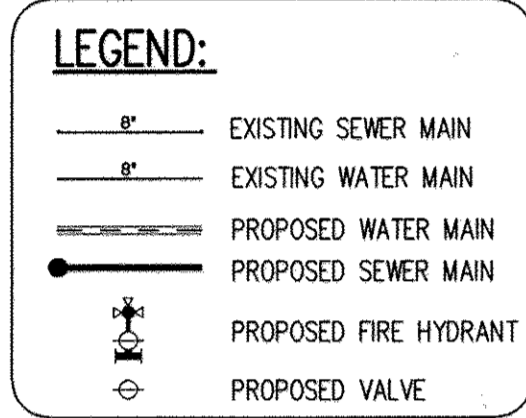


# WATER AND SEWER EXTENSION PLAN NORTH LAUREL COMMUNITY CENTER

## PARCEL 762 & 1065 6TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND CONTRACT No. 24-4590-D CAPITAL PROJECT C-0304

ITEMS	QUANTITIES ESTIMATED	AS-BUILT	
		QUANTITIES	TYPE / MANUFACTURER / SUPPLIER
8" C900 PVC WATER	2,792 L.F.	2,792 L.F.	150 J.M. PIPE / BRS
6" C900 PVC WATER	22 L.F.	22 L.F.	150 J.M. PIPE / BRS
8" 1/8" HB	1 EA.	1 EA.	150 SIGMA / BRS
8" 1/16" HB	8 EA.	8 EA.	150 SIGMA / BRS
8" 1/32" HB	4 EA.	4 EA.	150 SIGMA / BRS
8" x 8" TEE	2 EA.	2 EA.	Ductile MUELLER
8" TS & V	1 EA.	1 EA.	ROMAC IND. INC.
8" VALVES	8 EA.	8 EA.	Ductile MUELLER
8" CAP	1 EA.	2 EA.	Ductile MUELLER
8" x 6" FHT	3 EA.	3 EA.	Ductile MUELLER
6" x 6" FHT	1 EA.	1 EA.	Ductile MUELLER
FIRE HYDRANT	4 EA.	4 EA.	Ductile MUELLER
6" REDUCER	1 EA.	1 EA.	Ductile MUELLER
6" CAP	1 EA.	1 EA.	Ductile MUELLER
8" PVC COUPLING (CERTAINTED PVC HIGH DEFLECTION)	21 EA.	21 EA.	200 SIGMA / BRS
8" 1/32" VB	4 EA.	4 EA.	150 SIGMA / BRS
8" PVC SDR 35 SEWER	162 L.F.	162 L.F.	SDR-35 J.M. EAGLE / BRS
PRECAST MANHOLE	1 EA.	1 EA.	HANSON PIPE & PRECAST



**BENCH MARK**  
HOWARD COUNTY SURVEY CONTROL: 506A  
ELEVATION 248.625'  
N 527,567.677 E 1,359,772.604  
LOCATION IS ±180' SOUTH OF WHISKEY  
BOTTOM ROAD ALONG SOUTH BOUND US ROUTE 1.

HOWARD COUNTY SURVEY CONTROL: 50B5  
ELEVATION 177.385'  
N 524,999.374 E 1,357,925.748  
LOCATION: IS ±150' NORTH OF N LAUREL  
ROAD ALONG SOUTH BOND US ROUTE 1.

**WATER NOTES**

- EXCEPT AS INDICATED ON THE PLANS, ALL PUBLIC WATER MAINS SHALL BE POLYVINYLCHLORIDE (PVC) PIPE MEETING THE REQUIREMENTS OF AWWA C900 DR18, PRESSURE CLASS 150 AND THE HOWARD COUNTY DESIGN MANUAL VOLUME IV—STANDARD SPECIFICATIONS AND DETAILS FOR CONSTRUCTION AND ALL SUBSEQUENT AMENDMENTS THERETO.
- TOPS OF ALL WATER MAINS SHALL HAVE A MINIMUM OF 3'-6" OF COVER UNLESS OTHERWISE NOTED.
- VALVES ADJACENT TO TEES SHALL BE STRAPPED TO TEES.
- ALL FITTINGS SHALL BE BUTTRESSED OR ANCHORED WITH CONCRETE IN ACCORDANCE WITH THE 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 RESTRAINED AND BUTTRESSED OR ANCHORED WITH CONCRETE IN ACCORDANCE WITH STANDARD DETAILS. THE 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.
- FOR SPRINKLER SYSTEM FOR ALL TOWN HOMES OR MULTI-FAMILY DWELLING UNITS SHOULD HAVE A MINIMUM OF 1' CONNECTION WITH A 3/4" METER.
- ALL DUCTILE IRON PIPE (DIP) 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.
- FIRE HYDRANTS ARE D.I.P. ONLY.
- VALVES ARE TO BE ATTACHED WITH IRON FITTINGS OR CONCRETE ANCHORS.
- THE DIMENSION RATIO FOR THE PVC MAIN SHALL BE DR 18.
- WATER MAIN CONSTRUCTION SHALL CONSIST OF PVC MAIN WITH EPOXY COATED DIP FITTINGS OR PVC MAIN WITH PVC FITTINGS.

**SEWER NOTES**

- ALL SEWER MAINS SHALL BE PVC CONFORMING TO SDR 35 ASTM D3034 SPECIFICATIONS.
- ALL MANHOLES SHALL BE 4'-0" INSIDE DIAMETER UNLESS OTHERWISE NOTED.

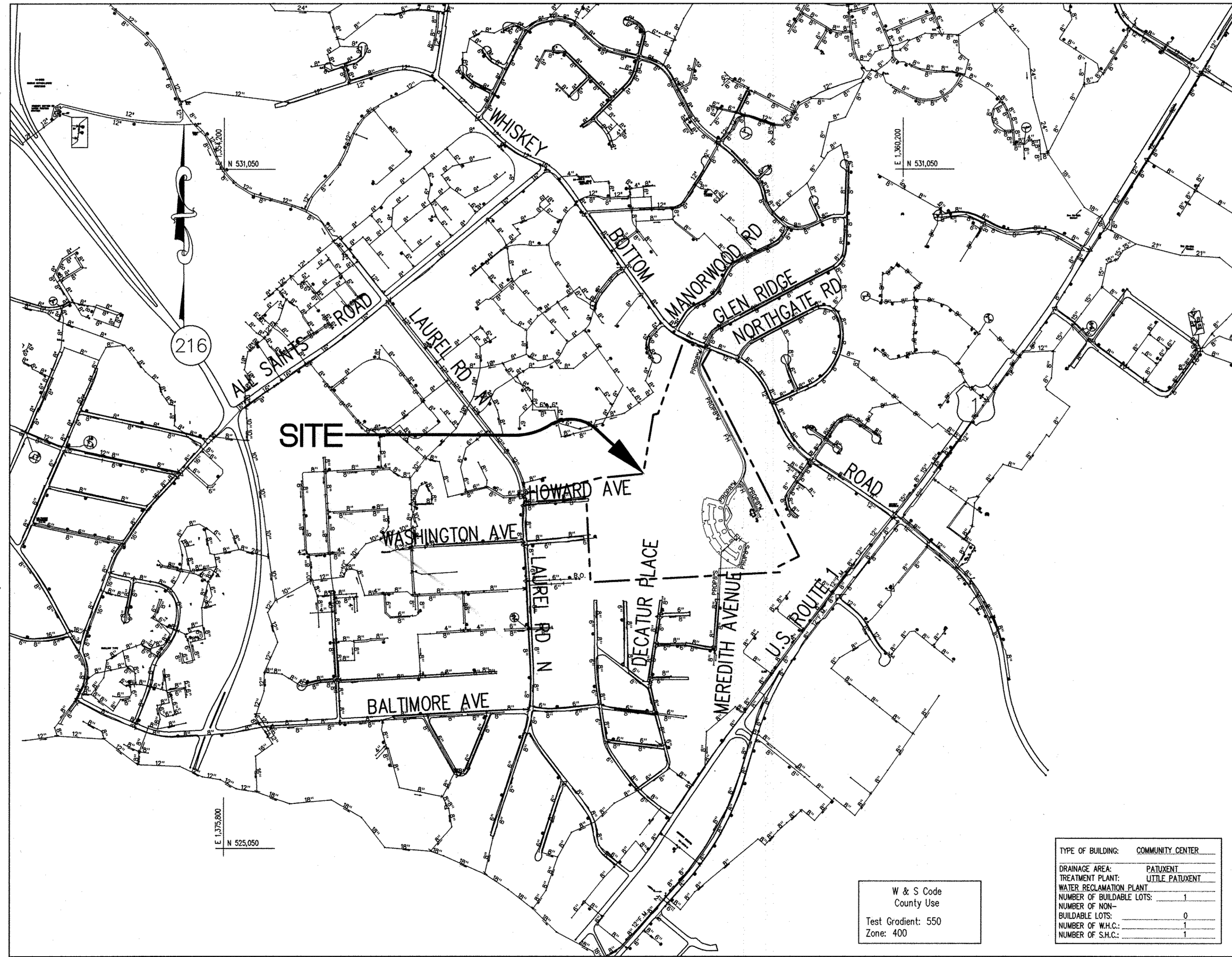
NAME OF UTILITY CONTRACTOR: PERCONTE CONSTRUCTION

SEWAGE TREATMENT PLANT	CHECKBOX
WATER RECLAMATION PLANT	AS-BUILT DATE
WATER RECLAMATION PLANT	SURVEY AND DRAFTING DIVISION

OWNER  
HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
AND TRANSPORTATION  
9250 BENDIX ROAD, COLUMBIA, MD 21045  
P 410.313.2414

DEVELOPER  
HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
AND TRANSPORTATION  
9250 BENDIX ROAD, COLUMBIA, MD 21045  
P 410.313.2414

