SURVEY AND DRAFTING DIVISION AS-BUILT DATE: SEPTEMBER 2007										
IMP.14G	QUANTITIES		AS-BUILT							
ITEMS	ESTIMATED	QUANTITIES	TYPE	MANUFACTURER/SUPPLIE						
8" P.V.C. C -900	845 LF	824 LF	SDR 35	NORTH AMERICAN/FERGUSO						
6" P.V.C. C 900	175 LF	20.3 LF	DIP CL 52	ATLANTIC STATES/FERGUSON						
8"x 8" TEE	1 EA.	1 EA.	MJ C153	TYLER PIPE/FERGUSON						
8"x 6" TEE	2 EA.	2 E.A.	MJ C153	TYLER PIPE/FERGUSON						
8" VALVE	2 EA.	3EA.	MJGV, OR	MUELLER CO./FERGUSON						
6" VALVE	2 EA.	2EA.	MJGV,OR	MUELLER CO./FERGUSON						
8" CAP & BUTTRESS	1 EA.	. IEA.	MJ C153	TYLER PIPE/FERGUSON						
1/32 H.B. 8"	2 EA.	2EA.	MJ C153	TYLER PIPE/FERGUSON						
1/8 H.B. 8"	2 EA.			. —						
8"x4"TSV. +V.	4 EA.	2 E.A.	MJFLG,RS	MUELLER CO./FERGUSON						
CURB STOP W 3.23	66 EA.	GIEA.	SLIDE V BOX	CAPITOL FOUNDRY/FERGUSON						
1 1/2" COPPER	£950 LF	454.5 LF	'K'COPPER	MUELLER CO./FERGUSON						
FIRE HYDRANT	2 EA.	. 2EA.	A-423	MUELLER CO./FERGUSON						
4" VALVE	€ EA.	. GEA.	MJ RS GV	MUELLER CO./FERGUSON						
4" 5HC	840 LF	960 LF	SDR 35	NORTH AMERICAN/FERGUSOI						
4" P7CCC100"	315 LF	258 LF	DIP CL 52	ATLANTIC STATES/FERGUSOI						
8"x4" TEE	-2EA-		 							
3/4" INSIDE METER	-66 EA									
1" COPPER	352 LF	274 LF	'K'COPPER	MUELLER CO./FERGUSON						
1/2" x 1" WYE	33 EA	33 EA.	TCS	FORD CO./FERGUSON						
				f ₃						

HOWARD COUNTY BENCHMARKS

361B 5	62,553.293	1,3	90,967.941	16	66.939			PROXIMATELY
WAT	ER VAL	/ <u>E</u>	LOCAT	ON	S-AS	<u> ឧប</u>	ILT	
	FROM	'	TO		DISTAN	CE	REMA	ARKS
6"FHV	I-141		VALVE		15'		COBUR	N COURT
3+68	FH 3+68	,	VALVE		71			
	TH 14 U1/12	CC	VALVE		44	1		
8" VALVE	SMH 15C		VALVE		39.	<u>ع،</u>	COBUR	NCOURT
5+00	DJD 6+82 8 "		VALVE		4'			
	DJD 6+88 8	۳٧	VALVE		41			
8" VALVE	CC 5+06 8'	'Y	VALVE		41		Daniel	JOHN DR.
6+88	SMH 15C		VALVE		43.3	3'		
	DJD 6+82 <i>8</i>	3 " V	VALVE		6			
8" VALVE	SM 15C		VALVE		40.4		DANIEL	JOHNDR.
6+82	TH 13 U 9/10		VALVE		57'			
	CC 5+06 8"	<u>V</u>	VALVE		41			
	084 6 100				C C A1		DANUEL	INIAL DD
4"V(FIRE LINE)	8"V 6+82		VALVE		66.41 501		VANIEL	JOHN DR.
Ø+1Ø	TH 13 U 9/10 C		VALVE				_	
ADD ON	TH13U%C	U	VALVE		73			
6"FHV	FH 5+61		VALVE	,	14'		DANIEL	JOHN DR.
5+61	TH 12 U1/12 C		VALVE		38		DANICL	. 00/114 98.
5+01	4"V 5+12		VALVE		41		 	
	7 7 3 1 12	•	4 / N to 9 to	-			1	
4"V (FIRE LINE)	6"FHV 5+6	1	VALVE		49	ı	DANIEL	JOHNDR.
5+12	FH 5+01		VALVE		50.			
ADD ON	TH12 U1/12 C		VALVE		43			
-	1							
4"(FIRE LINE)	SMI 17		VALVE	:	26.0	61	DANIEL	JOHN DR.
1+38	THIIU1/2 WI	HC	VALVE		23			
ADD ON	THIIU3/4 WI	HC	VALVE	,	43.4	١,		

SEDIMENT CONTROL MEASURES WILL BE IMPLEMENTED IN ACCORDANCE WITH SECTION 219 OF THE SPECIFICATIONS AND WITH SITE DEVELOPMENT PLAN SDP-04-017

THIS DEVELOPMENT IS APPROVED FOR SOIL

EROSION AND SEDIMENT CONTROL BY THE

NORTHING

DJD = DANIEL JOHN DRIVE

2+10 THI4U12 SHC VALVE ADD ON THIAUYZWHC VALVE 31.5' CC=COBURN COURT

FROM

4"Y(FIRELINE) SMH ISA VALVE

BRASS DISK ON CONC. MONUMENT IN GRASS PLOT ON

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

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND

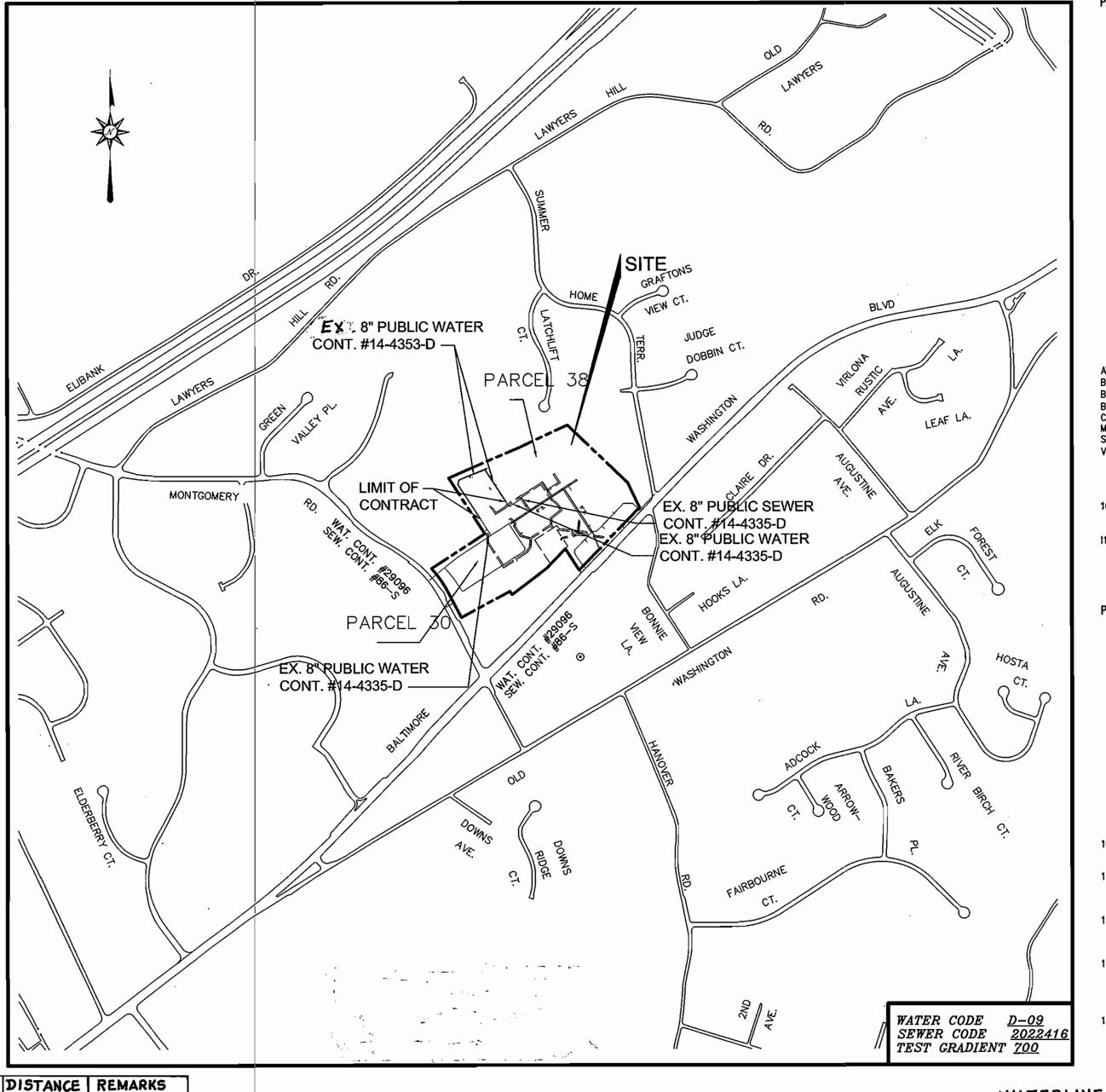
CHIEF. DEVELOPMENT ENGINEERING DIVISION OF DATE

DEPARTMENT OF PLANNING AND ZONING

HOWARD COUNTY, MARYLAND

ELKRIDGE CROSSING MONTGOMERY ROAD & WASHINGTON BOULEVARD (U.S. RTE. #1) PRELIMINARY WATER & SEWER PLAN HOWARD COUNTY, MARYLAND

CONTRACT No. 14 - 4353 - D



TYPE OF BUILDING.....

