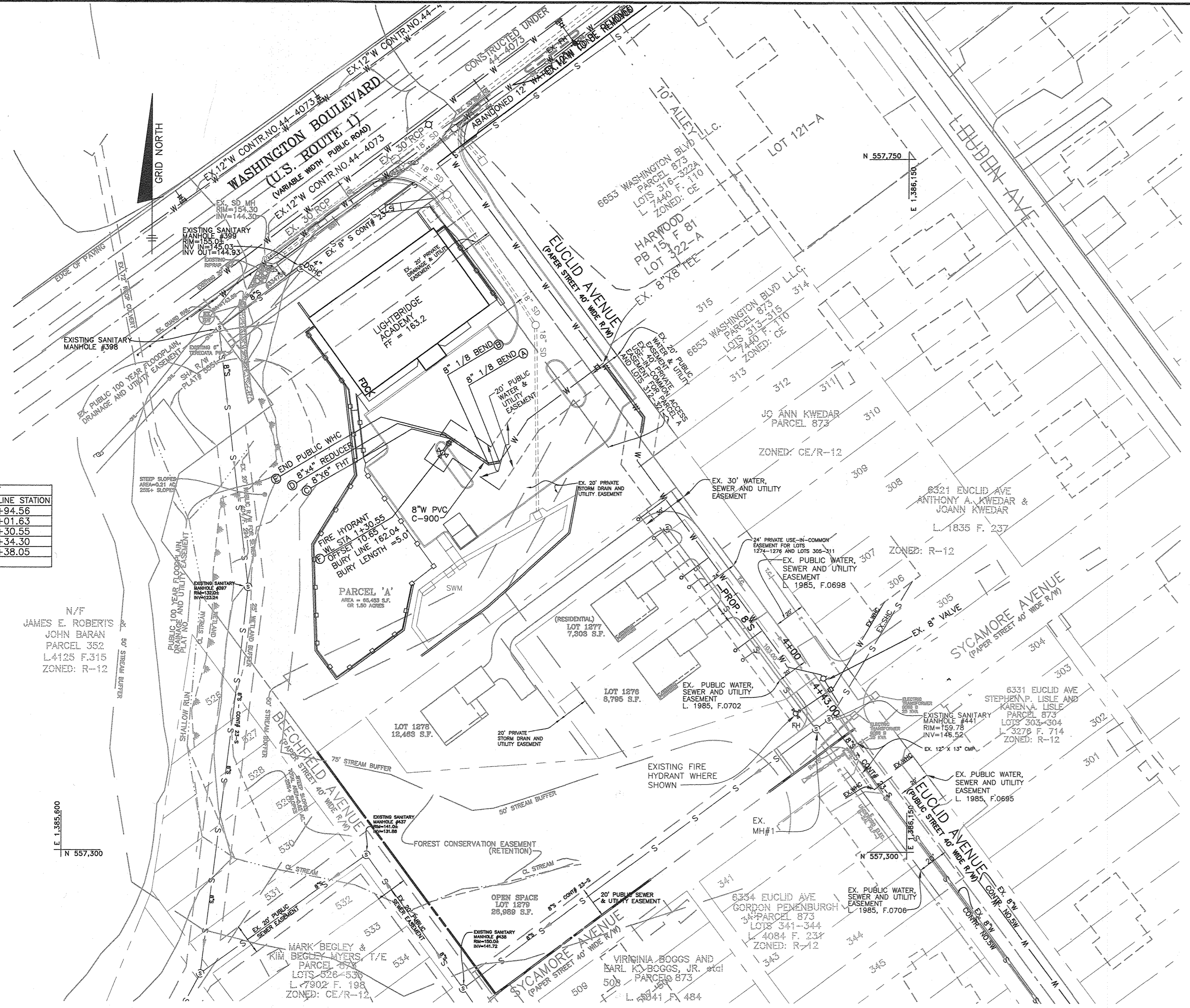
R. H. B... 11-9-06
DATE

[Signature] 11/27/06
DATE

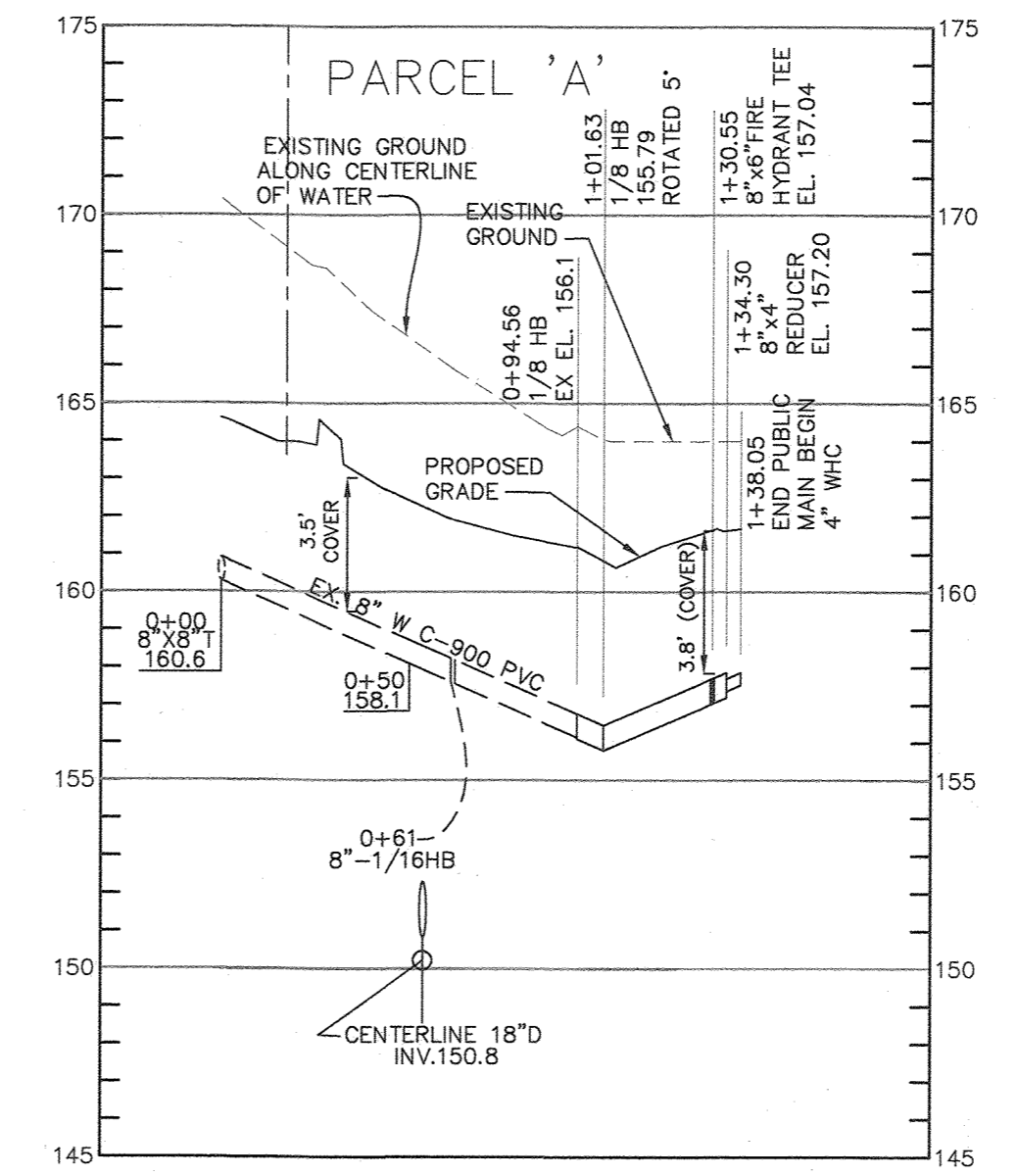
8400 BALTIMORE NATIONAL PIKE • SUITE #118 • ELICOTT CITY, MARYLAND 21043
PHONE: 410-465-6105 FAX: 410-465-6844

NAME	APPERTENANCE	WATER LINE STATION
A	8" 1/8 BEND	STA. 0+94.56
B	8" 1/8 BEND	STA. 1+01.63
C	8" X8" FHT	STA. 1+30.55
D	8" X4" REDUCER	STA. 1+34.30
E	END PUBLIC WHIC	STA. 1+38.05
F	FIRE HYDRANT	

N/F
JAMES E. ROBERTS
JOHN BARAN
PARCEL 352
L.412S F.315
ZONED: R-12



PLAN VIEW
SCALE: 1"=50'



WATER MAIN PROFILE TO PARCEL 'A'
SCALE: HORZ: 1"=50', VERT: 1"=5'

PORTIONS OF THE EXISTING WATER MAIN AND APPURTENANCES CONSTRUCTED, AS SHOWN ON SHEET 2 OF THIS CONTRACT DRAWING, ARE TO BE REMOVED PER THIS PLAN.

SANITARY SEWER LOT LATERAL DATA						
LOT NO.	STA.	MAIN	INV @ MAIN	INV @ R/W	M.C.E.	COMMENT
PARCEL 'A'	MH 399		145.03	145.33	150.23	