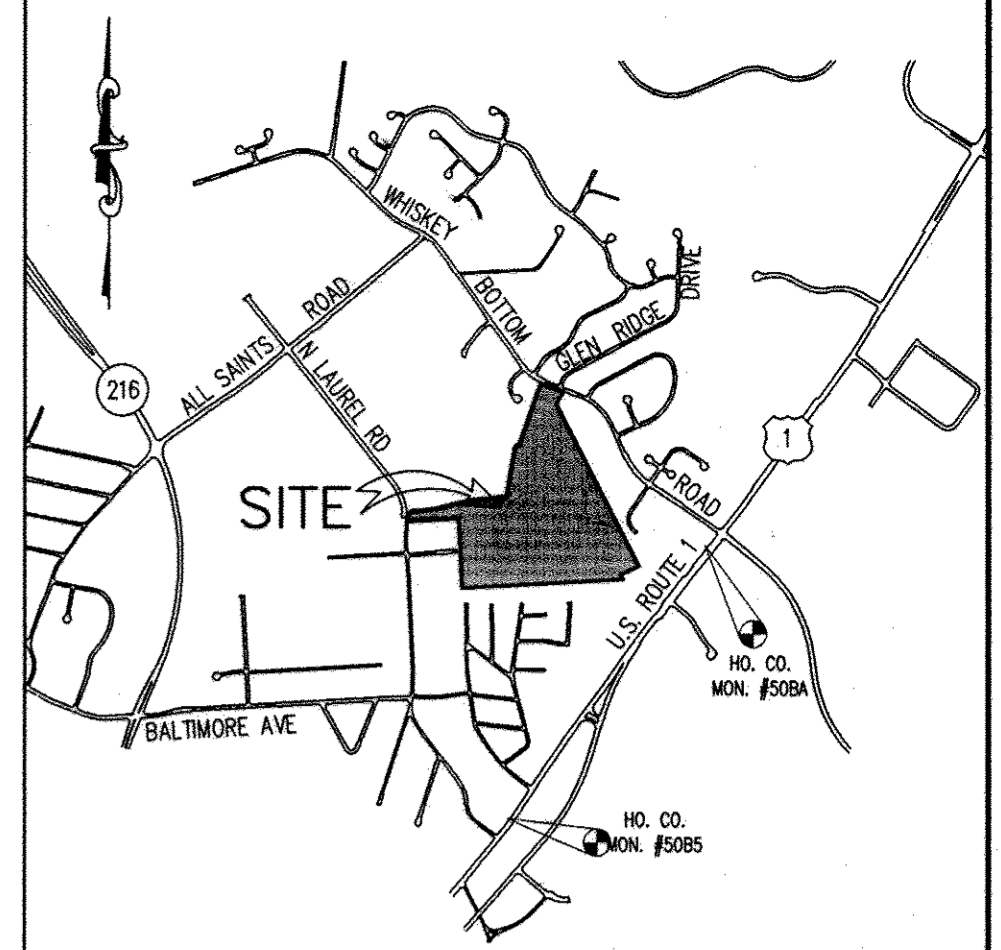
DATE: 3/16/09



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

**SHEET INDEX**

NO.	DESCRIPTION
1	TITLE SHEET
2	PLAN OF WATER & SEWER MAINS
3	PROFILE OF WATER & SEWER MAINS
4	PROFILE OF WATER MAINS
5	WATER MAIN NOTES AND DETAILS
6	DETAILS
7	CORROSION CONTROL LAYOUT
8	CORROSION CONTROL DETAILS - 1
9	CORROSION CONTROL DETAILS - 2
10	CORROSION CONTROL DETAILS - 3



**VICINITY MAP**  
SCALE: 1"=2000'  
COPYRIGHT ADC THE MAP PEOPLE  
PERMITTED USE NO. 2071183  
HOWARD COUNTY ADC MAP 19  
K10 & K11, MAP 20 A10 & A11

**GENERAL NOTES**

- 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.
- THE EXISTING TOPOGRAPHY IS TAKEN FROM AERIAL TOPOGRAPHIC SURVEY PREPARED BY VIRGINIA RESOURCE MAPPING DATED MARCH 31, 2006, AND FIELD RUN SURVEY WITH MAXIMUM TWO FOOT CONTOUR INTERVALS PREPARED BY PATTON HARRIS RUST & ASSOCIATES DATED APRIL 24, 2008. BOUNDARY SURVEY WAS PREPARED BY PATTON HARRIS RUST & ASSOCIATES DATED DECEMBER 12, 2006.
- HORIZONTAL AND VERTICAL SURVEY CONTROLS:
  - THE COORDINATES SHOWN ON THE DRAWINGS ARE BASED ON MARYLAND STATE REFERENCE SYSTEM NAD '83/91 AS PROJECTED BY HOWARD COUNTY GEODETIC CONTROL STATIONS NO. 50BA AND 50B5;
  - ALL VERTICAL CONTROLS ARE BASED ON NAVD-88. VERTICAL CONTROLS PROVIDED ON THE DRAWINGS ARE HOWARD COUNTY GEODETIC CONTROL STATIONS 50BA AND 50B5.
- ALL PIPE ELEVATIONS SHOWN ARE INVERT ELEVATIONS UNLESS OTHERWISE NOTED ON THE PLANS.
- CLEAR ALL UTILITIES BY A MINIMUM OF 12 INCHES. CLEAR ALL POLES BY 5'-0" MINIMUM OR TUNNEL AS REQUIRED UNLESS OTHERWISE NOTED. THE OWNER HAS CONTACTED THE UTILITY COMPANIES AND HAS MADE ARRANGEMENTS FOR BRACING OF POLES AS SHOWN ON THE DRAWINGS. IN THE EVENT THE CONTRACTOR'S WORK REQUIRES THE BRACING OF ADDITIONAL POLES 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 DRAWINGS, AND FOR MATERIALS AND CONSTRUCTION METHODS, USE HOWARD COUNTY DESIGN MANUAL, VOLUME IV, STANDARD SPECIFICATIONS AND DETAILS FOR CONSTRUCTION (LATEST EDITION). THE CONTRACTOR SHALL HAVE A COPY OF VOLUME IV ON THE JOB.
- WHERE TEST PITS HAVE BEEN MADE ON EXISTING UTILITIES, THEY ARE NOTED BY THE SYMBOL [ ] AT THE LOCATIONS OF THE TEST PITS. A NOTE OR NOTES CONTAINING THE RESULTS OF THE TEST PIT OR PITS IS INCLUDED ON THE DRAWINGS. EXISTING UTILITIES IN THE VICINITY OF THE PROPOSED WORK FOR WHICH TEST PITS HAVE NOT BEEN DUG SHALL BE LOCATED BY THE CONTRACTOR TWO WEEKS IN ADVANCE OF CONSTRUCTION OPERATIONS AT HIS OWN EXPENSE.
- THE CONTRACTOR SHALL NOTIFY THE FOLLOWING UTILITY COMPANIES OR AGENCIES AT LEAST FIVE WORKING DAYS BEFORE STARTING WORK SHOWN ON THESE PLANS:
 

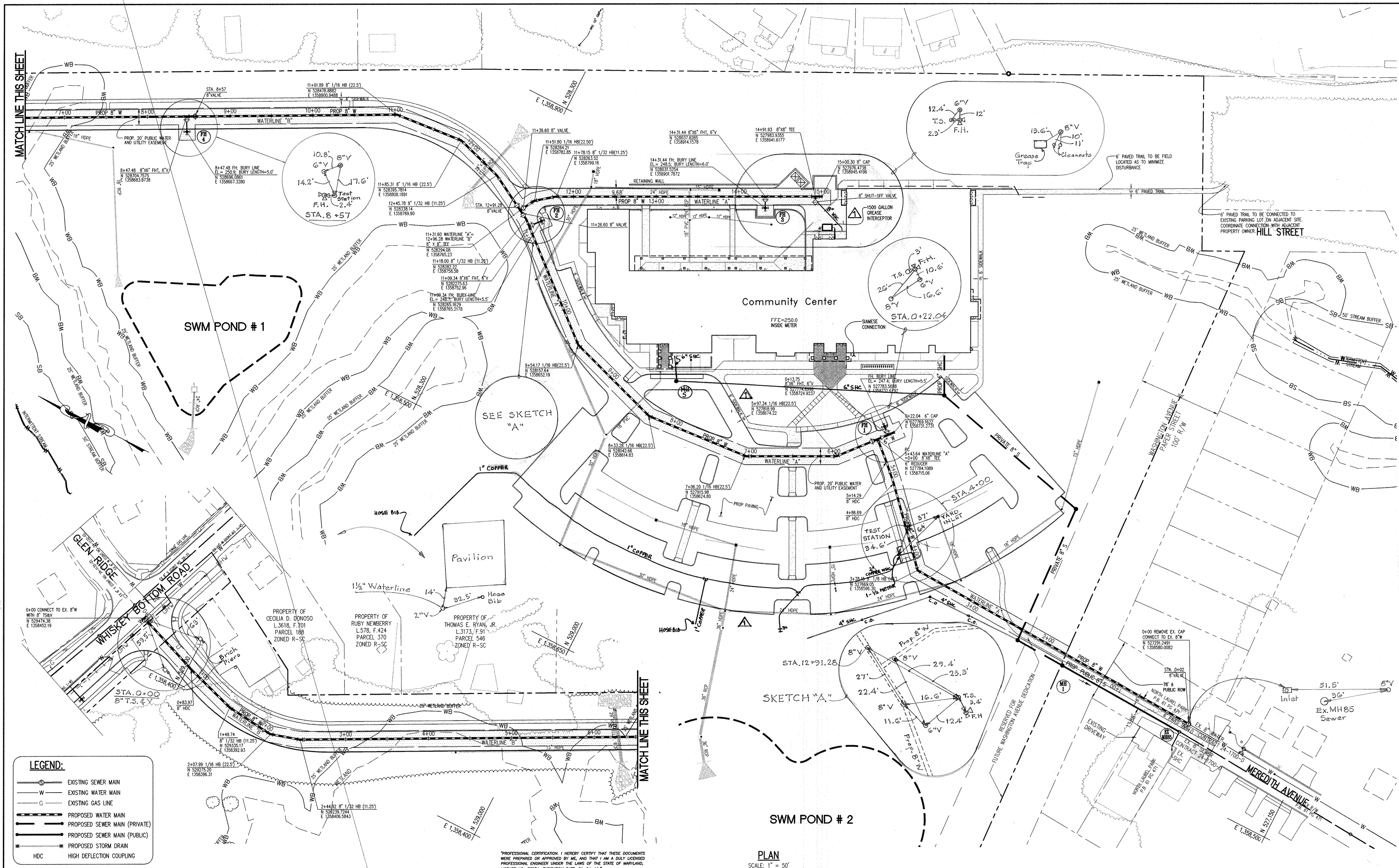
A&T	1-800-252-1133
BGE (CONSTRUCTION SERVICES)	410-850-4620
BGE (EMERGENCY)	410-685-1400
BUREAU OF UTILITIES	410-313-4900
COLONIAL PIPELINE CO.	410-795-1390
MISS UTILITY	1-800-257-7777
STATE HIGHWAY ADMINISTRATION	410-531-5533
VERIZON	1-800-743-0033 / 410-224-9210
- TREES AND SHRUBS ARE TO BE PROTECTED 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 THE LINE OF EXCAVATION. PAYMENT FOR SUCH REMOVAL SHALL BE INCLUDED IN THE UNIT PRICE BID FOR CONSTRUCTION OF THE MAIN.
- THE CONTRACTOR SHALL NOTIFY THE BUREAU OF HIGHWAYS, HOWARD COUNTY, AT 410-313-7450 AT LEAST FIVE WORKING DAYS BEFORE OPEN CUTTING OR BORING/JACKING OF ANY COUNTY ROAD FOR LAYING 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.

TYPE OF BUILDING: COMMUNITY CENTER

DRAINAGE AREA:	PATIENT
TREATMENT PLANT:	UTILE PATIENT
WATER RECLAMATION PLANT:	UTILE PATIENT
NUMBER OF BUILDABLE LOTS:	1
NUMBER OF NON-BUILDABLE LOTS:	0
NUMBER OF W.H.C.:	1
NUMBER OF S.H.C.:	1

W & S Code  
County Use  
Test Gradient: 550  
Zone: 400

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND  [Signature] 3/16/09 CHIEF, BUREAU OF UTILITIES	DEPARTMENT OF PLANNING & ZONING HOWARD COUNTY, MARYLAND  [Signature] 3/19/09 CHIEF, DEVELOPMENT ENGINEERING DIVISION	Patton Harris Rust & Associates, pc Engineers, Surveyors, Planners, Landscape Architects. PHRA 8818 Centre Park Drive Columbia, MD 21045 T 410.997.8900 F 410.997.9282	STATE OF MARYLAND [Seal] SHERRYLL C. MITCHELL # 33954 DES: WGK/HS DRN: WGK/HS CHK: SCM DATE: 2/23/09	PUBLIC WATER & SEWER COVER SHEET 600' SCALE MAP NO. 47 BLOCK NO. 22	NORTH LAUREL COMMUNITY CENTER TAX MAP 47, PARCELS 762 & 1065 ZONED R-SC 6TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND CONTRACT NO. 24-4590-D CAPITAL PROJECT C-0304 SCALE AS SHOWN SHEET 1 OF 10
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**LEGEND:**

	EXISTING SEWER MAIN
	EXISTING WATER MAIN
	EXISTING GAS LINE
	PROPOSED WATER MAIN
	PROPOSED SEWER MAIN (PRIVATE)
	PROPOSED SEWER MAIN (PUBLIC)
	PROPOSED STORM DRAIN
	HDC

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. 33954, EXPIRATION DATE: 01-24-11.

