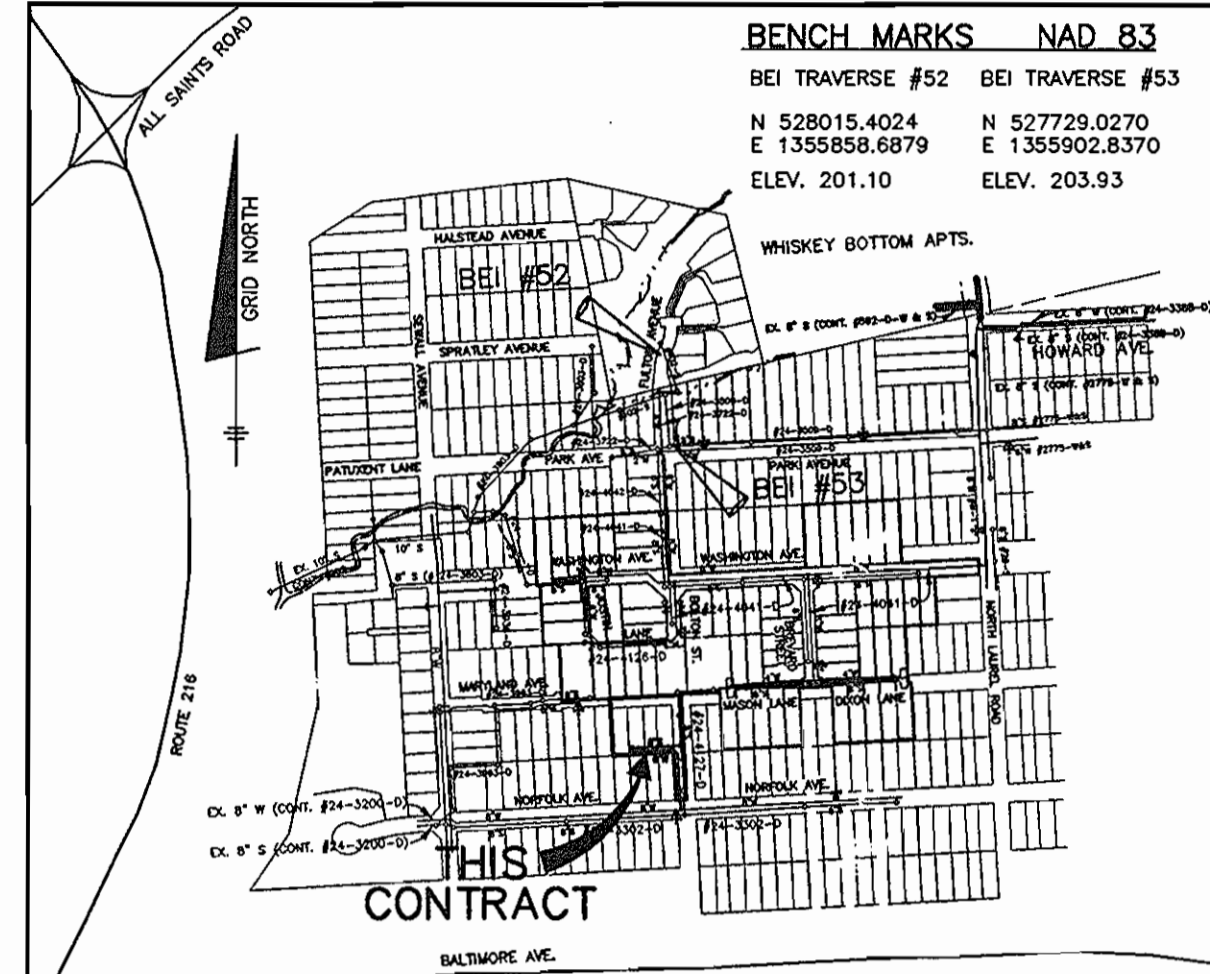
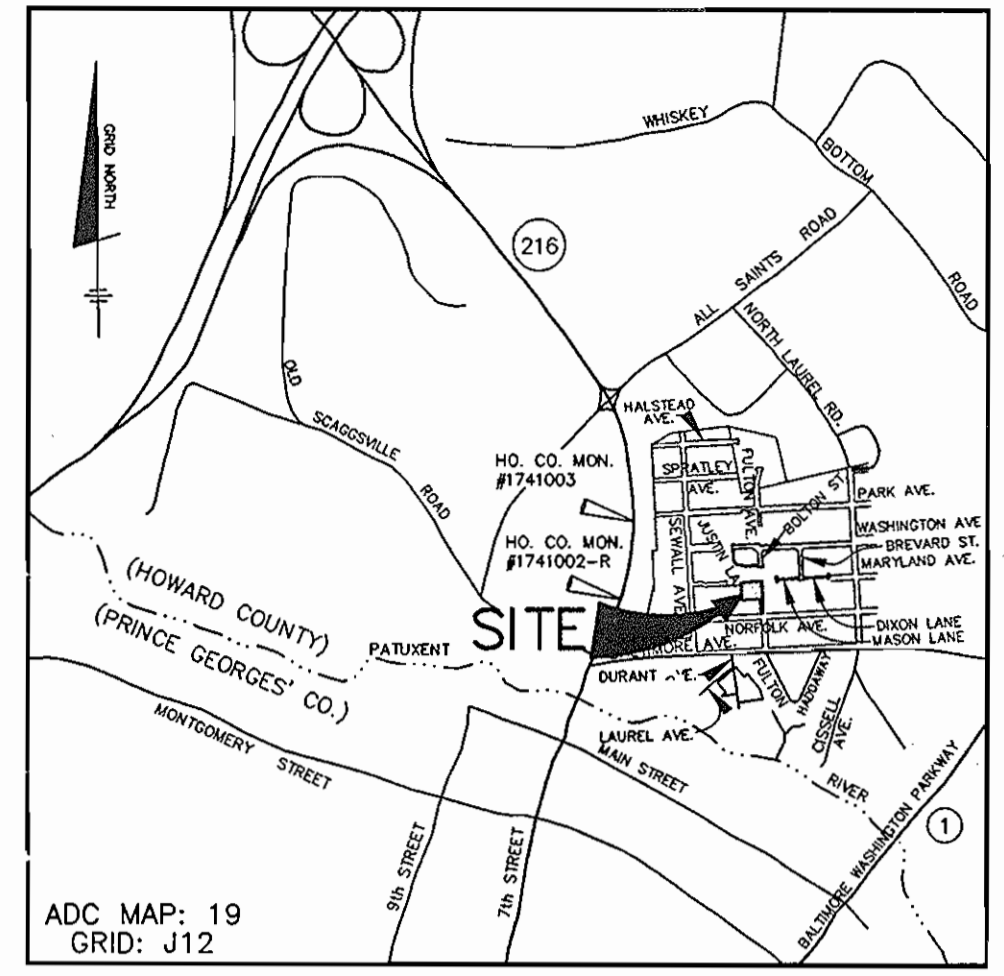