DRAINAGE AREA.....PATAPSCO

TREATMENT PLANT......PATAPSCO

No. OF WATER HOUSE CONNECTIONS.......35

No. OF SEWER HOUSE CONNECTIONS O

SHC	SHC & WHC LOCATIONS - AS BUILT										
BUILDING #	FROM	FROM TO DIS		REMARKS							
BLOG. B3	M-4	SHC	71.5'								
	6"V WHC TOB3	SHC	Ø3¹								
	FH 3+77	SHC	61'	_							
BLDG. B4	M-7B	SHC	01								
	6"V WHC TOB4	SHC	50'								
	THGU 13/14WHC	SHC	88'								
BLDG. B3	M-4	WHC	381								
6"V WHC	I-A52	WHC	40'								
	4" SHC (B3)	WHC	631								
	·										
BLDG. B4	M-7B	WHC	231								
6"V WHC	THO UI3/4WHC	WHC	291								
	4"SHC (B4)	WHC	631	<u> </u>							

GENERAL\L NOTES

SATISFACTION OF THE ENGINEER AT THE CONTRACTOR'S EXPENSE.

8. THE CONTRACTOR SHALL NOTIFY THE FOLLOWING UTILITY COMPANIES OR AGENCIES AT LEAST FIV

AT&T	1-800-252-1133
	410-850-462
	410-685-1400
BUREAU OF UTILITIES)	410-313-4900
COLONIAL PIPELINE CO	410-795-1390
MISS UTILITY	1-800-257-7777
	410-531-5533
VERIZON	1-800-743-0033/410-224-9210

11. 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 CONSTITUTE COMPLIANCE WITH DPW REQUIREMENTS PER SECTION 18.114(A) OF THE HOWARD

PART II WATER

1. ALL WATER MAINS SHALL BE AWWA C900 P.V.C. UNLESS OTHERWISE NOTED. 2. TOPS OF ALL WATER MAINS SHALL HAVE A MINIMUM OF 3' -6" OF COVER UNLESS OTHERWISE NOTED.

3. VALVES ADJACENT TO TEES SHALL BE STRAPPED TO TEES.

4. ALL FITTINGS SHALL BE BUTTRESSED OR ANCHORED WITH CONCRETE IN ACCORDANCE WITH STANDARD DETAILS

UNLESS OTHERWISE PROVIDED FOR ON THE DRAWINGS.

5. 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

6. THE CONTRACTOR SHALL NOT OPERATE ANY WATER MAIN VALVES ON THE EXISTING WATER SYSTEM.

7. FOR SPRINKLER SYSTEM FOR ALL TOWNHOMES OR MULTI-FAMILY DWELLING UNITS SHOULD HAVE A 1 1/2" CONNECTION WITH A 1" METER.

8. ALL DUCTILE IRON PIPES TO BE USED ON THE PUBLIC WATER SYSTEM SHALL BE CLASS 54. DUCTILE IRON FITTINGS SHALL MEET THE REQUIREMENTS OF THE HOWARD COUNTY DESIGN MANUAL VOLUME IV -STANDARD SPECIFICATIONS AND DETAILS FOR CONSTRUCTION AND

SHALL BE EXTERIOR EPOXY COATED IN ACCORDANCE WITH AWWA CII6. 9. 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.

10. ALL FIRE HYDRANT LEADS INCLUDING THE TEE SHALL BE DUCTILE IRON CLASS 54 MEETING THE REQUIREMENTS OF AND CONSTRUCTED IN ACCORDANCE WITH THE HOWARD COUNTY DESIGN MANUAL VOLUME IV —STANDARD SPECIFICATIONS AND DETAILS FOR CONSTRUCTION. 11. ALL WATER MAINS CONSTRUCTED IN FILL AREAS SHALL BE RESTRAINED DUCTILE IRON PIPE CLASS 54 MEETING THE REQUIREMENTS OF AND CONSTRUCTED IN ACCORDANCE WITH THE

HOWARD COUNTY DESIGN MANUAL VOLUME IV -STANDARD SPECIFICATIONS AND DETAILS 12. ALL WATER MAINS WITHIN CASING PIPES SHALL BE RESTRAINED DUCTILE IRON PIPE CLASS 54 MEETING THE REQUIREMENTS OF AND CONSTRUCTED IN ACCORDANCE WITH THE HOWARD COUNTY DESIGN MANUAL VOLUME IV -STANDARD SPECIFICATIONS AND DETAILS FOR

13. THE FOLLOWING NOTE IS ADDED TO HOWARD COUNTY STANDARD DETAIL W2.22, BUTTRESSES AND ANCHORAGE'S FOR VERTICAL BENDS. "WHEN ANCHORING PVC PIPE, THE STRAPPING IN CONTACT WITH THE PIPE SURFACE SHALL BE 1-INCH WIDE BY 14-INCH THICK STEEL. THE REMAINING PORTION OF THE STRAP SHALL BE REINFORCING BAR SIZED IN ACCORDANCE WITH

THE PERTINENT CHART SHOWN ON THE DETAIL."

14. EXCEPT AS INDICATED ON THE PLANS AND NOTED ABOVE, ALL PUBLIC WATER MAINS SHALL BE POLYVINYL CHLORIDE (PVC) PIPE MEETING THE REQUIREMENTS OF AWWA C900 DRIB, PRESSURE CLASS 150 AND THE HOWARD COUNTY DESIGN MANUAL VOLUME IV -STANDARD SPECIFICATIONS AND DETAILS FOR CONSTRUCTION AND ALL SUBSEQUENT AMENDMENTS THERETO.

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6-7 2106 2106		"Ch	\mathbf{A}^{+}	-50 M	RD	OLD BAR		
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	ELA	S C	TO XS	110 Steel	O	CANADA	A STATE OF	
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LOCATION MAP

WHE & SHE LOCATIONS-AS BUILT

WIL	SHC LOCAT	TUND-AS	BUILI		
	FROM	TO	DISTANCE		
TH9UI	SM 6	WHC	49'		
	TH9 U2 WHC	WHC	4.5'		
TH902	SMIG	WHC	531		
7,7,500	TH9U3WHC	WHC	4.51		
TUQUA	Chalea	14/11/0	104'		
TH9U3	TH9U4 WHC	WHC WHC	101.5'		
	INSUA WILC	WIIC	101.5		
TH9 U4	SMH 5A	WHC	101.51		
	8"V 0+04	WHC	981		
			5.5.		
TH9U5	5M 5A	WHC	81.51		
	8"V 0+04	WHC	801		
TH9U6	SM15A	WHC	771		
	8"V 0+04	WHC	70.51		
TH9U7	SM 5A	WHC	58.51		
	8"V 0+04	WHC_	60.5		
TH9U8	SMISA	WHC	551		
111300	8"V 0+04	WHC	571		
TH9U9	SM 5A	WHC	381		
	8"V 0+04	WHC	451		
TH9UID	SM 5A	WHC	35.51		
1119010	8"V 0+04	WHC	431		
			 		
TH9UII	SM 5A	WHC	25'		
	8"V 0+04	WHC	38.51		
THOMB	Chales	14/16	00.51		
TH9U12	SM 5A 8"V 0+04	WHC	24.51		
	5 1 0.04	WHC	391		
TH9U1/2	SMO	SHC	60'		
	TH9U34SHC	SHC	23.41		
TUO 11 24	CALLE	6116	- A		
TH9U3/4	5MH @ TH 9 U 5/@	SHC	811		
	1119070	JAC	25'		
TH90%	5M6	SHC	1041		
	TH9 U 1/8	SHC	241		
TH907/8	SM15A	SHC	51.5'		
· · ·	8"V 0+04	SHC	53.61		
TH9 U%10	SMI 5A	SHC	33'		
5 710	8"V 0+04	SHC	41'		
TH9U1/12	SM 5A	SHC	27'		
	8" > 0+04	SHC	411		

WATERLINE TEST STATIONS

		1	DIOMALICE	B 51 4 4 5 4 6
	FROM	L TO	DISTANCE	REMARKS
TEST STATION	6"V 3+68	TEST STATION	8'	COLBURN COUR
3+68	FH 3+68	TEST STATION	2'	_
RT. OF FH	TH 14 U 1/12 SHC	TEST STATION	511	
TEST STATION	6"V 5+61	TEST STATION	2'	
5+61	FH 5+61	TEST STATION	14'	
LT. OF FH	TH 12 U 1/12	TEST STATION	231	