PLAN  
SCALE: 1" = 50'

DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

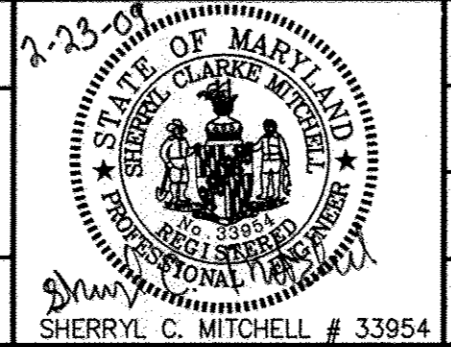
*Shane C. Brown* 3/1/10  
CHIEF, BUREAU OF UTILITIES DATE

DEPARTMENT OF PLANNING & ZONING  
HOWARD COUNTY, MARYLAND

*W. D. ...* 3/1/10  
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

Patton Harris Rust & Associates, pc  
Engineers, Surveyors, Planners, Landscape Architects.

**PHRA**  
8818 Centre Park Drive  
Columbia, MD 21045  
T 410.997.8900  
F 410.997.9282

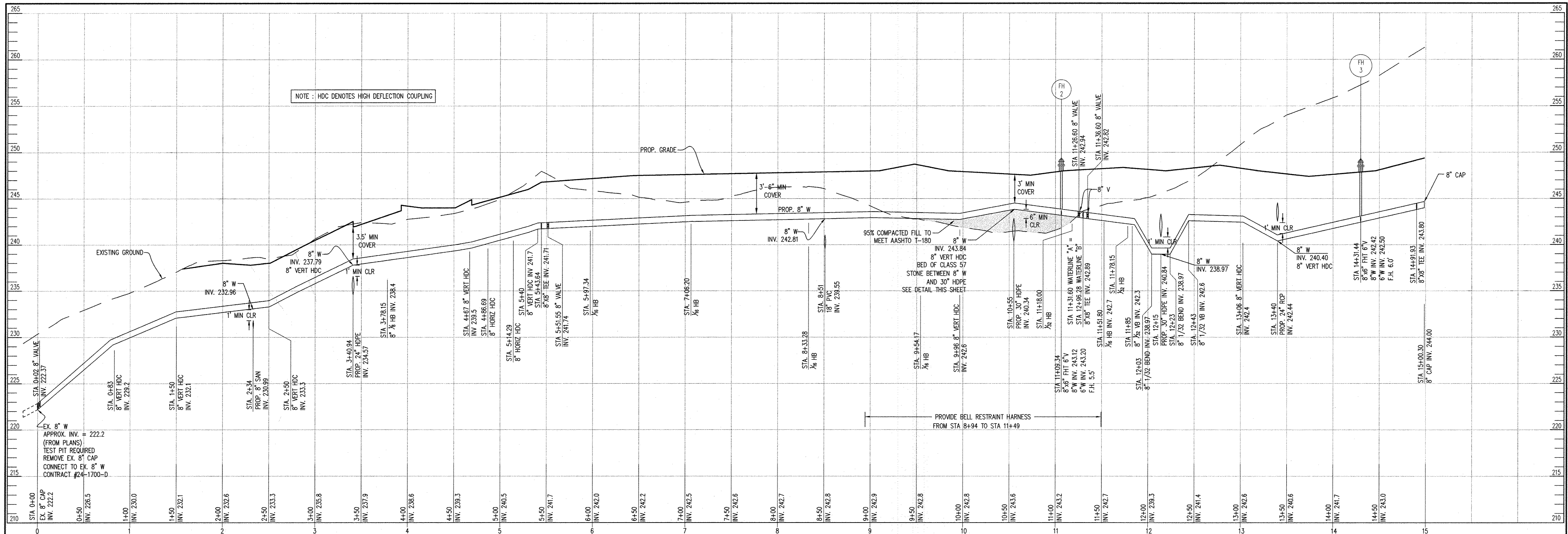


DES:	WJK			
DRN:	WJK			
CHK:	SCM			
DATE:	2/23/09			
BY:	NO.	REVISION	DATE	
		1 REVISE WATER & SEWER ALIGNMENTS	6/28/10	

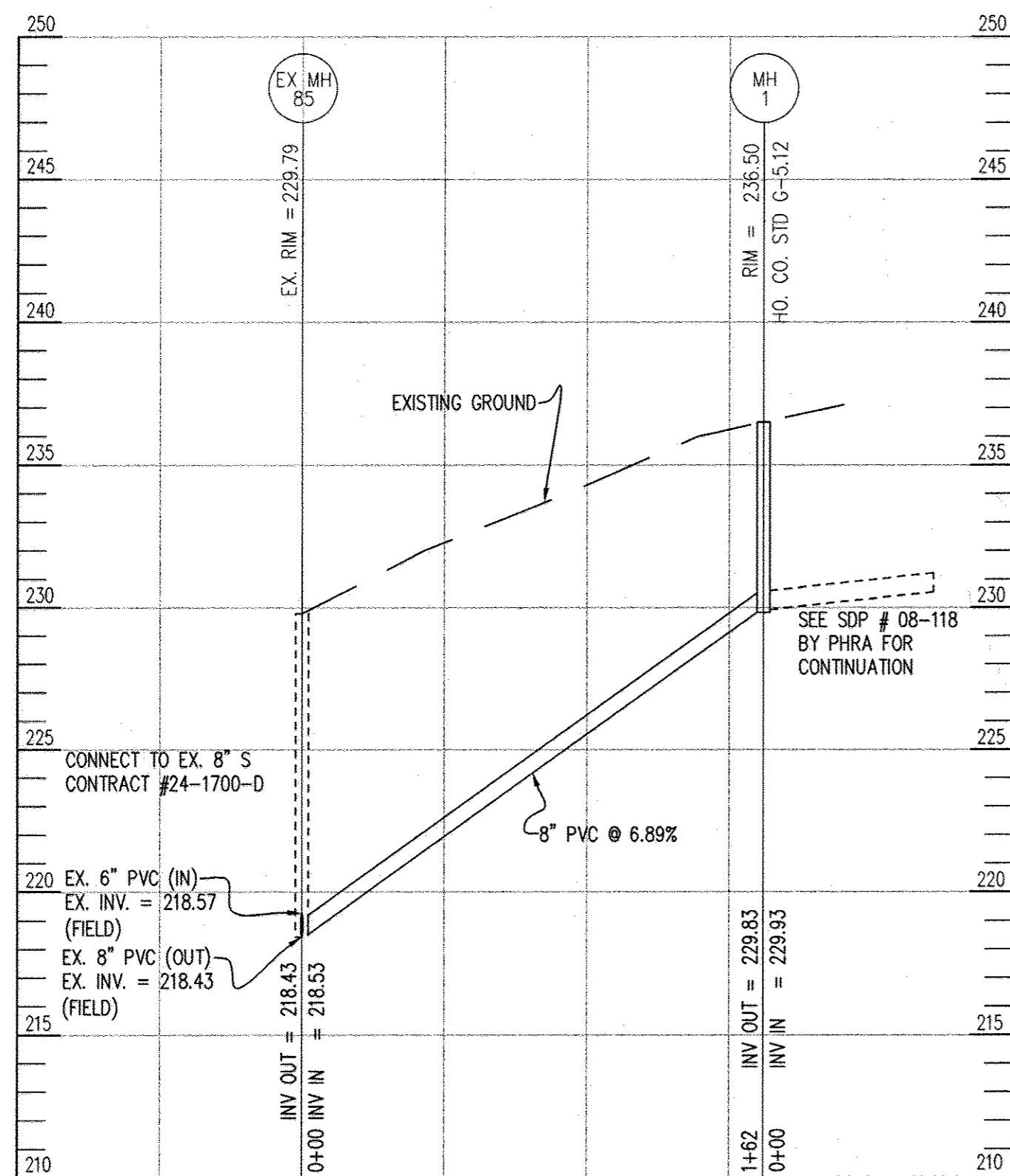
PLAN OF WATER & SEWER MAINS  
600' SCALE MAP NO. 47 BLOCK NO. 22

NORTH LAUREL COMMUNITY CENTER  
TAX MAP 47, PARCELS 762 & 1065 ZONED R-SC  
6th ELECTION DISTRICT  
HOWARD COUNTY, MARYLAND  
CONTRACT NO. 24-4590-D  
CAPITAL PROJECT C-0304