BENCH MARKS NAD 27
 HO. CO. #1741003 NAD 27
 CONCRETE MONUMENT ON WEST SIDE OF
 ROUTE 216 AND 0.2' BELOW SURFACE
 ELEV. 198.395

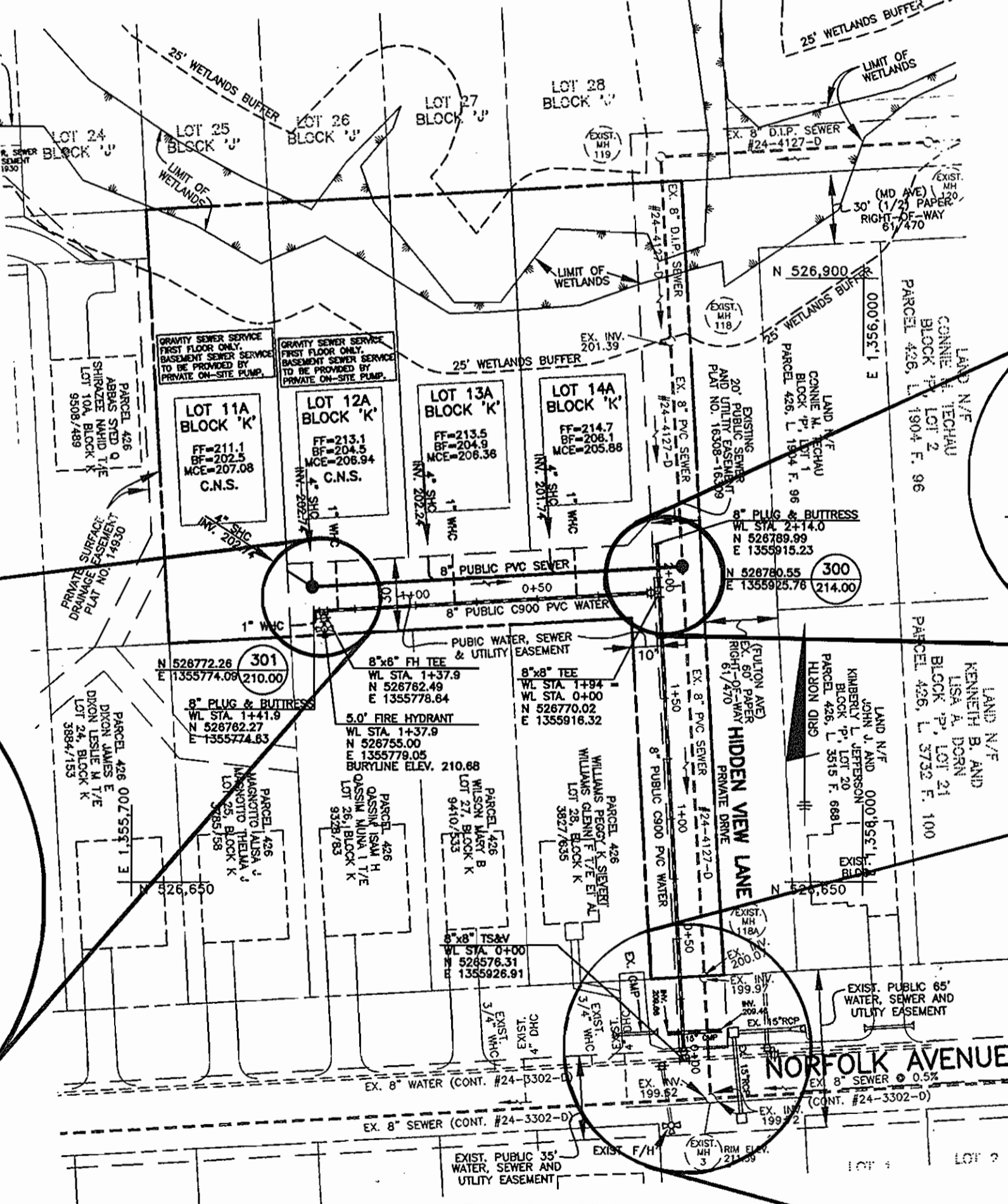
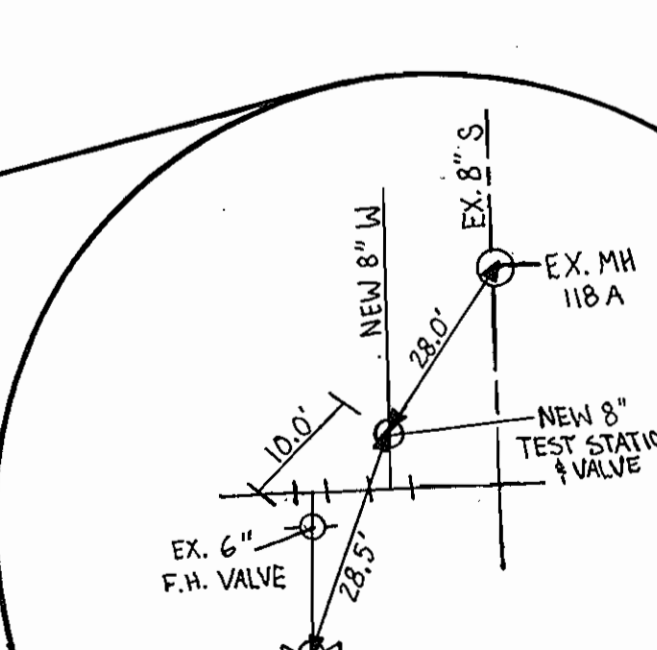