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND
[Signature]
CHIEF, BUREAU OF UTILITIES
DATE: 12/19/22

DEPARTMENT OF PLANNING AND ZONING
HOWARD COUNTY, MARYLAND
[Signature]
CHIEF, DEVELOPMENT ENGINEERING DIVISION
DATE: 1/3/22

BENCHMARK
ENGINEERS - LAND SURVEYORS - PLANNERS
ENGINEERING, INC.
3300 NORTH ROBE ROAD - SUITE 140 - ELLCOTT CITY, MARYLAND 21043
PHONE: 410-465-8105 FAX: 410-465-8644

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: 06-08-2024.
12/19/22

DES:	JC			
DRN:	JC			
CHK:	JC			
DATE:				
BY	NO.	REVISIONS	DATE	
BEI	4	SHEET ADDITION TO SHOW REVISED LAYOUT FOR PARCEL 'A'	9/22/22	

SHEET ADDITION
WATER AND SEWER PLAN
AND PROFILES
600 SCALE MAP NO. 38
BLOCK 13

EUCLID CORNERS
PARCEL 'A', LOTS 1276 - 1278 & OPEN SPACE LOT 1279
1st ELECTION DISTRICT
HOWARD COUNTY, MARYLAND
CONTRACT No. 14-4320-D

SCALE:
AS SHOWN
SHEET NO.
4 OF 4