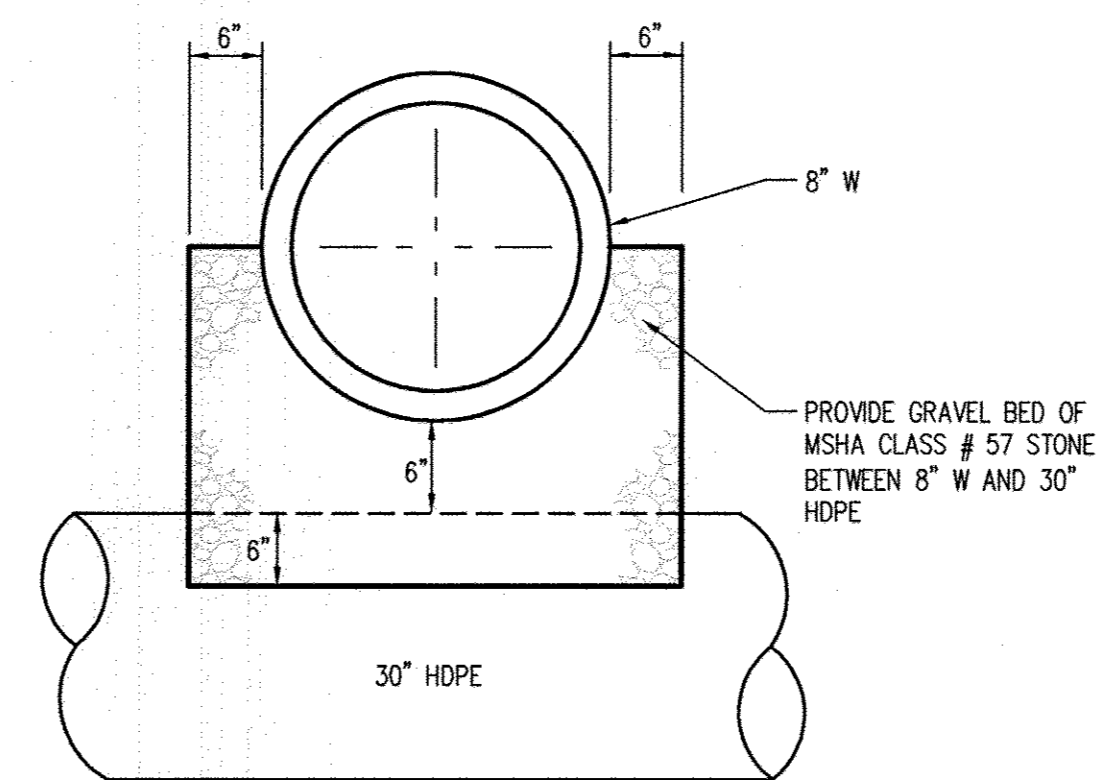
SCALE  
AS SHOWN  
SHEET  
2 OF 10



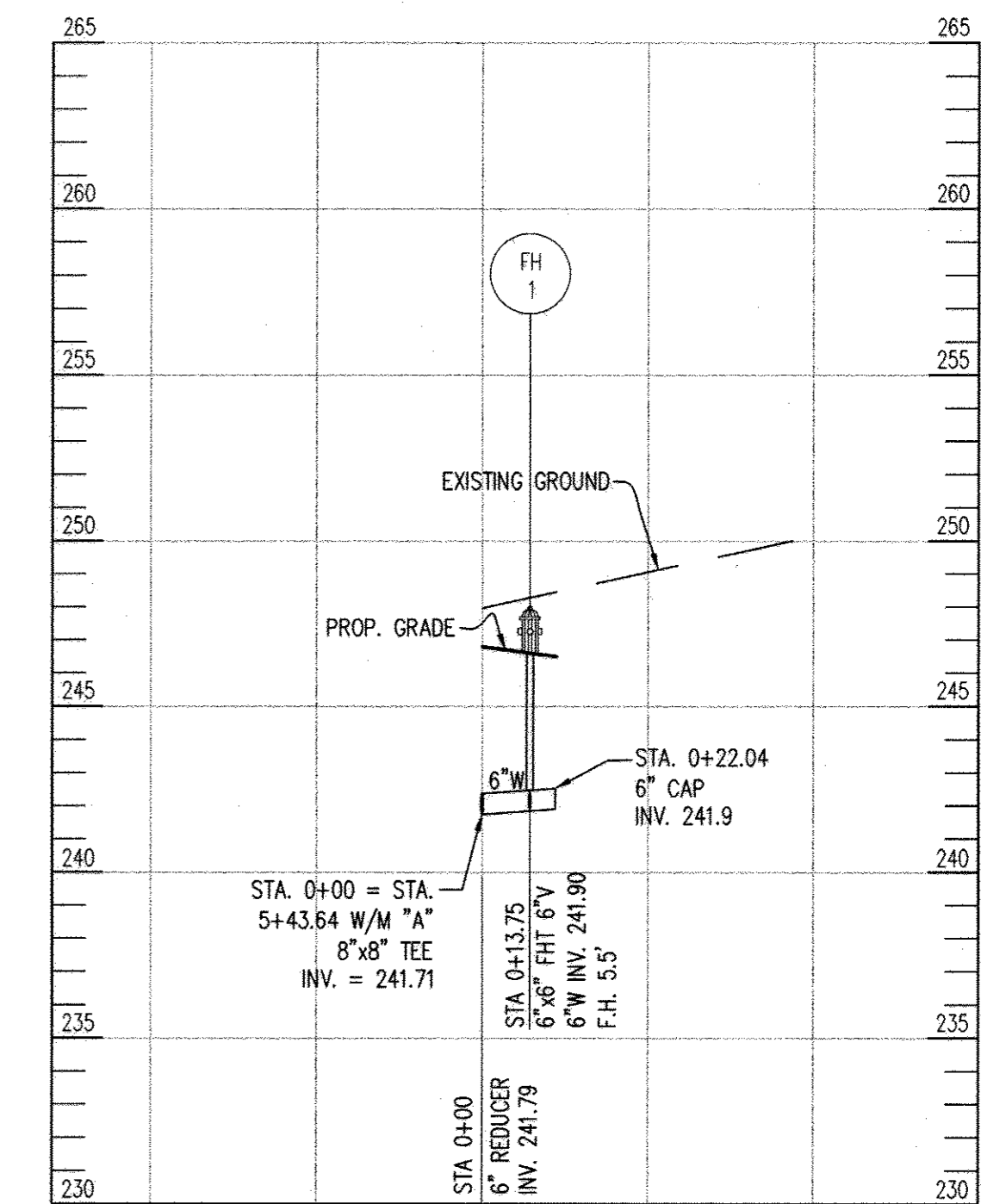
**PUBLIC WATERMAIN "A" PROFILE**  
SCALE: HOR: 1"=50' VERT: 1"=5'



**PUBLIC SEWER PROFILE**  
SCALE: HOR: 1"=50' VERT: 1"=5'



**CROSSING DETAIL**  
WATERMAIN A  
STA. 10+55  
NOT TO SCALE



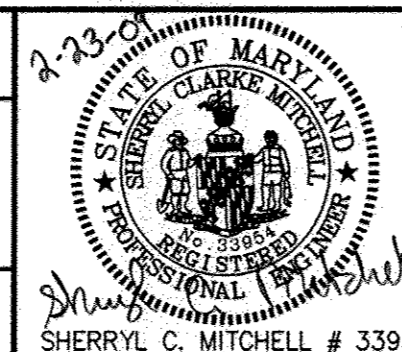
**PUBLIC FIRE HYDRANT NO. 1 PROFILE**  
SCALE: HOR: 1"=50' VERT: 1"=5'

"PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A FULLY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND. LICENSE NO. 33954, EXPIRATION DATE: 01-24-11."

DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

DEPARTMENT OF PLANNING & ZONING  
HOWARD COUNTY, MARYLAND

Patton Harris Rust & Associates, pc  
Engineers, Surveyors, Planners, Landscape Architects.  
**P-H-R-A**  
8818 Centre Park Drive  
Columbia, MD 21045  
T 410.387.8900  
F 410.997.9282



DES: WGK				
DRN: WGK				
CHK: SCM				
DATE: 2/23/09	BY	NO.	REVISION	DATE

PROFILE OF WATER & SEWER MAINS

NORTH LAUREL COMMUNITY CENTER  
TAX MAP 47, PARCELS 762 & 1065 ZONED R-SC  
6th ELECTION DISTRICT  
HOWARD COUNTY, MARYLAND  
CONTRACT NO. 24-4590-D  
CAPITAL PROJECT C-0304

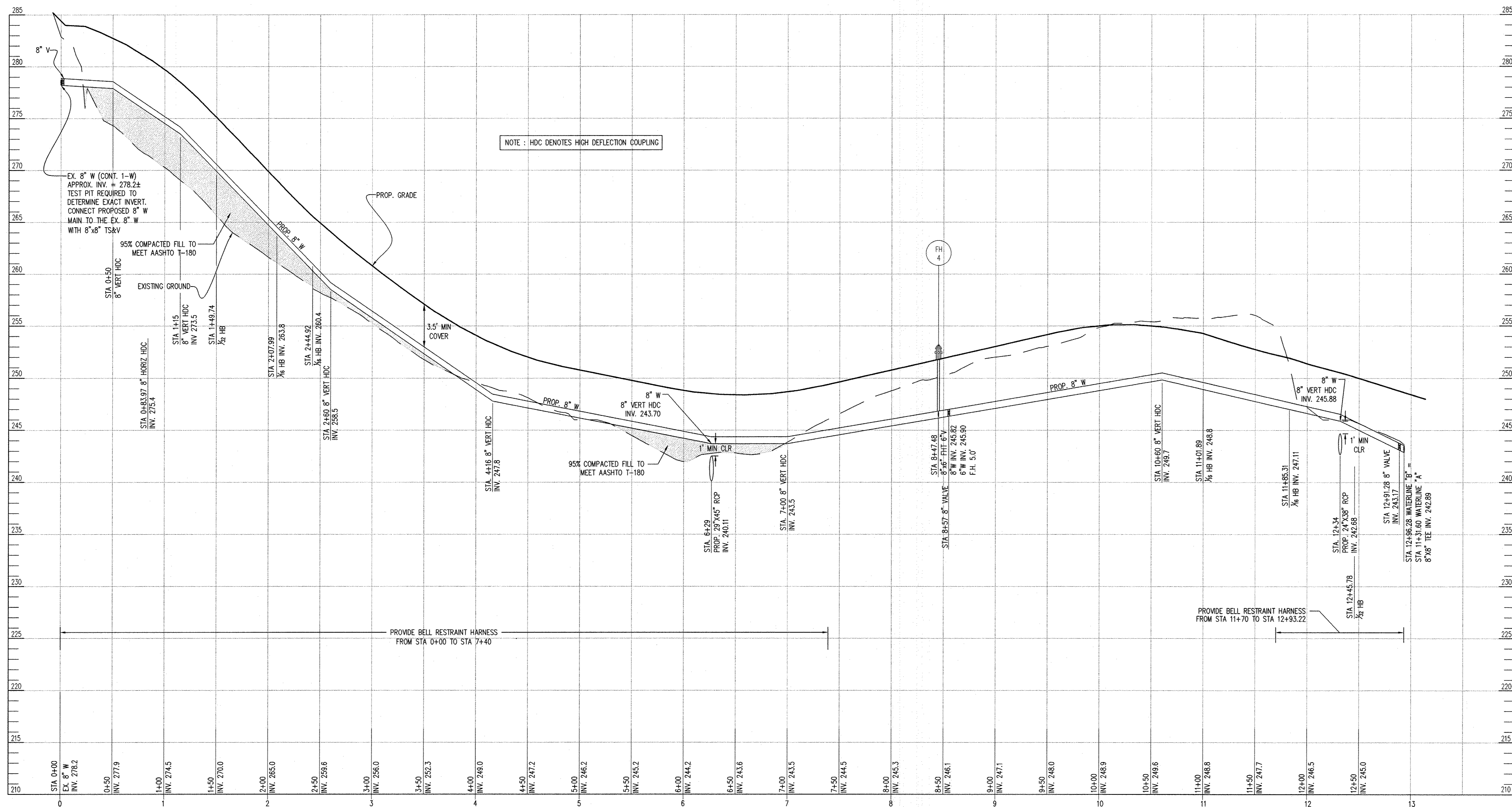
SCALE AS SHOWN  
SHEET 3 OF 10

Chief, Bureau of Utilities  
DATE

Chief, Development Engineering Division  
DATE

600' SCALE MAP NO. 47 BLOCK NO. 22

P:\PROJECTS\146681\0-PLANS\660WAS03.dwg



NOTE : HDC DENOTES HIGH DEFLECTION COUPLING

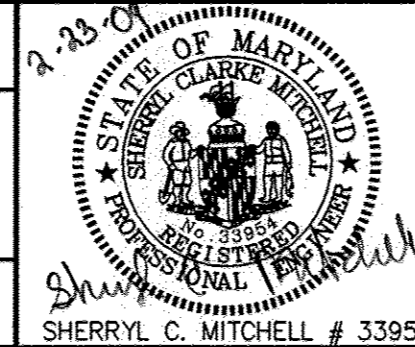
PUBLIC WATERMAIN "B" PROFILE  
SCALE : HOR: 1"=50' VERT: 1"=5'

"PROFESSIONAL CERTIFICATION, I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A FULLY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 33954, EXPIRATION DATE: 01-24-11."

DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

DEPARTMENT OF PLANNING & ZONING  
HOWARD COUNTY, MARYLAND

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PHRA  
8818 Centre Park Drive  
Columbia, MD 21045  
T 410.997.8950  
F 410.997.8282



DES: HS				
DRN: HS				
CHK: SCM				
DATE: 2/23/09				
BY NO.		REVISION		DATE

PROFILE OF WATER MAINS

NORTH LAUREL COMMUNITY CENTER  
TAX MAP 47, PARCELS 762 & 1065 ZONED R-SC  
6th ELECTION DISTRICT  
HOWARD COUNTY, MARYLAND  
CONTRACT NO. 24-4590-D  
CAPITAL PROJECT C-0304

SCALE  
AS SHOWN  
SHEET  
4 OF 10

Chief, Bureau of Utilities DATE

Chief, Development Engineering Division DATE

600' SCALE MAP NO. 47 BLOCK NO. 22

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**SPECIFICATIONS**

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

EXCEPT AS INDICATED HEREIN, ALL WORK SHALL BE IN ACCORDANCE WITH THE PERTINENT SECTIONS OF HOWARD COUNTY DESIGN MANUAL VOLUME IV-STANDARD SPECIFICATIONS AND DETAILS FOR CONSTRUCTION. CATEGORY 900, SECTIONS 905.01 (POLYVINYL CHLORIDE (PVC) PIPE OF THE HOWARD COUNTY STANDARD SPECIFICATIONS IS AMENDED TO INCLUDE THE FOLLOWING REQUIREMENTS.

**GENERAL**

- POLYVINYL CHLORIDE (PVC) PIPE AND COUPLINGS SHALL BE HOMOGENEOUS THROUGHOUT AND FREE FROM VISIBLE CRACKS, BUBBLES, BUSTERS, 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 1/4 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.
- PVC PIPE MANUFACTURED MORE THAN SIX MONTHS PRIOR TO WORK SITE INSPECTION WILL NOT BE ACCEPTED.
- 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.
- SUBMITTALS: THE FOLLOWING ITEMS SHALL BE SUBMITTED FOR REVIEW AND APPROVAL PRIOR TO INSTALLATION. MATERIALS NOT APPROVED WILL NOT BE ACCEPTED.
  - PVC PIPE: SUBMIT MANUFACTURER'S LITERATURE AND CERTIFICATE OF COMPLIANCE FOR PVC PIPE ALONG WITH THE MANUFACTURER'S IDENTIFICATION CODES FOR NORMAL 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 TESTS AND THE METHODS OF SELECTING TEST SPECIMENS SHALL BE IN ACCORDANCE WITH AWWA C900.
  - PVC PIPE FITTINGS: SUBMIT MANUFACTURER'S LITERATURE AND CERTIFICATES OF COMPLIANCE FOR PVC PIPE FITTINGS ALONG WITH THE MANUFACTURER'S IDENTIFICATION CODES FOR NORMAL SIZE, PRESSURE CLASS, PRODUCTION RECORD CODE, AND DATE OF MANUFACTURE. SUBMIT MANUFACTURER'S WRITTEN TRANSCRIPT OF TEST RESULTS, FOR ACCELERATED-REGRESSION TEST, BURST PRESSURE AND HEAT-REVERSION TEST IN ACCORDANCE WITH AWWA C907.
  - MISCELLANEOUS FOR PVC WATER PIPE: SUBMIT MANUFACTURER'S LITERATURE AND CERTIFICATES OF COMPLIANCE, FOR 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 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.

- PVC PIPE AND FITTINGS:
  - 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 RATION (OR) 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 IF INSERTION INTO THE BELL AND FACTORY TEST IN ACCORDANCE WITH AWWA C900. PVC PIPE SHALL BE MANUFACTURED BY ONE OF THE FOLLOWING:
    - UPONOR ETI
    - J-M PIPE
    - DIAMOND PLASTICS CORP
    - NATIONAL PIPE AND PLASTICS, INC.
  - 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 TO THE HARRINGTON CORPORATION (HARCO) OR APPROVED EQUAL. PIPE JOINTS SHALL BE IN ACCORDANCE WITH THE STANDARDS SPECIFIED FOR THE PIPE FITTING.
- JOINT RESTRAINING MATERIALS FOR PVC PIPE:
 

HORIZONTAL AND VERTICAL BENDS, TURNS, 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.

JOINTS FOR HARNESSING JOINTS SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS AND THE REQUIREMENTS BELOW:

  - ALL JOINT RESTRAINT DEVICES SHALL BE FACTORY MUTUAL APPROVED.
  - IN RESTRAINED JOINTS, PVC PIPE SHALL NOT BE DEFLECTED. IF DEFLECTION IS REQUIRED IN A RESTRAINED JOINT, USE DUCTILE IRON PIPE OR FITTINGS.
  - WHERE A RESTRAINED JOINT IS REQUIRED BETWEEN PVC PIPE AND 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 APPROVED EQUAL.
  - WHERE A RESTRAINED JOINT IS REQUIRED FOR PVC PUSH-ON JOINT, JOINT RESTRAINT SHALL BE UNI-B-13, ICM 620 SUR-GRIP, EBAA IRON SERIES 1600, UNIFLANGE SERIES 1390-C, OR APPROVED EQUAL.
- TRACER WIRE FOR NON-METALLIC PIPELINES
 

TRACER WIRE SHALL BE 6-GAGE, 7-STRAND CONTINUOUS COPPER WIRE WITH 45-MIL POLYETHYLENE INSULATION. THE WIRE SHALL BE BLUE, HAVE "UL" MARKINGS AND SUITABLE FOR DIRECT BURY APPLICATIONS.
- 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" X 12" METAL FRAME AND COVER AS SHOWN ON 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.
- DETECTION TAPE:
 

VISUAL DETECTION TAPE SHALL BE 3 INCHES WIDE (MINIMUM) METALLIC BLUE PLASTIC TAPE LETTERED "WATER" IN BLACK GRAPHICS.
- CONNECTION TO PVC WATERLINES:
  - CONNECTIONS TO PVC WATERLINES SHALL BE BY USING FITTINGS, SUCH AS TEES, INDICATED ON THE PLANS.
  - SADDLES MAY BE USED FOR 2-INCH AND SMALLER CONNECTIONS TO PVC WATERLINES. SADDLES WITH CLAMS 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 FORGED 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 A5395 WITH TWO 18-8 STAINLESS STEEL STRAPS AND SHALL BE EPOXY OR NYLON COATED. SADDLES SHALL HAVE WATER-TIGHT GASKETS OF BUNA-N RUBBER MEETING ASTM D2000 OR NITRILE AROUND THE TAP HOLE. SADDLES SHALL BE ONE OF THE FOLLOWING:
    - FORD FC-202
    - MUELLER SERIES DR25
    - ROMAC 202N
    - SMITH BLAIR 317 NYLON COATED
    - 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:

- INSTALLATION OF PVC WATER MAINS:
  - PVC PIPE AND FITTING SHALL BE HANDLED IN ACCORDANCE WITH AWWA C605.
  - BEDDING: 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 OR 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 ON 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.
  - 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. DEFLECTING PVC JOINTS OR BENDING PVC PIPE WILL NOT BE PERMITTED.
 

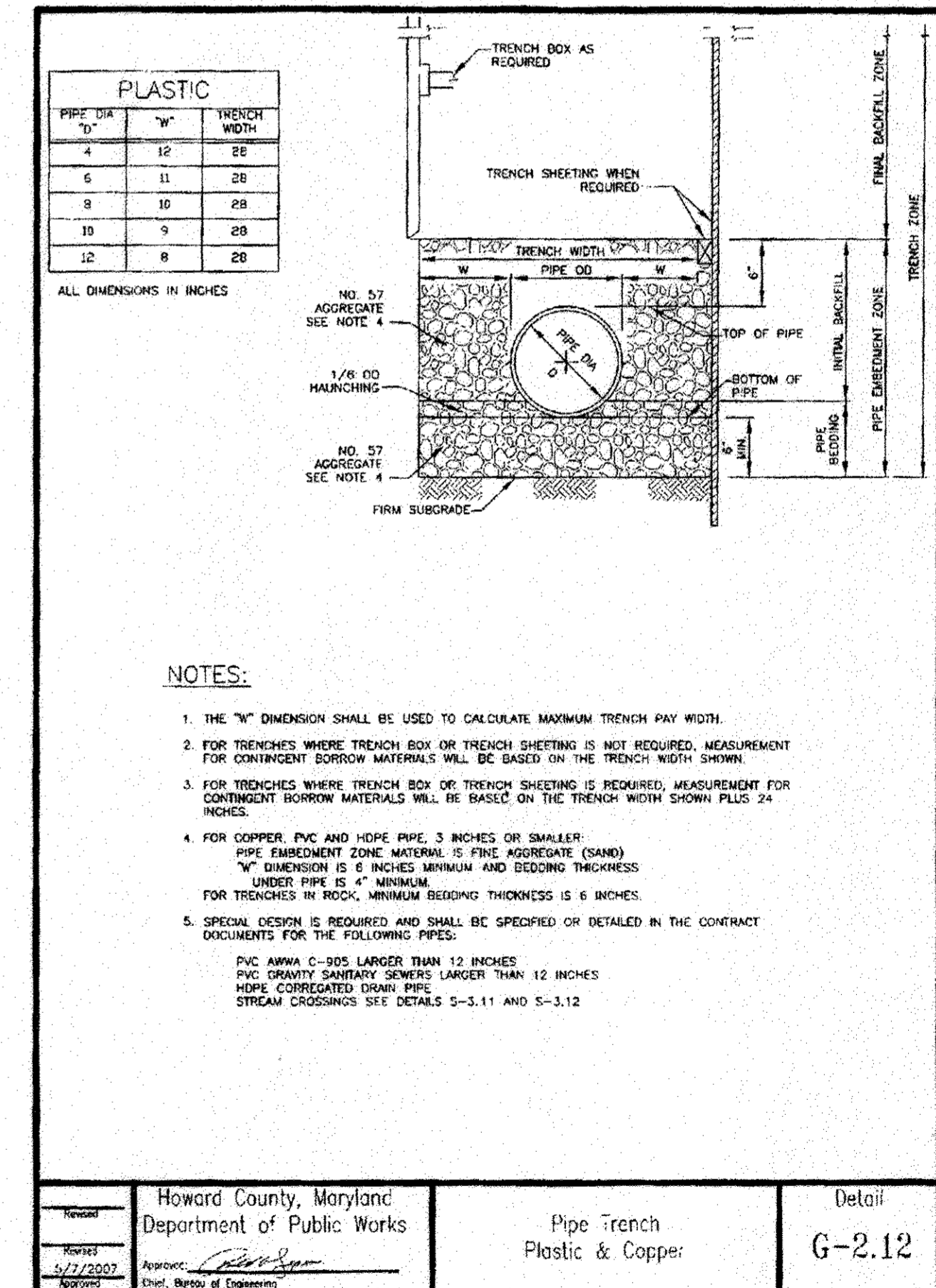
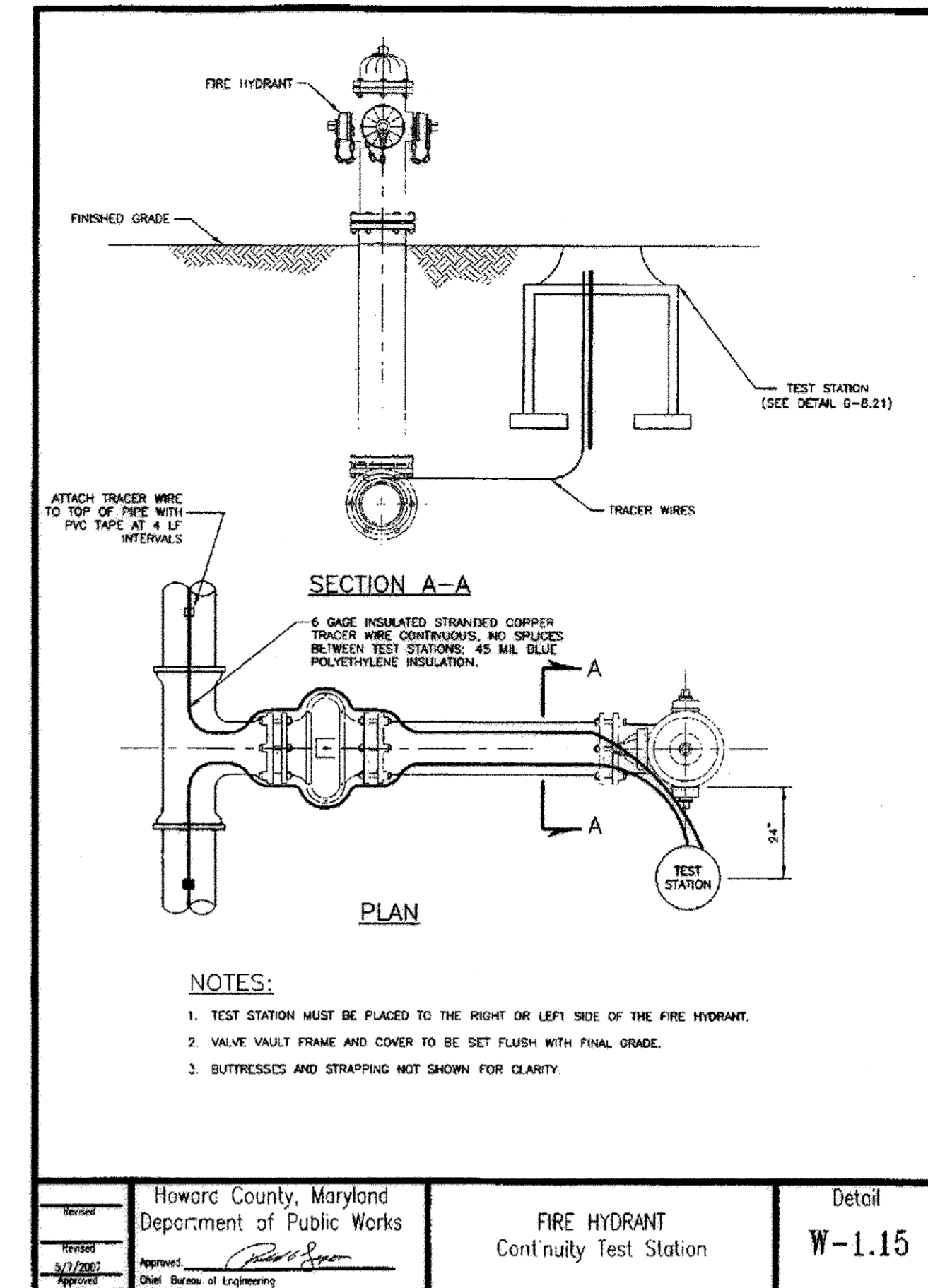
WHENEVER A PIPE REQUIRES CUTTING, THE WORK SHALL BE DONE IN A MANNER THAT LEAVES A SMOOTH, SQUARE END. CUT PVC PIPE ENDS SHALL HAVE BURRS REMOVED AND THE END BEVELED TO MATCH FACTORY BEVEL. TO ENSURE THE PROPER LENGTH OF INSERTION OF THE SPIGOT INTO THE BELL, PVC PIPE CUT IN THE FIELD SHALL BE BEVELED 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 MAKING 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.
  - TRACER WIRES: INSTALL TRACER WIRES WITH THE PIPE. TAPE WIRE TO THE TOP OF THE PIPE WITH MINIMUM 2-INCH WIDE 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 ALL FIRE HYDRANTS. ALL SPLICING SHALL BE DONE AT TEST STATION, NO DIRECT BURY SPLICING SHALL BE ALLOWED.
 