DATE: SEPTEMBER 2007

DEVELOPER BRANTLY DEVELOPMENT GROUP, INC. 8835-P COLUMBIA 100 PARKWAY COLUMBIA, MARYLAND 21045

SCALE:

SHOWN

SHEET:

1 OF 4

Richardson Engineering, LLC

25' COLBURNCOURT

110 Old Padonia Road, Suite LC Cockeysville, Maryland 21030 Phone: 410-560-1502 Fax: 410-560-0827

TO

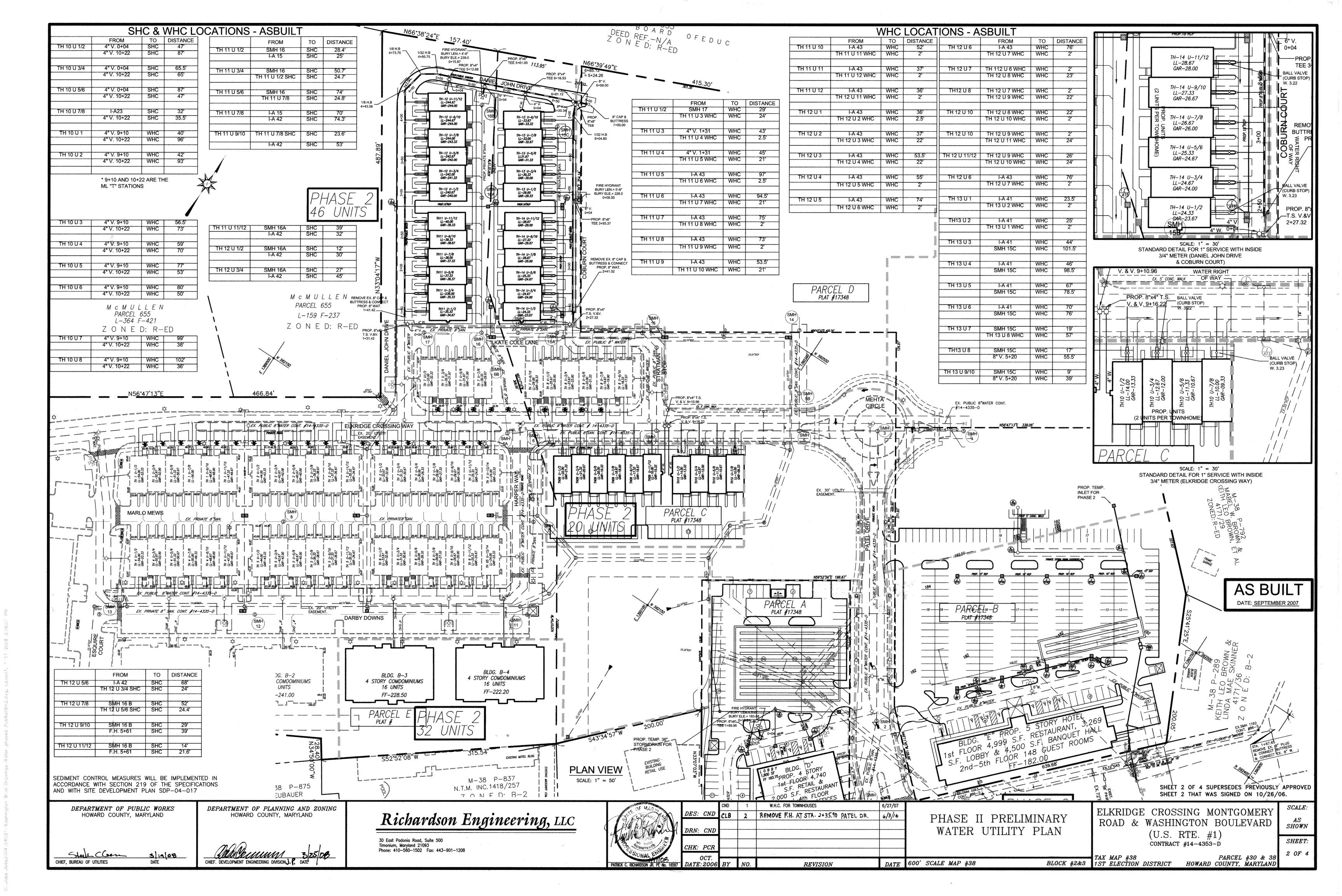
	LE OF MADE		CND	- 1	QUANTITIES & CALCULATIONS	6/18/07
	FOR STEER ST	DES: CND				
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۱		DRN: CND				
	A PECISTERE	CHK: PCR				
	Broad Ex					
	PATRICK C. RICHARDSON JR. PE No. 16597	<i>OCT. DATE: 2006</i>	BY	NO.	REVISION	DATE

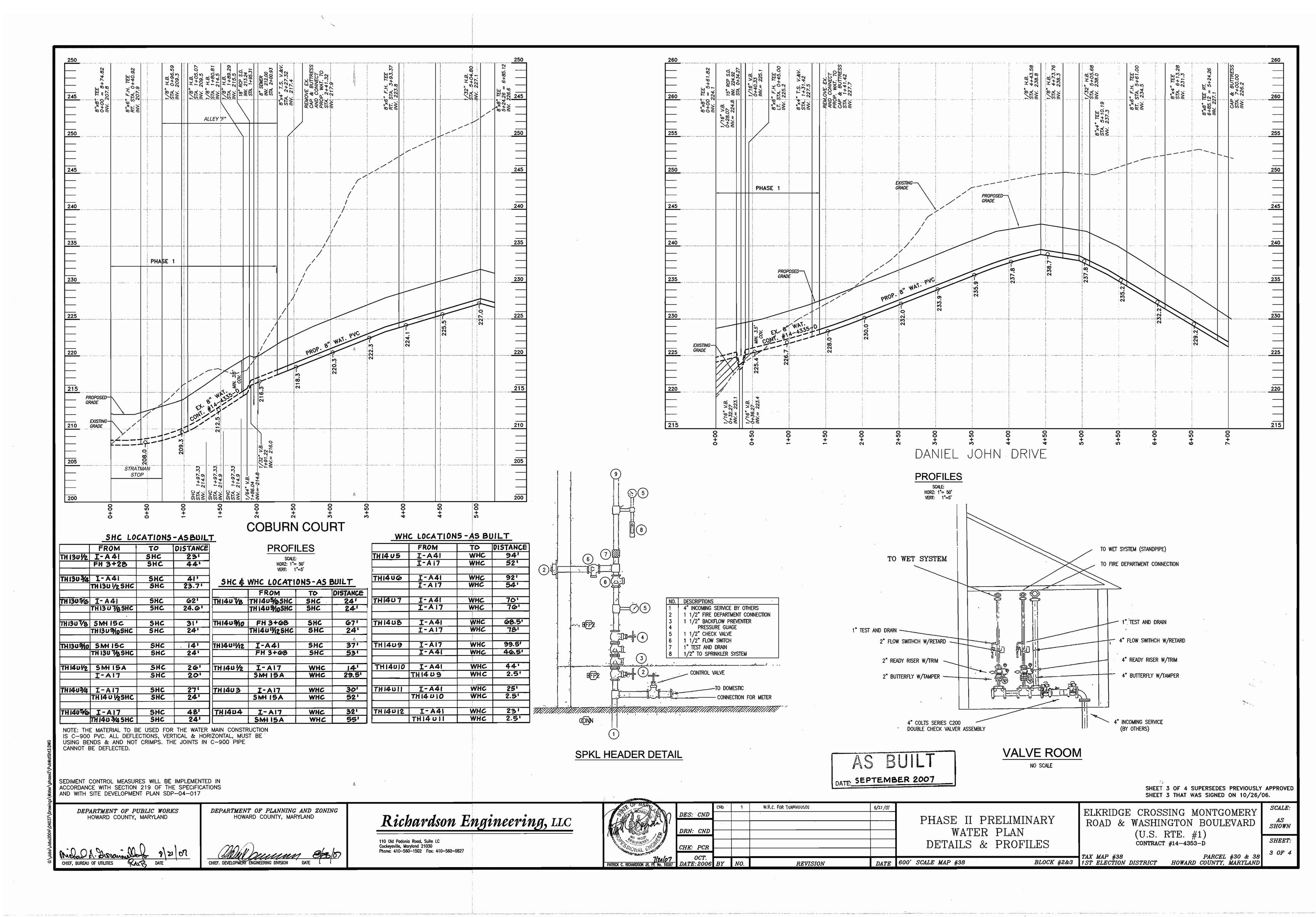
..RESIDENTIAL\COMMERCIAL

PHASE II PRELIMINARY WATER PLAN

ELKRIDGE CROSSING CONTRACT #14-4353-D

HK: PCR					COVER	SHEET				
OCT.							TAX MAP #38		PA	ARCEL #30 & 3
ATE: 2006	BY	NO.	REVISION	DATE	600' SCALE MAP #38	BLOCK #2&	3 1ST ELECTION	DISTRICT	HOWARD COL	INTY, MARYLANI