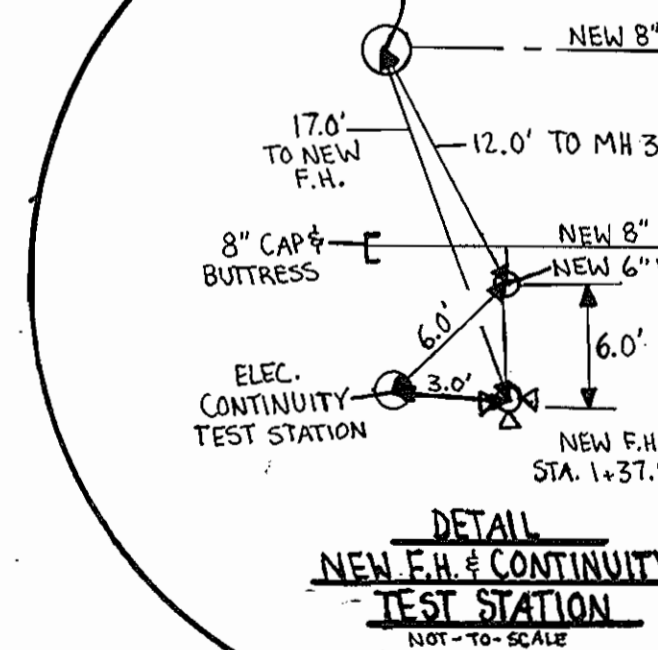
BENCH MARKS NAD 83
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 E 1355858.6879 E 1355902.8370
 ELEV. 201.10 ELEV. 203.93