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: BACKFILL OVER THE PVC PIPE IN ACCORDANCE WITH THE 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 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-100-A.
  - DETECTION TAPE: INSTALL DETECTION TAPE DIRECTLY OVER THE CENTERLINE OF THE WATER MAIN SON COMPACTED BACKFILL NOT LESS THAN 18 INCHES OR MORE THAN 24 INCHES BELOW FINISHED SURFACE. TAPE SHALL BE INSTALLED WITH MINIMAL SPLICES. SPLICES SHALL OVERLAP A MINIMUM OF 6 INCHES.
- JOINTS:
  - MECHANICAL JOINTS: FOR PVC PLAIN-END TO BE CONNECTED TO DUCTILE 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.
  - PUSH-ON JOINTS: FOR PVC 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 THE PIPE THAT IS NOT FINISHED WITH THE 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, AS SPECIFIED HEREIN.
 

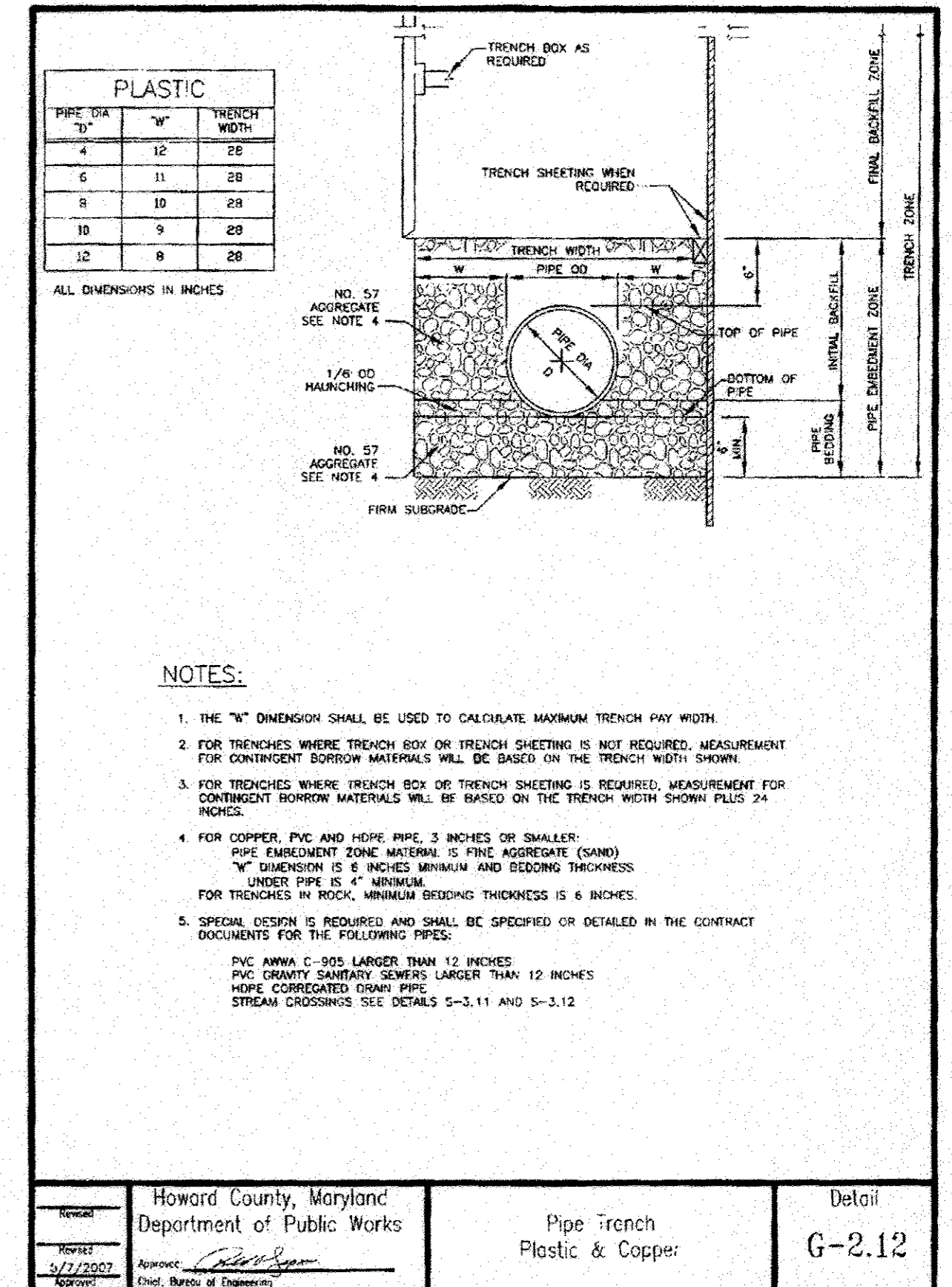
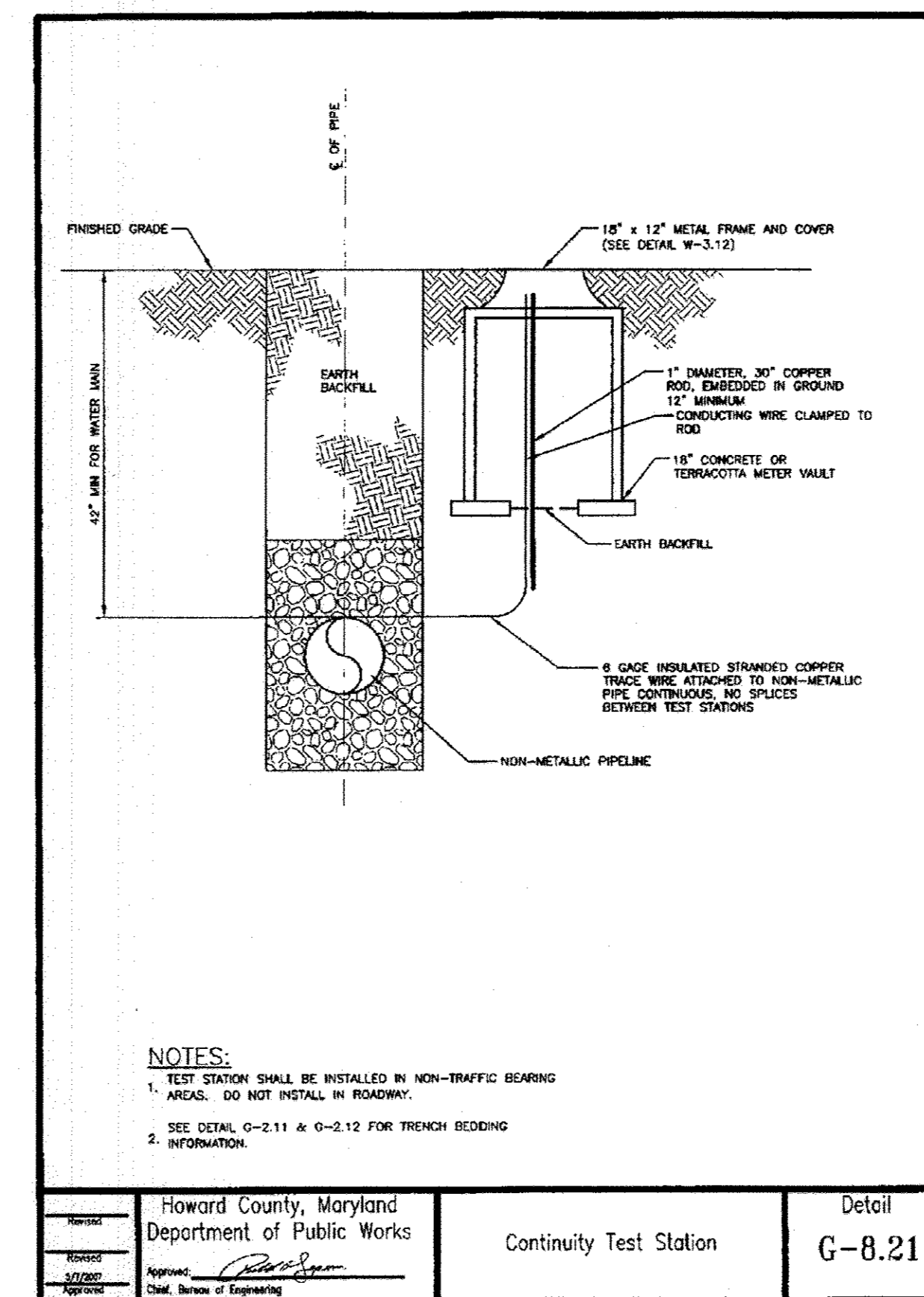
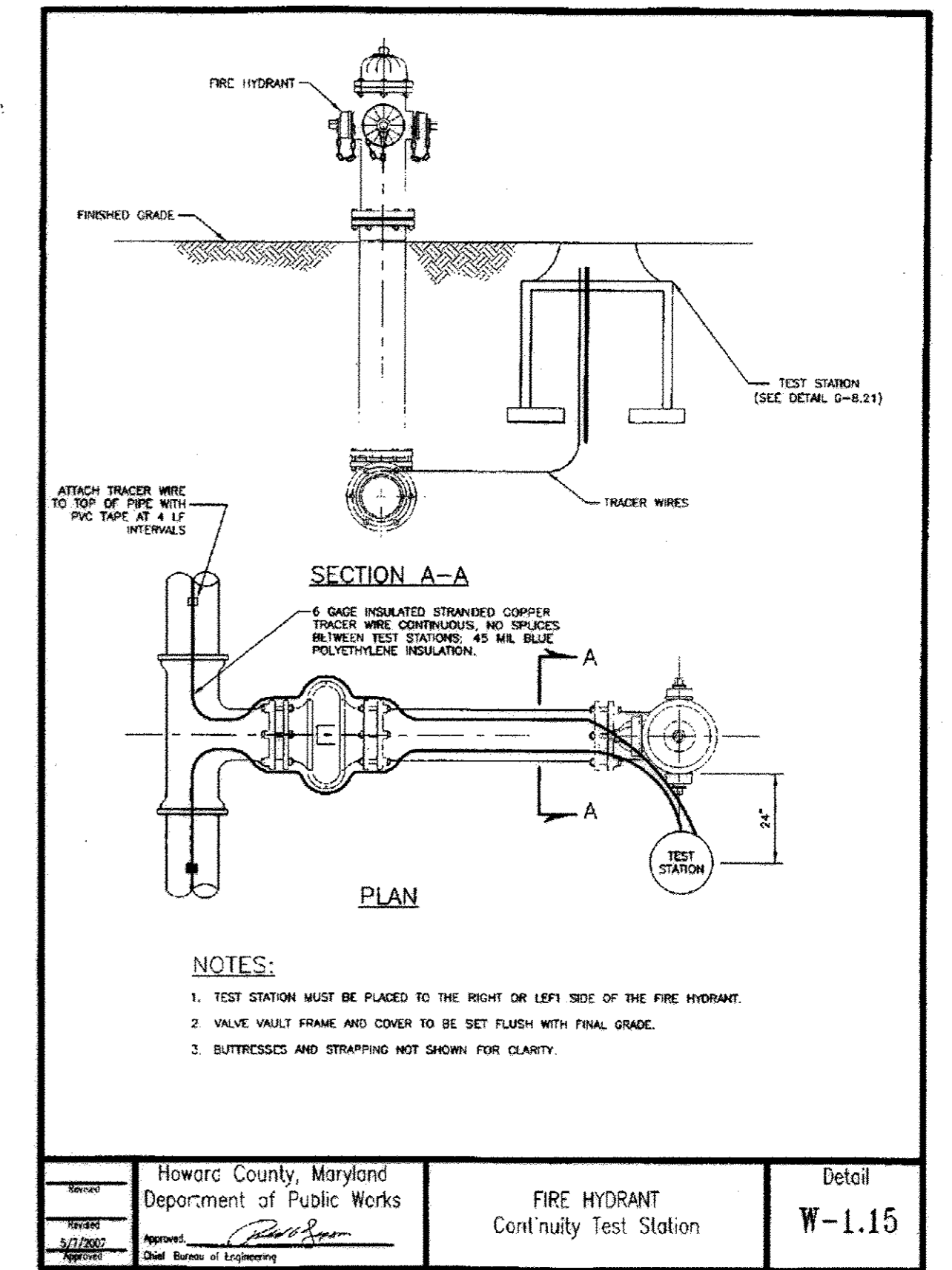
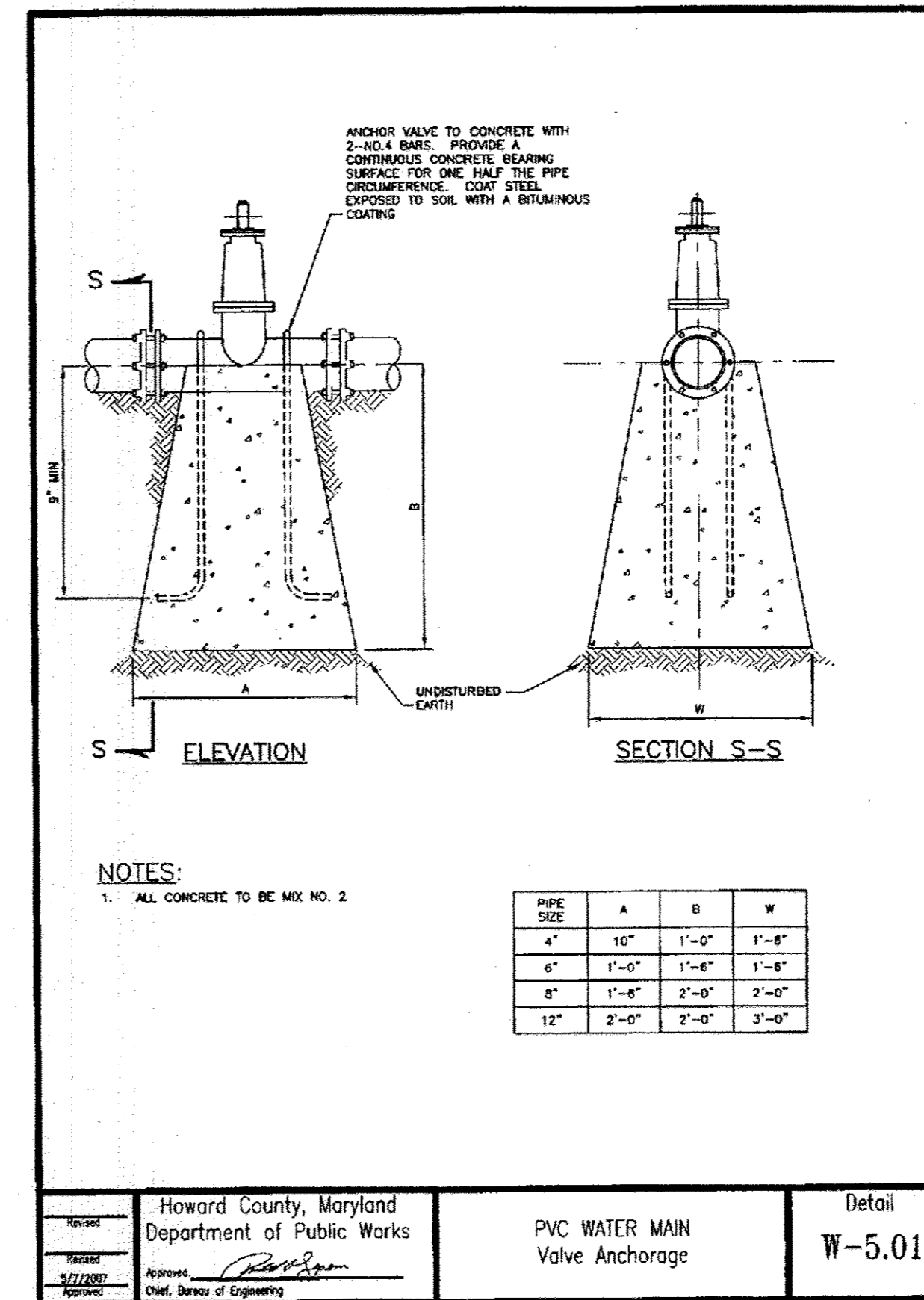