DMSION 5 SPECIAL PROVISIONS

5.01 UTILIZATION OF PLANS AND SPECIFICATIONS

(A) THIS CONTRACT WILL BE CONSTRUCTED UNDER THE PROVISIONS OF THE "HOWARD COUNTY DESIGN MANUAL, VOLUME IV, STANDARD SPECIFICATIONS AND DETAILS FOR CONSTRUCTION", DATED JANUARY, 1991, AND ANY SUBSEQUENT AMENDMENTS WHICH ARE HEREBY INCORPORATED BY REFERENCE:: INTO THE CONTRACT DOCUMENTS. IN THE EVENT OF A CONFLICT BETWEEN PORTIONS OF "THE CONTRACT DOCUMENTS, THE PROVISIONS OF SECTION 105.04 OF VOLUME IV WILL GOVERN, THE ORDER OF WHICH IS:

1. SPECIAL PROVISIONS

2. PLANS (DRAWINGS) 3. SUPPLEMENTAL SPECIFICATIONS 4. STANDARD SPECIFICATIONS AND DETAILS

5.02 WORK TO BE DONE:

(A) THE WORK TO BE DONE UNDER THIS CONTRACT CONSISTS OF THE FURNISHING OF ALL MATERIALS AND THE CONSTRUCTING COMPLETE IN PLACE OF THE WATER AND SEWER PIPELINES, AND ALL APPURTENANCES. FOR THE ABOVE ITEMS, AS SHOWN ON THE CONTRACT DRAWINGS OR AS DIRECTED BY THE ENGINEER.

(B) THE PLANS AND SPECIFICATIONS ARE INTENDED TO COVER A COMPLETE PROJECT INCLUDING THE TESTING OF THE PIPELINES, EQUIPMENT AND APPURTENANCES. IT SHOULD BE DISTINCTLY UNDERSTOOD THAT FAILURE TO MENTION SPECIFICALLY ANY WORK WHICH WOULD NATURALLY BE REQUIRED TO COMPLETE THE PROJECT SHALL NOT RELIEVE THE DEVELOPER OF HIS RESPONSIBILITY TO PERFORM SUCH WORK.

(C) FIVE DRAWINGS ACCOMPANY THESE SPECIFICATIONS AND SHOW THE EXTENT OF THE WORK TO B€ DONE UNDER THIS CONTRACT.

5.03 ACCESS TO PROJECT:

(A) THE DEVELOPER SHALL PERMIT FREE ACCESS TO ALL PARTS OF THE PROJECT AT: ALL TIMES FOR INSPECTION PURPOSES FOR REPRESENTATIVES OF THE PUBLIC HEALTH SERVICE OF THE UNITED STATES AND FOR REPRESENTATIVES OF THE DEPARTMENT OF HEALTH OF THE STATE OF MARYLAND, AND SHALL PROVIDE PROPER FACILITIES FOR SUCH ACCESS AND INSPECTION WHEREVER IT IS REQUIRED.

5.04 DEVELOPER'S PIPE MATERIAL SPECIFICATIONS:

(A) ALTHOUGH UNDER THIS CONTRACT "THE DEVELOPER HAS THE OPTION OF FURNISHING PIPE OF VARIOUS MATERIALS, IT IS THE INTENT THAT ONCE A MATERIAL FOR PIPE HAS BEEN SELECTED, THIS MATERIAL SHALL BE USED EXCLUSIVELY THROUGHOUT THIS CONTRACT EXCEPT, HOWEVER, WITHIN LIMITS WHERE PIPELINE TYPE AND MATERIAL ARE SPECIFIED ON THE DRAWINGS. THE DEVELOPER SHALL NOT CHANGE MATERIALS DURING THE PROSECUTION OF THIS CONTRACT UNLESS HE IS AUTHORIZED IN WRITING TO DO SO

5.05 TESTING WATER MAINS:

(A) THE COMPLETED WATER MAINS SHALL BE FILLED WITH WATER. AND BROUGHT TO A TEST GRADIENT OF ELEVATION 700.00 AS SPECIFIED UNDER PARAGRAPH 1002.04. 5.06 TEMPORARY PROTECTIVE CHANNEL COVER:

(A) IN ALL SEWER MANHOLES A TEMPORARY PROTECTIVE CHANNEL COVER AS SHOWN ON THE DRAWING ENTITLED TEMPORARY PROTECTIVE CHANNEL COVER" SHALL BE PROVIDED.

(B) THE PROTECTIVE CHANNEL COVER SHALL BE INSTALLED WHEN THE SEWER MAINS HAVE BEEN INSPECTED AND TESTED.

5.07 TIE-IN AT WATER MAIN:

(A) THE DEVELOPER SHALL NOTIFY THE HOWARD COUNTY BUREAU OF UTILITIES (313-4900) PRIOR TO MAKING ANY TIE TO THE EXISTING SYSTEM.

(B) THE DEVELOPER SHALL NOT OPERATE ANY WATER MAIN VALVE ON THE EXISTING SYSTEM.

(C) THE DEVELOPER SHALL NOTIFY ALL WATER CUSTOMERS OF THE COUNTY WHO WILL BE WITHOUT SERVICE A MINIMUM OF FORTY-EIGHT (48) HOURS IN ADVANCE OF THE

5.08 PRECONSTRUCTION MEETING:

SCHEDULED SHUTDOWN.

(A) A PRECONSTRUCTION MEETING WILL BE HELD WITH THE DEVELOPER, HIS CONTRACTOR AND THE COUNTY TO DISCUSS THE PROJECT AND SEQUENCE OF WORK PRIOR TO BEGINNING ANY WORK.

5.09 STERILIZATION AND DISINFECTION OF WATER MAINS:

(A) STERILIZATION AND DISINFECTION OF WATER MAINS INCLUDING BACTERIOLOGICAL TESTINGS SHALL BE DONE BY THE CONTRACTOR AS SPECIFIED IN SECTIONS 1006 AND 1007.

(1) DISINFECTING OF WATER MAINS SHALL BE DONE BY THE CONTRACTOR AS SPECIFIED AND DIRECTED WITHOUT ADDITIONAL PAYMENT THEREOF. THE CONTRACTOR SHALL PROVIDE ALL LABOR, MATERIALS AND EQUIPMENT FOR THE COMPLETE STERILIZING

(2) DISINFECTING OF WATER MAINS SHALL BE DONE IN ACCORDANCE WITH AWWA C651-86 USING THE CONTINUOUS FEED METHOD. THE OPTION OF PLACING CALCIUM HYPO CHLORITE GRANULES IN THE PIPE DURING CONSTRUCTION SHALL NOT BE USED. AN AIR GAP OR A DEVICE TO PREVENT BACKFLOW OF THE CHLORINE SOLUTION INTO THE COUNTY WATER SYSTEM MUST BE APPROVED BY THE COUNTY AND USED DURING THE TESTING PROCEDURES.

(3) PRIOR TO THE BEGINNING OF DISINFECTING OPERATIONS, THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER FOR APPROVAL A SCHEDULE LISTING DETAIL OF DISINFECTING PROCEDURES TO BE FOLLOWED.

5.10 PERMITS:

(A) STATE OF MARYLAND DEPARTMENT OF THE ENVIRONMENT.

THE GENERAL NOTES ARE AMENDED TO INCLUDE THE FOLLOWING

1. ALL DUCTILE IRON PIPES TO BE USED ON THE PUBLIC WATER SYSTEM SHALL BE CLASS 54. DUCTILE IRON FITTINGS SHALL MEET THE REQUIREMENTS OF THE HOWARD COUNTY DESIGN MANUAL VOLUME IV -STANDARD SPECIFICATIONS AND DETAILS FOR CONSTRUCTION AND SHALL BE EXTERIOR EPOXY COATED IN ACCORDANCE WITH AWWA CII6.

2. 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.

3. ALL FIRE HYDRANT LEADS INCLUDING THE TEE SHALL BE DUCTILE IRON CLASS 54 MEETING THE REQUIREMENTS OF AND CONSTRUCTED IN ACCORDANCE WITH THE HOWARD COUNTY DESIGN MANUAL VOLUME IV --STANDARD SPECIFICATIONS AND DETAILS FOR CONSTRUCTION.

4. ALL WATER MAINS CONSTRUCTED IN FILL AREAS SHALL BE RESTRAINED DUCTILE IRON PIPE CLASS 54 MEETING THE REQUIREMENTS OF AND CONSTRUCTED IN ACCORDANCE WITH THE HOWARD COUNTY DESIGN MANUAL VOLUME IV -STANDARD SPECIFICATIONS AND DETAILS FOR CONSTRUCTION.