WATER AND SEWER PROFILE
 SCALE: 1"=50' HORIZ., 1"=5' VERT.

WATER AND SEWER PROFILE
 SCALE: 1"=50' HORIZ., 1"=5' VERT. * EXISTING INVERT AS LOCATED IN FIELD

AS-BUILT LOCATIONS				
UNIT #	FROM	TO	DISTANCE	REMARKS
LOT 11A	SHC	Q SMH 301	15.0'	
	SHC	Q FIRE HYDRANT	29.5'	
	1" WHC	Q SMH 301	18.0'	
	1" WHC	Q FIRE HYDRANT	14.5'	
	1" WHC	Q 6" VALVE	14.0'	
LOT 12A	1" WHC	SHC LOT 13A	38.0'	
	1" WHC	6" F.H. VALVE	23.0'	
	1" WHC	Q FIRE HYDRANT	29.0'	
	1" WHC	SHC LOT 12A	11.0'	
	1" WHC	Q SMH 301	15.0'	
	SHC	Q SMH 301	12.0'	
	SHC	Q FIRE HYDRANT	29.0'	
	SHC	SHC LOT 11A	11.0'	
LOT 13A	1" WHC	SHC LOT 13A	10.0'	
	1" WHC	6" F.H. VALVE	59.0'	
	1" WHC	Q FIRE HYDRANT	62.0'	
	SHC	6" F.H. VALVE	50.0'	
	SHC	Q FIRE HYDRANT	53.0'	
LOT 14A	1" WHC	SHC LOT 14A	10.0'	
	1" WHC	8" VALVE	37.4'	
	SHC	8" VALVE	47.0'	
	SHC	WHC LOT 13A	39.0'	
	1" WHC	Q SMH 300	83.0'	
	SHC	Q SMH 300	93.0'	



ITEMS	QUANTITIES ESTIMATED	AS-BUILT		
		QUANTITIES	TYPE	MANUF./SUPPLIER
8" C900 PVC WATER	360 L.F.	360 L.F.	C900 PVC	NATIONAL PIPE
1" WHC	75 L.F.	84 L.F.	TYPE K COPPER	BEAUMONT SUPPLY
8"x8" TS&V	1 EA.	1 EA.	STAINLESS STEEL	ROU/MAC/BELAIR ROAD SUPPLY
8" P&B	2 EA.	2 EA.	M.J.	BELAIR ROAD SUPPLY
FIRE HYDRANT	1 EA.	1 EA.	MUELLER	MUELLER/BELAIR ROAD SUPPLY
8" PVC SEWER	152 L.F.	152 L.F.	PVC	BELAIR ROAD SUPPLY
MANHOLES	2 EACH	2	A PRECAST	BELAIR ROAD SUPPLY
VERT. FEET OF MH	22.5 FT.		PVC	BELAIR ROAD SUPPLY
4" SHC	40 L.F.	37.5 L.F.	PVC	BELAIR ROAD SUPPLY
8" VALVE	2	2	M/GATE VALVE	MUELLER/BELAIR ROAD SUPPLY
6" VALVE	1	1	M/GATE VALVE	MUELLER/BELAIR ROAD SUPPLY