DO NOT DEFLECT PVC PIPE AT CONNECTION TO CAST OR DUCTILE IRON PIPE OR FITTINGS. THE CONTRACTOR SHALL ACHIEVE CHANGE IN ALIGNMENT AS INDICATED ELSEWHERE HEREIN. ASSEMBLY OF THE PLAIN END INTO THE BELL SHALL BE DONE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. INSTALL PUSH-ON RESTRAINED JOIST IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
  - RESTRAINED JOINT: IN A RESTRAINED JOINT, PVC PIPE SHALL NOT BE DEFLECTED. IF DEFLECTION IS REQUIRED IN A RESTRAINT JOINT, USE RESTRAINED DUCTILE IRON PIPE.
    - 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.
- CONNECTIONS TO PVC FOR WATER HOUSE CONNECTIONS:
  - PERFORM TAPS ON PVC PIPE IN ACCORDANCE WITH AWWA C605, THE PIPE MANUFACTURER'S RECOMMENDATIONS, AND AS INDICATED HEREIN.
  - INSTALL A SERVICE SADDLE WHEN TAPPING A PVC WATER MAIN. MAINTAIN A MINIMUM OF 24 INCHES BETWEEN TAPS AND PVC PIPE BELLS.
  - 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. WHEN TAPPING PVC PIPE, FOLLOW THE MANUFACTURER'S SAFETY PRECAUTIONS AND THE SAFETY PRECAUTIONS CITED IN AWWA C605.
  - 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.



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. 33954, EXPIRATION DATE: 01-24-11.