5. ALL WATER MAINS WITHIN CASING PIPES SHALL BE RESTRAINED DUCTILE IRON PIPE CLASS 54 MEETING THE REQUIREMENTS OF AND CONSTRUCTED IN ACCORDANCE WITH THE HOWARD COUNTY DESIGN MANUAL VOLUME IV -STANDARD SPECIFICATIONS AND DETAILS FOR

6. THE FOLLOWING NOTE IS ADDED TO HOWARD COUNTY STANDARD DETAIL W2.22, BUTTRESSES AND ANCHORAGE'S FOR VERTICAL BENDS. WHEN ANCHORING PVC PIPE, THE STRAPPING IN CONTACT WITH THE PIPE SURFACE SHALL BE 1-INCH WIDE BY 14-INCH THICK STEEL. THE REMAINING PORTION OF THE STRAP SHALL BE REINFORCING BAR SIZED IN ACCORDANCE WITH THE PERTINENT CHART SHOWN ON THE DETAIL."

7. EXCEPT AS INDICATED ON THE PLANS AND NOTED ABOVE, ALL PUBLIC WATER MAINS SHALL BE POLYVINYL CHLORIDE (PVC) PIPE MEETING THE REQUIREMENTS OF AWWA C900 DRIS. pressure class 150 and the howard county design manual volume iv —standard SPECIFICATIONS AND DETAILS FOR CONSTRUCTION AND ALL SUBSEQUENT AMENDMENTS THERETO.

AMENDMENT TO THE HOWARD COUNTY DESIGN MANUAL VOLUME IV - STANDARD SPECIFICATIONS AND 2. JOINT RESTRAINING MATERIALS FOR PVC PIPE:

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.

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 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 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 \pm 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

4. SUBMITTALS: THE FOLLOWINGS ITEMS SHALL BE SUBMITTED FOR REVIEW AND APPROVAL PRIOR TO INSTALLATION. MATERIALS NOT APPROVED WILL NOT BE ACCEPTED.

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.

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

SUBMIT MANUFACTURERS' LITERATURE AND CERTIFICATES OF COMPLIANCE, FOR JOINT RESTRAINT DEVICES, PIPE COUPLINGS, TRACER WIRE, WIRE CONNECTOR SPLICE KITS, DETECTION TAPE, AND SERVICE SADDLES.

D. SUBMIT MANUFACTURERS' 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.

METALLIC DETECTION TAPE

INSTALLED 18" BELOW SURFACE

FARTH RACKER I

COMPACT IN 8" LIFTS

6 BASE TRACE WIRE ATTACHED TO PVC PIPE

PVC C900 WATER MAIN (SEE PLAN FOR SIZE)

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 THE 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 150 PSI, 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, INC.

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

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

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 HARNESSING 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 THIS JOINT SHALL MEET ASTM F1674 AND SHALL BE UNIFLANGE SERIES 1500, EBAA IRON SERIES 2000PV, OR

D. WHERE A RESTRAINED JOINT IS REQUIRED FOR PVC PUSH-ON JOINT, JOINT RESTRAINT SHALL BE UNI-B-13, ICM 620 SUR-GRIP, EBBA IRON SERIES 1600, UNIFLANGE SERIES 1390-C, OR APPROVED EQUAL.

3. TRACER WIRE FOR NON METALLIC PIPELINES:

Tracer wire shall be 6-gage, 7-strand continuous copper wire with a 45-mil polyethylene INSULATION. THE WIRE SHALL BE BLUE, HAVE "UL" MARKINGS AND SUITABLE FOR DIRECT BURY

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" X 12" METAL FRAME AND COVER AS SHOWN IN THE DETAILS ON THE PLANS. A 1-INCH DIAMETER BY 30-INCH LONG COPPER PROUNDING 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.

VISUAL DITECTION TAPE SHALL BE 3 INCHES WIDE (MINIMUM) METALLIC BLUE PLASTIC TAPE

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 A395 WITH TWO 18-8 STAINLESS STEEL STRAPS AND SHALL BE EPOXY OR NYLON COATED. SADDLES SHALL HAVE WATERTIGHT GASKETS OF BUMA-N RUBBER MEETING ASTM 02000 OR NITRILE AROUND THE TAP HOLE. SADDLES SHALL BE ONE OF THE FOLLOWING: 1. FORD FC-202

. MUELLER SERIES DR2S ROMAC 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.

PROVIDE 6 INCHES OF STONE BEDDING UNDER THE PIPE IN ACCORDANCE WITH 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.

INSTALL TRACER WIRES WITH THE PIPE. TAPE WIRE TO THE TOP OF THE PIPE WITH MINIMUM 2-INCH WIDE X 1/2-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. WHERE REQUIRED, SPLICING SHALL BE DONE WITH DIRECTBURY WIRE CONNECTOR, WIRE NUT, OR SPLICE KIT LISTED AND LABELED FOR DIRECT BURY, INSTALLED AS RECOMMENDED BY MANUFACTURER, AND TAPED TO THE PIPE. CONNECTIONS TO CONTINUITY TEST STATIONS SHALL BE IN ACCORDANCE WITH THE DETAIL 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.

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 IS INCHES OR MORE THAN 24 INCHES BELOW FINISHED SURFACE. TAPE SHALL BE INSTALLED WITH MINIMAL SPLICES. SPLICES SHALL OVERLAP A MINIMUM OF 6

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 OF FITTINGS.

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 LONG. 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. THE SPIGOT SHALL NOT BE INSERTED DEEPER THAN MANUFACTURER'S RECOMMENDATIONS. INSTALL PUSH-ON RESTRAINED JOINTS IN ACCORDANCE WITH MANUFACTURER'S

IN A RESTRAINED JOINT, PVC PIPE SHALL NOT BE DEFLECTED. IF DEFLECTION IS REQUIRED IN A RESTRAINT 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 titing 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-INCHS APART WHEN MEASURED LONGITUDINALLY.

10" 1'-6" 1'-0" TO BE USED ONLY WHERE 1'-0" | 2'-0" | 2'-0" VALVES ARE NOT ATTACHED TO TEES. 1 - 0 | 2 - 0 | 3 - 0 |

EARTH

9" | 1'-8" | 1'-6"

-ANCHOR VALVE TO CONCRETE WITH 2 - 14 BARS. PROVIDE A CONTINUOUS BEARING SURFACE FOR ONE HALF

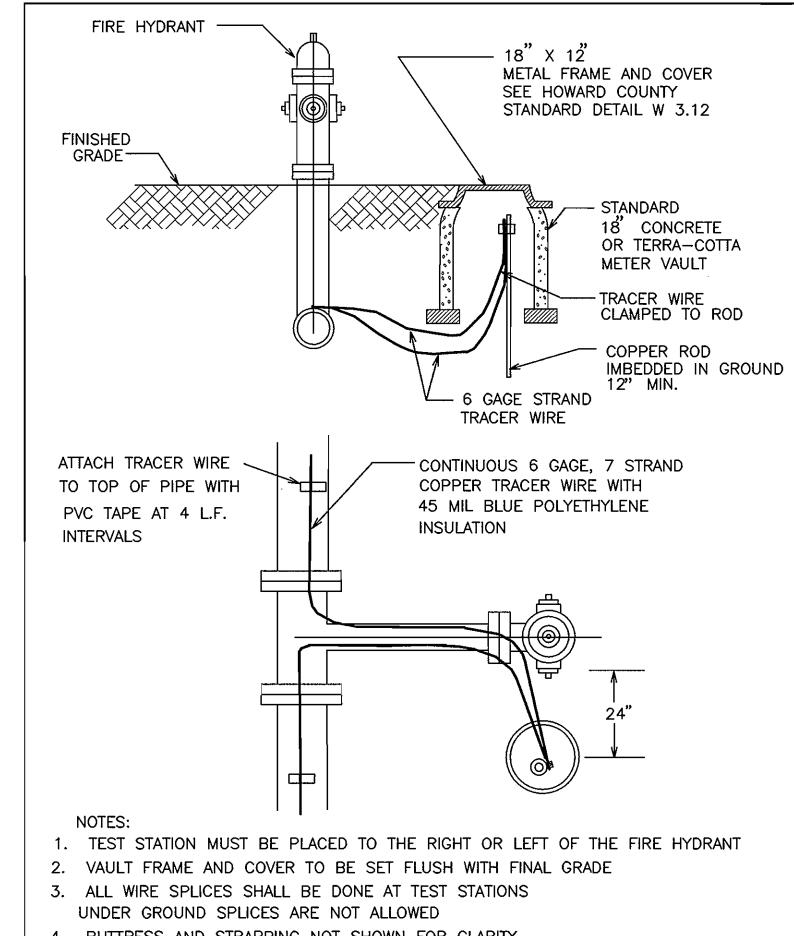
THE PIPE PERIMETER. COAT STEEL

ALL CONCRETE TO BE NEX NO. 2

APPROVED BITUMINOUS COATING.