LEGEND	
EXIST. WATER MAIN	---
EXIST. SEWER MAIN	---
PROP. WATER MAIN	---
PROP. SEWER MAIN	---
PROP. SEWER MANHOLE	○
PROP. SEWER HOUSE CONNECTION	---
PROP. WATER HOUSE CONNECTION (SINGLE - 1")	---
PROP. VALVE	○
PROP. PLUG & BUTTRISS	---
PROP. FIRE HYDRANT	○

AS BUILTS
 BY: DPJ DATE: 4-11-08

GENERAL NOTES

- PART I - GENERAL**
- 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 FEBRUARY, 2003 BY BENCHMARK ENGINEERING, INC.
 - 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. 1012 AND NO. 16C3.
 - ALL VERTICAL CONTROLS ARE BASED ON NAVD 88. VERTICAL CONTROLS PROVIDED ON THE PLANS.
 - ALL PIPE ELEVATIONS SHOWN ARE INVERT ELEVATIONS UNLESS OTHERWISE NOTED ON THE PLANS.
 - CLEAR ALL UTILITIES BY A MINIMUM OF 12" CLEARANCES. 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 (5) WORKING DAYS BEFORE STARTING WORK SHOWN ON THESE PLANS:
 AT&T.....1-800-252-1133
 BGE (CONSTRUCTION SERVICES).....410-850-4620
 BGE (EMERGENCY).....410-855-1400
 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.....1-800-743-0033/410-224-9210
 - 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 (5) 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.

PART II - WATER

- ALL WATER MAINS SHALL BE C900 PVC 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 BUTTRISSED 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.
- ALL WATER HOUSE CONNECTIONS SHALL BE FOR INSIDE METER SETTING UNLESS OTHERWISE NOTED ON PLANS OR IN SPECIFICATIONS.
- FOR SPRINKLER SYSTEM FOR ALL TOWN HOMES OR MULTI-FAMILY DWELLING UNITS SHOULD HAVE A MINIMUM OF 1" CONNECTION WITH A 3/4" METER.

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 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 CELLAR CANNOT BE SERVED.

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

John K. Dutton 12/10/07
 HOWARD SOIL CONSERVATION DISTRICT DATE

SEDIMENT CONTROL MEASURES FOR THIS CONTRACT WILL BE IMPLEMENTED IN ACCORDANCE WITH SECTION 219 OF THE HOWARD COUNTY STANDARD SPECIFICATIONS AND AS PER SITE DEVELOPMENT PLANS SDP-07-144

OWNER/DEVELOPER:
 SCAGGSVILLE ROAD INVESTMENT LLLP
 11807 WOLLINGFORD COURT
 CLARKSVILLE, MARYLAND 21029
 410-792-2565

DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND

DEPARTMENT OF PLANNING AND ZONING
 HOWARD COUNTY, MARYLAND

BENCHMARK
 ENGINEERS & LAND SURVEYORS & PLANNERS
ENGINEERING, INC.
 8480 BALTIMORE NATIONAL PIKE & SUITE 418
 ELLICOTT CITY, MARYLAND 21043
 PHONE: 410-465-8105 FAX: 410-465-8644

DESIGN: DBT
 DRAFT: DBT
 CHK: DAM
 DATE: 11/2007

PLAN AND PROFILE OF
 WATER AND SEWER MAINS

NORTH LAUREL PARK
 LOTS 11A - 14A, BLOCK K
 TAX MAP: 50 - GRID: 3 - PARCEL: P/O 426 - ZONED: RSC - ELECTION DISTRICT NO. 6
 CONTRACT NO. 24-4503-D
 SCALE: AS SHOWN
 SHEET NO. 1 OF 2

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 fittings shall be homogeneous throughout and free from voids, 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 certificate 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 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 reference 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 ductile iron pipe equivalent outside diameter. 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 made of ductile iron in accordance with the Standard Specifications or PVC fittings. PVC fittings shall have push-on rubber gaskets, shall be injection-molded meeting AWWA C907, pressure class 150; or fabricated using 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:
 - a. 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.

Joint restraints for harnassing joints shall be in accordance with the Standard Specifications and the requirements below:

- a. All joint restraint devices shall be Factory Mutual approved.
- b. In restrained joints, PVC pipe shall not be deflected. If deflection is required in a restrained joint, use ductile iron pipe or fittings.
- c. Where a restrained joint is required between PVC pipe and a fitting, the fitting shall be ductile iron mechanical joint. Joint restraint for the joint shall meet ASTM F1674 and shall be UniFlange Series 1500, EBAA Iron Series 2000PV, or approved equal.
- d. Where a restrained joint is required for PVC push-on joint, joint restraint shall be Uni-B-13, JCM 620 Sur-Grip, EBAA Iron Series 1600, UniFlange Series 1390-C, or approved equal.

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 attached 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. Saddle 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 A535 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. Ramac 202N
 4. Smith Blair 317 Nylon Coated
 5. JCM 406

EXECUTION

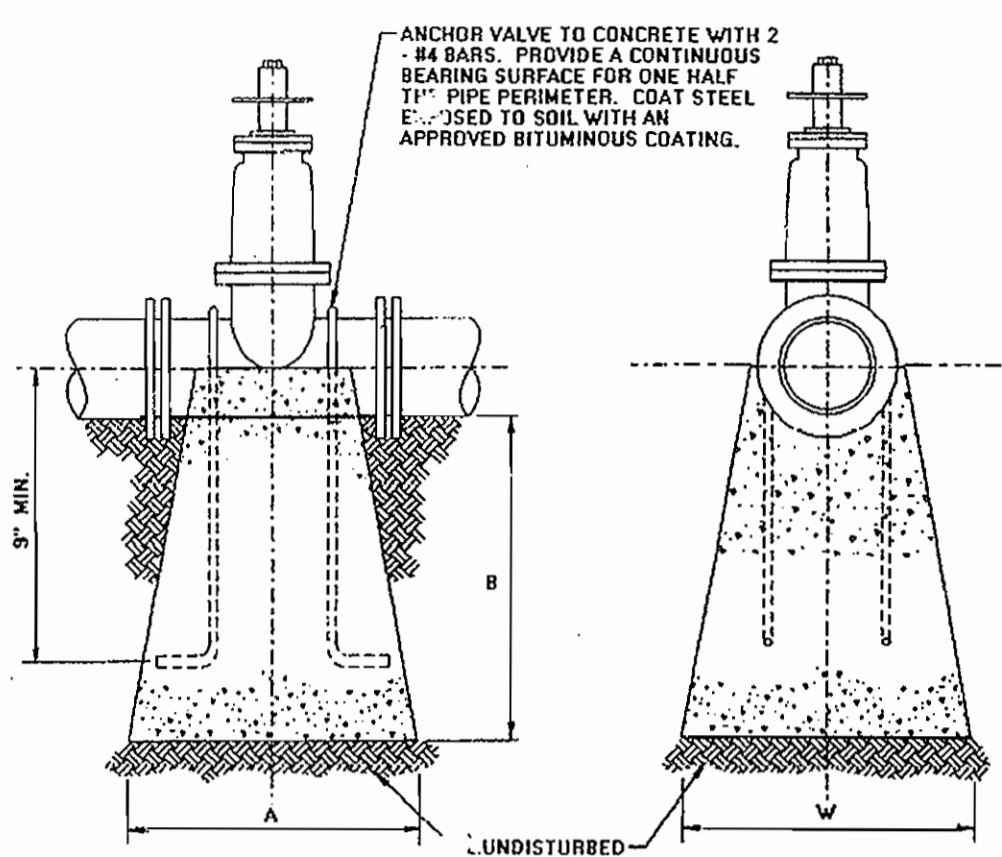
All construction methods and details shall be in accordance with the Howard County Design Manual Volume IV—Standard Specifications and Details for Construction and the following Criteria.

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 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 with 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 marking 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-thick pipe-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 all fire hydrants. There shall be no buried splices. Connections to continuity test stations shall be in accordance with the details shown on the Plans.
- 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 a trench compaction density of 95% as determined by AASHTO T-100-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.

2. Joints:
 - a. Mechanical Joints: For PVC plain-ends 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 and 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. The spigot shall not be inserted deeper than 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.