EXPOSED TO SOIL WITH AN

ANCHORAGES FOR VALVES WITH PVC PIPE



4. BUTTRESS AND STRAPPING NOT SHOWN FOR CLARITY

STANDARD INSTALLATION HOWARD COUNTY CONTINUITY TEST STATION

AT FIRE HYDRANT & SPLICES

ELKRIDGE CROSSING MONTGOMERY ROAD & WASHINGTON BOULEVARD (U.S. RTE. #1)

CONTRACT #14-4353-D

1ST ELECTION DISTRICT HOWARD COUNTY, MARYLANI

PARCEL #30 & 38

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND

AND WITH SITE DEVELOPMENT PLAN SDP-04-017

SEDIMENT CONTROL MEASURES WILL BE IMPLEMENTED IN

ACCORDANCE WITH SECTION 219 OF THE SPECIFICATIONS

FINISHED GROUND-

DEPARTMENT OF PLANNING AND ZONING HOWARD COUNTY, MARYLAND

Richardson Engineering, LLC

Phone: 410-560-1502 Fax: 410-560-0827



106	OCT.	DIZ	170	DEWGLON	D 4 (F)
THE PERSON NAMED IN COLUMN TO PERSON NAMED I					
AL CONTRACTOR	CHK: PCR				
	DRN: CND				
	DES: CND				
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PHASE II PRELIMINARY WATER & SEWER PLAN NOTES & DETAILS

BLOCK #2&3

TAX MAP #38

SHEET 4 OF 4

10-16-06

CHIEF. DEVELOPMENT ENGINEERING DIVISION DATE

TRENCH FOR PVC PIPE AND

CONTINUITY TEST STATION DETAIL

12"

110 Old Padonia Road, Suite LC Cockeysville, Maryland 21030

- 18" X 12" METAL FRAME AND COVER SEE HOWARD CO, STO DETAIL W3,12

CONDUCTING WIRE CLAMPED TO ROD

COPPER ROD, IMBEDDED

- 18" CONCRÉTE OR TERRA-

COTTA METER VAULT

- WELL COMPACTED AASHTO M43 HS7 STONE

'←— EARTH BACKFILL

IN GROUND 12" MIN.

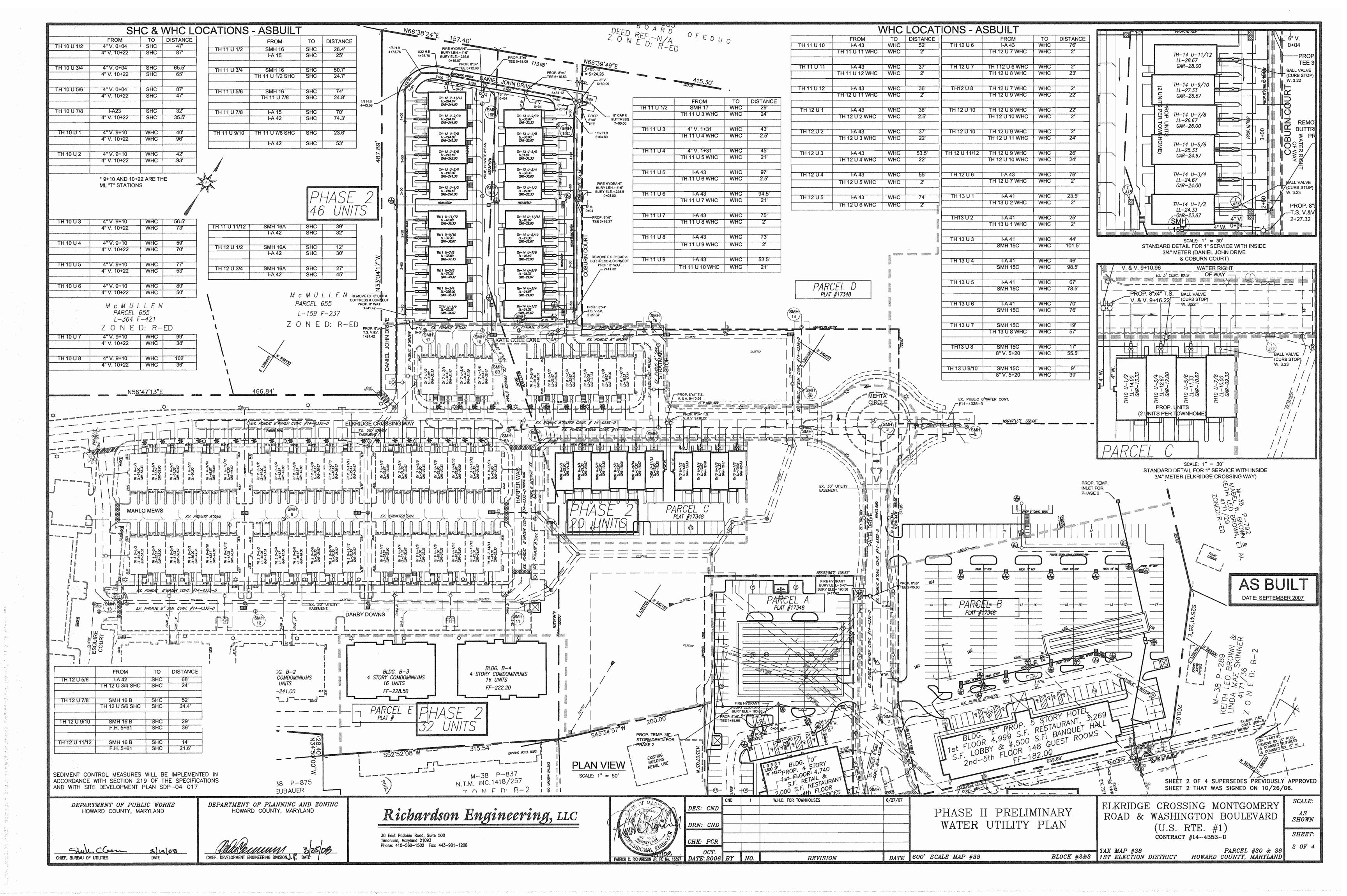
PATRICK C. RICHARDSON JR. PE No. 16597 DATE: 2006 BY NO.

DATE 600' SCALE MAP #38 REVISION

ATE SEPTEMBER 2007

SCALE:

NTS



	VAME OF UTILITY CONTRACTOR: AMERICAN INFRASTRUCTURE											
SURVEY AND DRAFTING DIVISION AS-BUILT DATE: SEPTEMBER 2007												
ITEMS	<i>QUANTITIES</i> ESTIMATED		AS-B	UILT								
	BUIIRAIBD	QUANTITIES	TYPE	MANUFACTURER/SUPPLIED								
8" P.V.C. C -900	845 LF	824 LF	SDR 35	NORTH AMERICAN/FERGUSON								
6" P.V.C. C 900	175 LF	20.3 LF	DIP CL 52	ATLANTIC STATES/FERGUSON								
8" x 8" TEE	1 EA.	I EA.	MJ C153	TYLER PIPE/FERGUSON								
8"x 6" TEE	2 EA.	2EA.	MJ C153	TYLER PIPE/FERGUSON								
8" VALVE	2 EA.	3EA.	MJGV,OR	MUELLER CO./FERGUSON								
6" VALVE	∴3 <i>EA</i> .	2EA.	MJ GV, OR	MUELLER CO./FERGUSON								
8" CAP & BUTTRESS	1 EA.	IEA.	MJ C153	TYLER PIPE/FERGUSON								
1/32 H.B. 8"	2 EA.	2EA.	MJ C153	TYLER PIPE/FERGUSON								
1/8 H.B. 8"	2 EA.			,								
8"x4"TSV. +V.	4 EA.	ZEA.	MJ FLG, RS	MUELLER CO./FERGUSON								
CURB STOP, W3.23	66 EA.	GIEA.	SLIDE V BOX	CAPITOL FOUNDRY/FERGUSON								
1 1/2" COPPER	2950 LF	454.5 LF	'K'COPPER	MUELLER CO./FERGUSON								
FIRE HYDRANT	⊰3 <i>EA</i> .	2EA.	A-423	MUELLER CO./FERGUSON								
4" VALVE	& EA.	GEA.	MJ RS GV	MUELLER CO./FERGUSON								
4" 5HC	840 LF	960 LF	SDR 35	NORTH AMERICAN/FERGUSON								
4" P70 0100	335 LF	258 LF	DIP CL 52	ATLANTIC STATES/FERGUSON								
8"x4" TEE	2-EA											
3/4" INSIDE METER	-66 EA-	· · · · · · · · · · · · · · · · · · ·	<u> </u>	-								
1" COPPER	352 LF	274 LF	'K'COPPER	MUELLER CO./FERGUSON								
1/2" × 1" WYE	33 EA	33 EA.	TCS	FORD CO./FERGUSON								
8"x 6"T.S.V.\$V.	I EA.											
- And Andrews	and the second s											

	HOWARD COUNTY BENCHMARKS									
NO.	NORTHING	EASTING	ELEV.	DESCRIPTION						
38A9	561,056.341	1,389,634.145	223.417	BRASS DISK ON CONC. MONUMENT IN GRASS PLOT ON SOUTHEAST SIDE OF U.S. RTE. #1 AND MONTGOMERY ROAD.						
361B	562,553.293	1,390,967.941	166.939	BRASS DISC ON CONC. MONUMENT ON WEST SIDE OF RTE. #1 APPROXIMATELY 100' NORTH OF BONNIE VIEW LANE.						
W	WATER VALVE LOCATIONS - AS BUILT									
	FROM	TO	DISTAN	ICE REMARKS						