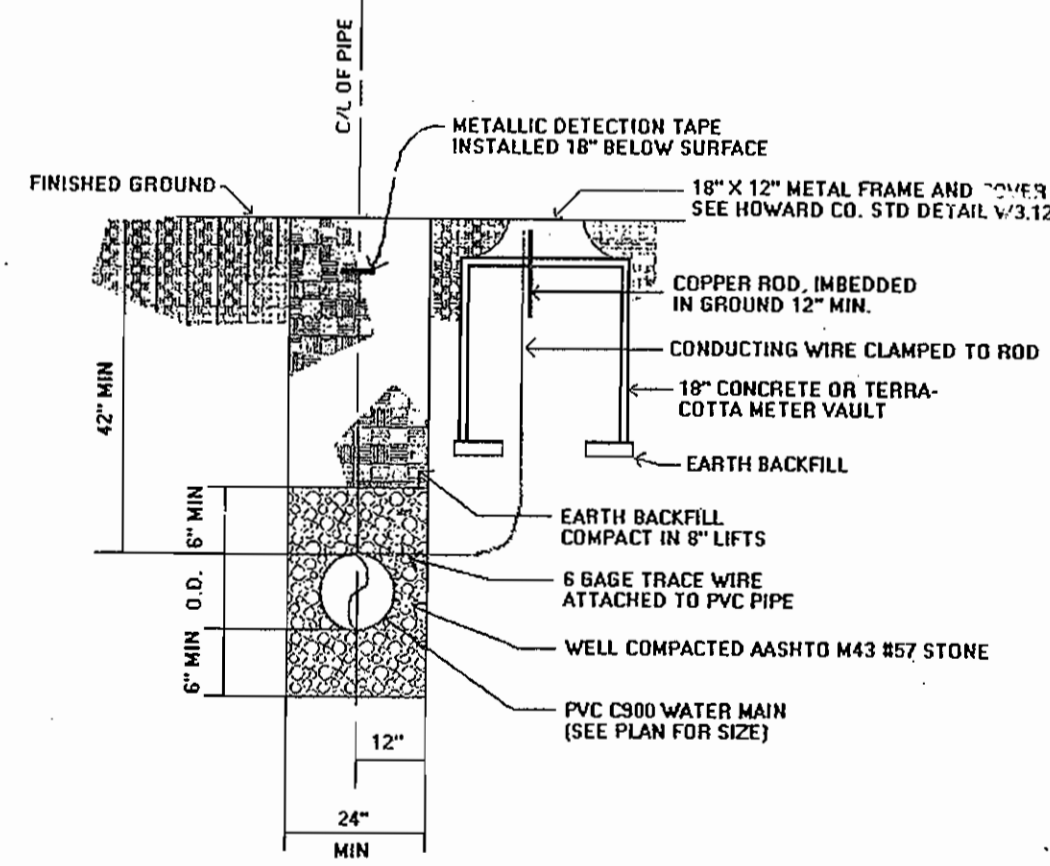


PIPE SIZE	A	B	W
4"	9"	1'-0"	1'-0"
6"	10"	1'-0"	1'-0"
8"	1'-0"	2'-0"	2'-0"
12"	1'-0"	2'-0"	3'-0"

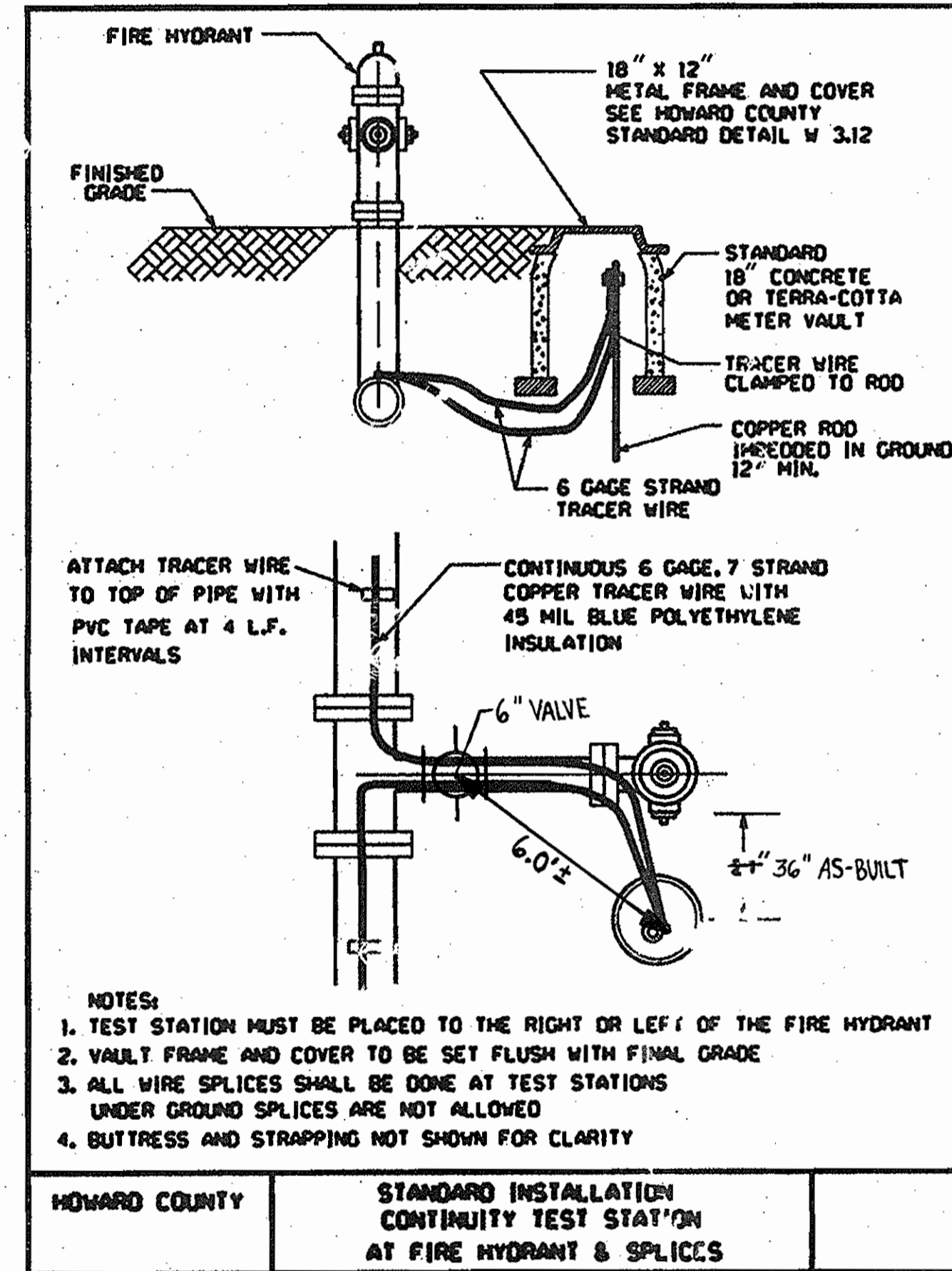
ALL CONCRETE TO BE MIX NO. 2

NOTE: ONLY ANCHOR VALVES THAT ARE NOT ATTACHED TO TEES.

ANCHORAGES FOR VALVES WITH PVC PIPE



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

HOWARD COUNTY STANDARD INSTALLATION CONTINUITY TEST STATION AT FIRE HYDRANT & SPLICES

OWNER/DEVELOPER:
SCAGGSVILLE ROAD INVESTMENT LLP
11807 WOLLINGFORD COURT
CLARKSVILLE, MARYLAND 21029
410-792-2565

BENCHMARK
ENGINEERS & LAND SURVEYORS & PLANNERS
ENGINEERING, INC.
8480 BALTIMORE NATIONAL PIKE SUITE 418
ELLCOTT CITY, MARYLAND 21043
PHONE: 410-465-8105 FAX: 410-465-8644

Professional Certified. I hereby certify that these documents were prepared by me or under my direct supervision and that I am a duly licensed professional engineer under the laws of the State of Maryland. License No. 21443. Date: 11/26/07

DESIGN: DBT
DRAFT: DBT
CHK: DAM
DATE: 10/20/07

PLAN AND PROFILE OF WATER AND SEWER MAINS

600 SCALE MAP NO. 50 BLOCK 3

NORTH LAUREL PARK
LOTS 11A - 14A, BLOCK K
TAX MAP: 50 - GRID: 3 - PARCEL: P/O 426 - ZONED: RSC - ELECTION DISTRICT NO. 6

CONTRACT NO. 24-4503-D

SCALE:
AS SHOWN
SHEET NO.
2 OF 2