	FROM	TO	DISTANCE	REMARKS
6"FHV	I-141	VALVE	15'	COBURN COURT
3+68	FH 3+68	VALVE	7 '	
	TH 14 U1412CC	VALVE	44'	
- / . / .				
8" VALVE	SM 15C	VALVE	39.31	COBURN COURT
5+00	DJD 6+82 8"V	VALVE	4'	
	DJD 6+88 8"V	VALVE	4'	
8" VALVE	CC 5+06 8"V	VALVE	4.	DANIEL JOHN DE
6+88	SMH ISC	VALVE	43.31	
	DJD 6+828"V	VALVE	6'	
			4.5.4.	TANKEL INCHES
8"VALVE	SM 15C	VALVE	40.4'	DANIEL JOHNDI
6+82	TH 13 U9/10 CO	VALVE	57'	
	CC 5+06 8"V	VALVE	4'	
4"V(FIRE LINE)	8"V 6+82	VALVE	66.41	DANIEL JOHN DI
0+10	TH 13 U9/10 CO	VALVE	50'	
ADD ON	TH13 U 76 CO	VALVE	731	
6"FHV	FH 5+61	VALVE	14'	DANIEL JOHN D
5+61	TH 12 U'M2 CO	VALVE	38'	JAMEL JOING
	4"V 5+12	VALVE	41'	
4"V (FIRELINE)		VALVE	49'	DANIEL JOHND
5+12	FH 5+01	VALVE	50.31	
ADD ON	TH12 U1/12 CO	VALVE	43'	
4"(FIRE LINE)	A contract of the second secon	VALVE	26.6'	DANIEL JOHN DI
1+38	THIIU1/2 WHC	VALVE	23'	
ADD ON	THIIU3/4 WHC	VALVE	43.4	

SEDIMENT CONTROL MEASURES WILL BE IMPLEMENTED IN ACCORDANCE WITH SECTION 219 OF THE SPECIFICATIONS AND WITH SITE DEVELOPMENT PLAN SDP-04-017

THIS DEVELOPMENT IS APPROVED FOR SOIL

EROSION AND SEDIMENT CONTROL BY THE HOWARD COUNTY SOIL CONSERVATION DISTRICT. DJD = DANIEL

2+10 THI4U12 SHC VALVE ADD ON THI4U12 WHC VALVE CC = COBURN COURT

FROM

4"V(FIRELINE) SMH ISA VALVE

TO

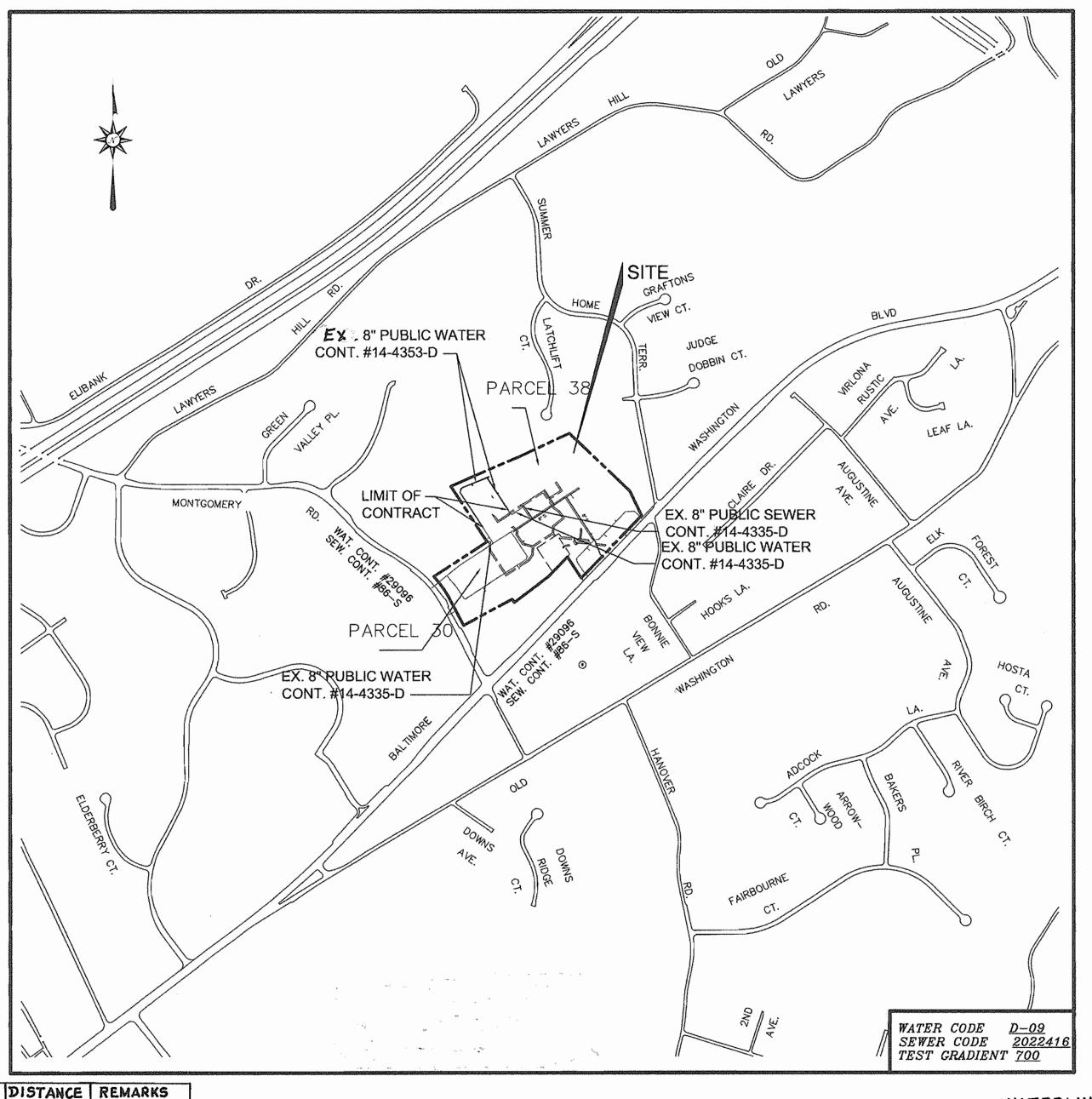
REVIEWED FOR HOWARD COUNTY SOIL CONSERVATION DISTRICT AND MEETS TECHNICAL REQUIREMENTS.

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND

DEPARTMENT OF PLANNING AND ZONING HOWARD COUNTY, MARYLAND

CHIEF. DEVELOPMENT ENGINEERING DIVISION ON DATE CHIEF, BUREAU OF UTILITIES DATE

ELKRIDGE CROSSING MONTGOMERY ROAD & WASHINGTON BOULEVARD (U.S. RTE. #1) PRELIMINARY WATER & SEWER PLAN HOWARD COUNTY, MARYLAND CONTRACT No. 14 - 4353 - D



SHC & WHC LOCATIONS - AS BUILT						
BUILDING #	FROM	TO	DISTANCE	REMARKS		
BL06. B3	M-4	SHC	71.5'			
6"VWHCTOB3		SHC	<i>6</i> 3¹			
	FH 3+77	SHC	61'			
<u> </u>						
BLDG. B4	M-7B	SHC	01'			
	6"V WHC TOB4	SHC	50'			
	THOU 13/14WHC	SHC	88'			
		33001.16				
BLDG. B3	M-4	WHC	381			
6"V WHC	I-A52	WHC	40'			
	4" SHC(B3)	WHC	63'			
BLOG. B4	M-78	WHC	231			
6"V WHC	THE UISLAWHO	WHC	291			
	4"SHC (B4)	WHC	631			

GENERAL\L NOTES

- 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. 2. TOPOGRAPHIC FIELD SURVEYS WERE PERFORMED ON APRIL, 2004 BY MILDENBERG-BOENDE
- THE COORDINATES SHOWN ON THE DRAWINGS ARE BASED ON MARYLAND STATE REFERENCE SYSTEM NAD '83/'91 AS PROJECTED BY HOWARD COUNTY GEODETIC CONTROL STATIONS
- DRAWINGS ARE BRASS DISKS ON CONCRETE MONUMENTS. 5. CLEAR ALL UTILITIES BY A MINIMUM OF 12 INCHES. CLEAR ALL POLES BY 5'-0" MINIMUM
- ADVANCE OF CONSTRUCTION OPERATIONS AT HIS OWN EXPENSE. 8. THE CONTRACTOR SHALL NOTIFY THE FOLLOWING UTILITY COMPANIES OR AGENCIES AT LEAST FIVE

AT&T	1-800-252-1133
BGE (CONSTRUCTION SERVICES)	
BGE (EMERGENCY)	410-685-1400
BUREAU OF UTILITIES)	410-313-4900
COLONIAL PIPELINE CO	410–795–1390
MISS UTILITY	
STATE HIGHWAY ADMINISTRATION	
VERIZON	1-800-743-0033/410-224-9210

- 11. 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 wil CONSTITUTE COMPLIANCE WITH DPW REQUIREMENTS PER SECTION 18.114(A) OF THE HOWARD

- 1. ALL WATER MAINS SHALL BE AWWA C900 P.V.C. UNLESS OTHERWISE NOTEO. 2. TOPS OF ALL WATER MAINS SHALL HAVE A MINIMUM OF 3' -6" OF COVER UNLESS OTHERWISE NOTED.

 3. VALVES ADJACENT TO TEES SHALL BE STRAPPED TO TEES. 4. ALL FITTINGS SHALL BE BUTTRESSED OR ANCHORED WITH CONCRETE IN ACCORDANCE WITH STANDARD DETAILS
- UNLESS OTHERWISE PROVIDED FOR ON THE DRAWINGS. 5. 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
- 6. THE CONTRACTOR SHALL NOT OPERATE ANY WATER MAIN VALVES ON THE EXISTING WATER SYSTEM. 7. FOR SPRINKLER SYSTEM FOR ALL TOWNHOMES OR MULTI-FAMILY DWELLING UNITS SHOULD HAVE A 1 1/2" CONNECTION WITH A 1" METER.
- 8. ALL DUCTILE IRON PIPES TO BE USED ON THE PUBLIC WATER SYSTEM SHALL BE CLASS 54. DUCTILE IRON FITTINGS SHALL MEET THE REQUIREMENTS OF THE HOWARD COUNTY DESIGN MANUAL VOLUME IV --STANDARD SPECIFICATIONS AND DETAILS FOR CONSTRUCTION AND SHALL BE EXTERIOR EPOXY COATED IN ACCORDANCE WITH AWWA CIIG.
- 9. 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.
- 10. ALL FIRE HYDRANT LEADS INCLUDING THE TEE SHALL BE DUCTILE IRON CLASS 54 MEETING THE REQUIREMENTS OF AND CONSTRUCTED IN ACCORDANCE WITH THE HOWARD COUNTY DESIGN MANUAL VOLUME IV -STANDARD SPECIFICATIONS AND DETAILS FOR CONSTRUCTION. 11. ALL WATER MAINS CONSTRUCTED IN FILL AREAS SHALL BE RESTRAINED DUCTILE IRON PIPE CLASS 54 MEETING THE REQUIREMENTS OF AND CONSTRUCTED IN ACCORDANCE WITH THE HOWARD COUNTY DESIGN MANUAL VOLUME IV -STANDARD SPECIFICATIONS AND DETAILS
- 12. ALL WATER MAINS WITHIN CASING PIPES SHALL BE RESTRAINED DUCTILE IRON PIPE CLASS 54 MEETING THE REQUIREMENTS OF AND CONSTRUCTED IN ACCORDANCE WITH THE HOWARD COUNTY DESIGN MANUAL VOLUME IV -STANDARD SPECIFICATIONS AND DETAILS FOR
- 13. THE FOLLOWING NOTE IS ADDED TO HOWARD COUNTY STANDARD DETAIL W2.22, BUTTRESSES AND ANCHORAGE'S FOR VERTICAL BENDS. "WHEN ANCHORING PVC PIPE, THE STRAPPING IN CONTACT WITH THE PIPE SURFACE SHALL BE 1-INCH WIDE BY 14-INCH THICK STEEL THE REMAINING PORTION OF THE STRAP SHALL BE REINFORCING BAR SIZED IN ACCORDANCE WITH
- THE PERTINENT CHART SHOWN ON THE DETAIL."

 14. EXCEPT AS INDICATED ON THE PLANS AND NOTED ABOVE, ALL PUBLIC WATER MAINS SHALL BE POLYVINYL CHLORIDE (PVC) PIPE MEETING THE REQUIREMENTS OF AWWA C900 DRIB, PRESSURE CLASS 150 AND THE HOWARD COUNTY DESIGN MANUAL VOLUME IV -STANDARD SPECIFICATIONS AND DETAILS FOR CONSTRUCTION AND ALL SUBSEQUENT AMENDMENTS THERETO.

rid G-7 People 2402106	Branch	RO GUAL RU
No. 17 g 3 Yhe Map Number 20	Holy Care Tringly &	PELKRIDGE
ADC Map No. 17 grid G-7 Copyright ADC Yhe Map People rmitted Use Number 20402106	Election of the second of the	San Augustine
ADX Copyrig Permitted	Baines Ba	Si Augustine
	Bapt San Elerings Corner	-SITE
	Rowanberry & Cur Shop Ctr	and to
	Elkridge Z HARWOOD IND PK	FLOREY ND
	LOCATIO	NINAAD

LOCATION MAP

	FROM	TO	DISTANO
TH9UI	SM10	WHC	49'
	TH9 U2 WHC	WHC	4.5'
TH9U2	SMI 6	WHC	531
111902	TH9U3WHC	WHC	4.5
<u> </u>	INSUSWIC	WILL	
TH9U3	SM 5A	WHC	104'
111303	TH9U4 WHC	WHC	101.5
TH9 U4	SM 5A	WHC	101.5
	8"V 0+04	WHC	981
TH9U5	SM 5A	WHC	81.5
	8"V 0+04	WHC	801
TUONS	GNALEA	1411.7	-
TH9UG	SM15A 8"V 0+04	WHC	771
	0 4 0+04	WHC	70.5
TH9U7	SM 5A	WHC	58.5
	8"V 0+04	WHC	60.5
\(\text{\tinc{\text{\tint{\text{\tin}\text{\tett{\text{\tett{\text{\text{\text{\texi}\text{\text{\text{\text{\text{\text{\tin\tint{\text{\text{\text{\text{\text{\tinte\tint{\text{\ti}\tin}\text{\texititt{\text{\text{\text{\text{\text{\text{\texi			
TH9U8	SM 5A	WHC	551
	8"V 0+04	WHC	571
TH9U9	SM15A	WHC	381
	8"V 0+04	WHC	451
TH9UIO	SM15A	VALLE	35.5
טוטפחו	8"V 0+04	WHC WHC	431
*************************************	10 10 10 1	77.10	
TH9UII	SM 5A	WHC	25'
	8"V 0+04	WHC	38.5

TH9U12	SMISA	WHC	24.5
	8"V 0+04	WHC	391
THOUSE		Cua	
TH9U1/2	SMI Ø TH9U¾ SHC	SHC	60'
	307/43/1C	SHC	23.41
TH9U3/4	SMI @	SHC	81'
	TH9 U 5/6	SHC	25'
TH9U%	SMG	SHC	104
	TH9 U 1/8	SHC	241
			1
TH9078	SM 5A	SHC	51.5'
	8"V 0+04	SHC	53.6
MQ 1194	SMI 5A	eur	33'
TH9 U%10	8"V 0+04	SHC	1
	0 V 0 · 04	JIL	41'
2N106H3	SMISA	SHC	27'
The second secon	8"V 0+04	SHC	411
			-v. 4

WATERLINE TEST STATIONS

	FROM	TO	DISTANCE	REMARKS
TEST STATION	6"V 3+68	TEST STATION	8'	COLBURN COURT
3+68	FH 3+68	TEST STATION	2'	
RT. OF FH	TH 14 U 1/12 SHC	TEST STATION	51'	
TEST STATION	0"V 5+61	TEST STATION	21	
5+61	FH 5+61	TEST STATION	14'	
LT. OF FH	TH 12 U 1/12	TEST STATION	23'	

DATE SEPTEMBER 2007

DEVELOPER BRANTLY DEVELOPMENT GROUP, INC. 8835-P COLUMBIA 100 PARKWAY COLUMBIA, MARYLAND 21045

Richardson Engineering, LLC

25' COLBURN COURT

Cockeysville, Maryland 21030 Phone: 410-560-1502 Fax: 410-560-0827



TYPE OF BUILDING.....

DRAINAGE AREA.....PATAPSCO

No. OF WATER HOUSE CONNECTIONS......35

No. OF SEWER HOUSE CONNECTIONS......0

TREATMENT PLANT.....

SE OF MARIE		CND	1	QUANTITIES & CALCULATIONS	6/18/07	
	DES: CND	CND	2	QUANTITIES & CALCULATIONS	10/29/07	PHASE II
A COLLAN	DDM. CMD					WAT
	DRN: CND					WAI
COISTERE COM	CHK: PCR			<u> </u>		COVI
Totalor	OCT.					
PATRICK C. RICHARDSON JR. PE No. 16597	DATE: 2006	BY	NO.	REVISION	DATE	600' SCALE MAP #38

..RESIDENTIAL\COMMERCIAL

...PATAPSCO

PHASE II PRELIMINARY WATER PLAN COVER SHEET

ELKRIDGE CROSSING CONTRACT #14-4353-D

SHOWN SHEET:

SCALE:

TAX MAP #38 PARCEL #30 & 38
BLOCK #2&3 1ST ELECTION DISTRICT HOWARD COUNTY, MARYLAND