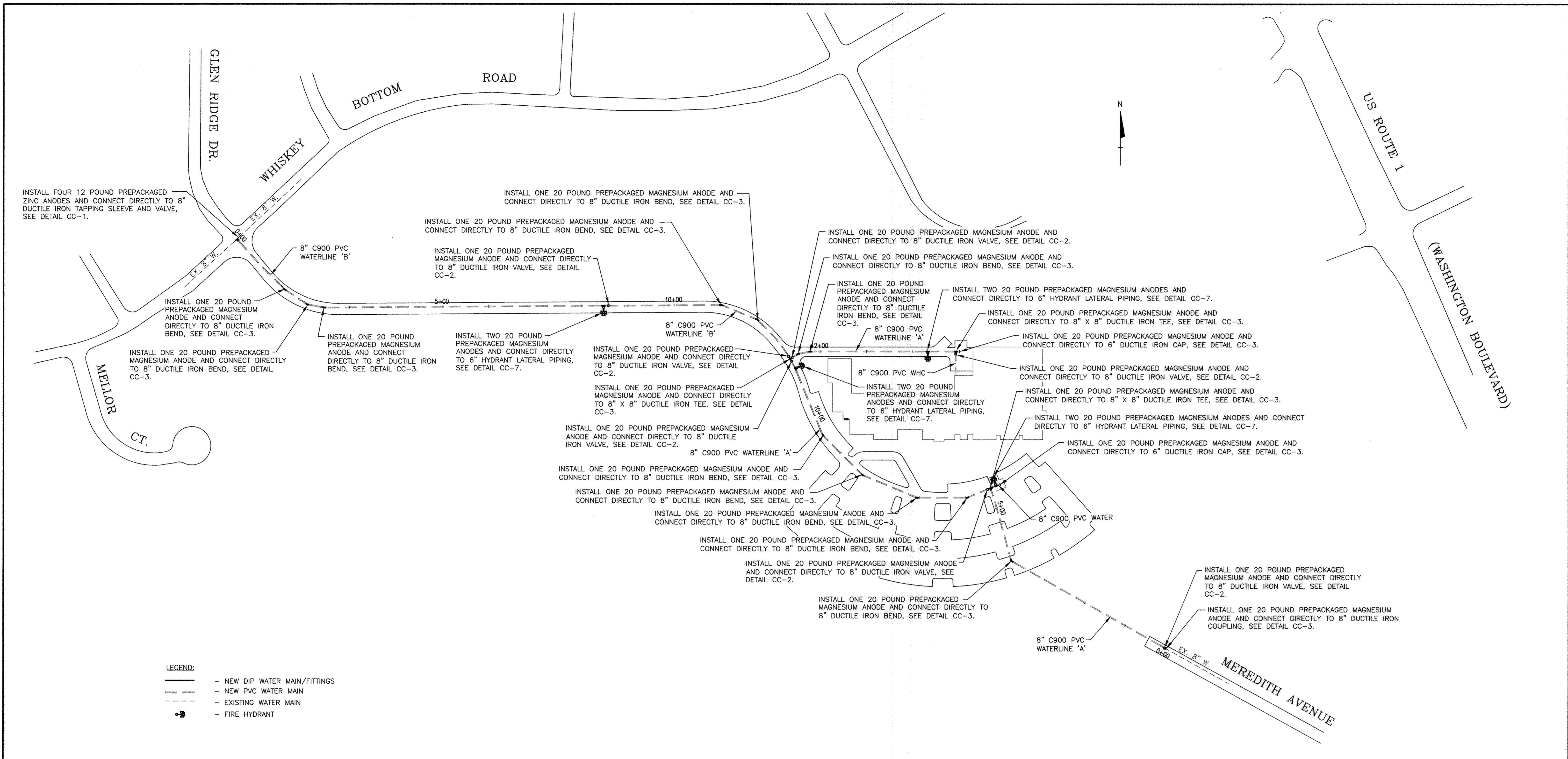
DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND Chief, Bureau of Utilities Date:	DEPARTMENT OF PLANNING & ZONING HOWARD COUNTY, MARYLAND Chief, Development Engineering Division Date:	Patton Harris Rust & Associates, PC Engineers, Surveyors, Planners, Landscape Architects 8518 Centre Park Drive Columbia, MD 21045 T 410.997.8900 F 410.997.9282	DES: HS DRN: HS CHK: SCM DATE: 2/23/09	BY: NO. REVISION DATE	WATER MAIN NOTES AND DETAILS 600' SCALE MAP NO. 47 BLOCK NO. 22	NORTH LAUREL COMMUNITY CENTER TAX MAP 47, PARCELS 762 & 1065 ZONED R-SC 6th ELECTION DISTRICT HOWARD COUNTY, MARYLAND CONTRACT NO. 24-4590-D CAPITAL PROJECT C-0304	SCALE AS SHOWN SHEET 5 OF 10
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"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. 33954, EXPIRATION DATE: 01-24-11."

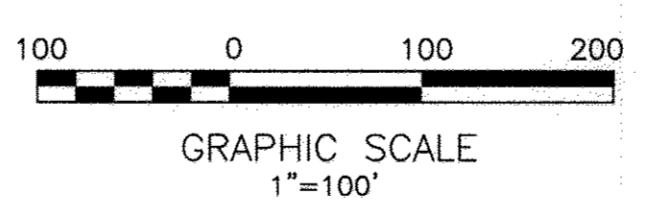
DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND	DEPARTMENT OF PLANNING & ZONING HOWARD COUNTY, MARYLAND	Patton Harris Rust & Associates, pc Engineers, Surveyors, Planners, Landscape Architects. 8818 Centre Park Drive Columbia, MD 21045 T 410.997.9900 F 410.997.9282	2-23-01 STATE OF MARYLAND CLARKE MITCHELL PROFESSIONAL ENGINEER SHERRY L. MITCHELL # 33954	DES: HS DRN: HS CHK: SCM DATE: 2/23/09	BY NO. REVISION DATE	600' SCALE MAP NO. 47 BLOCK NO. 22	NORTH LAUREL COMMUNITY CENTER TAX MAP 47, PARCELS 762 & 1065 ZONED R-SC 6th ELECTION DISTRICT HOWARD COUNTY, MARYLAND CONTRACT NO. 24-4590-D CAPITAL PROJECT C-0304	SCALE AS SHOWN SHEET 6 OF 10
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- LEGEND:**
- NEW DIP WATER MAIN/FITTINGS
  - NEW PVC WATER MAIN
  - - - EXISTING WATER MAIN
  - FIRE HYDRANT

- NOTES:**
1. ALL NEW DUCTILE IRON TEES AND DUCTILE IRON BENDS ALONG THE PVC WATER MAINS ARE TO BE PROVIDED WITH CORROSION PROTECTION (ALL DUCTILE IRON TEES AND BENDS MAY NOT SHOWN ON THIS DRAWING), SEE DETAIL CC-3.
  2. ALL PVC PIPE DESIGNATED AS BEING "RESTRAINED JOINT" SHALL HAVE ONE 12 POUND PREPACKAGED ZINC ANODE CONNECTED TO EACH METALLIC RESTRAINING HARNESS, SEE DETAIL CC-4. RESTRAINED JOINT PIPE NOT SHOWN ON THIS DRAWING.
  3. DO NOT THERMITE WELD TO PVC PIPE.

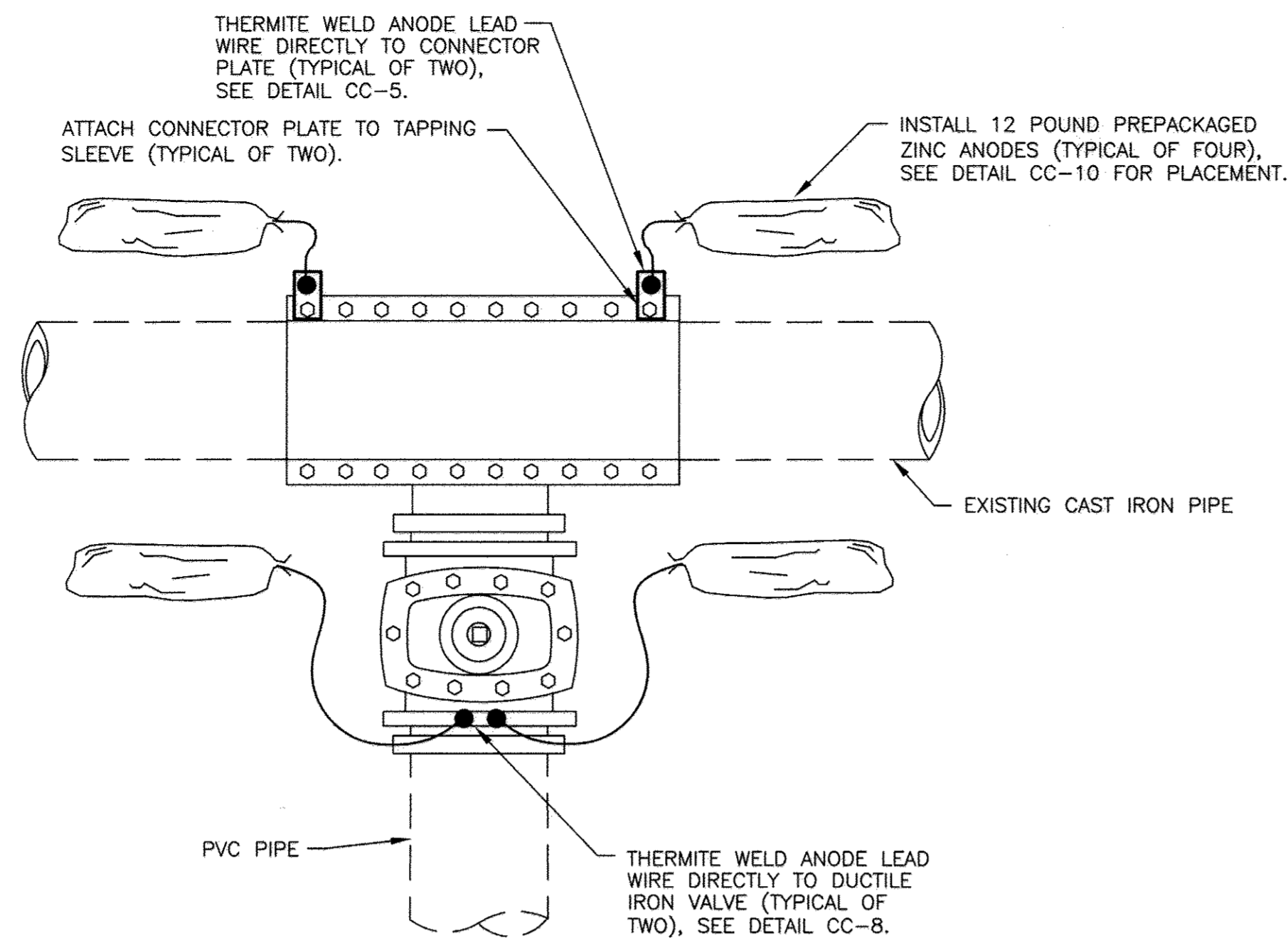
**CORROSION CONTROL LAYOUT**



THIS DRAWING IS NOT APPLICABLE FOR USE AS STANDARD CORROSION CONTROL PROCEDURES FOR OTHER PROJECTS DUE TO VARIOUS CONDITIONS AT OTHER SITES. NEITHER THIS DESIGN NOR ANY PART THEREOF MAY BE REPRODUCED IN ANY WAY FOR OTHER PROJECTS OR MODIFIED IN ANY WAY FOR THIS OR OTHER PROJECTS, EXCEPT BY WRITTEN AGREEMENT WITH RUSSELL CORROSION CONSULTANTS, INC.

"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. 17083, EXPIRATION DATE: 9/27/2010"

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND  <i>Shane Clavin</i> CHIEF, BUREAU OF UTILITIES	DEPARTMENT OF PLANNING & ZONING HOWARD COUNTY, MARYLAND  <i>3/9/09</i> CHIEF, DEVELOPMENT ENGINEERING DIVISION	<b>Patton Harris Rust &amp; Associates, PC</b> Engineers, Surveyors, Planners, Landscape Architects. PHRA 8818 Centre Park Drive Columbia, MD 21045 T 410.997.8900 F 410.997.9282  <b>RUSSELL CORROSION CONSULTANTS, INC.</b> Columbia, Maryland		DES: MJS DRN: DJD CHK: MJS DATE: 2/23/09	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><th>BY</th><th>NO.</th><th>REVISION</th><th>DATE</th></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> </table>	BY	NO.	REVISION	DATE													<b>CORROSION CONTROL LAYOUT</b>  600' SCALE MAP NO. _____ BLOCK NO. _____	<b>NORTH LAUREL COMMUNITY CENTER</b> <b>PARCELS 762 &amp; 1065 ZONED R-SC</b> CAPITAL PROJECT: C-0304 CONTRACT NO.: 24-4590-D 6TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND	CP-1 SCALE 1"=100' SHEET 7 OF 10
BY	NO.	REVISION	DATE																					

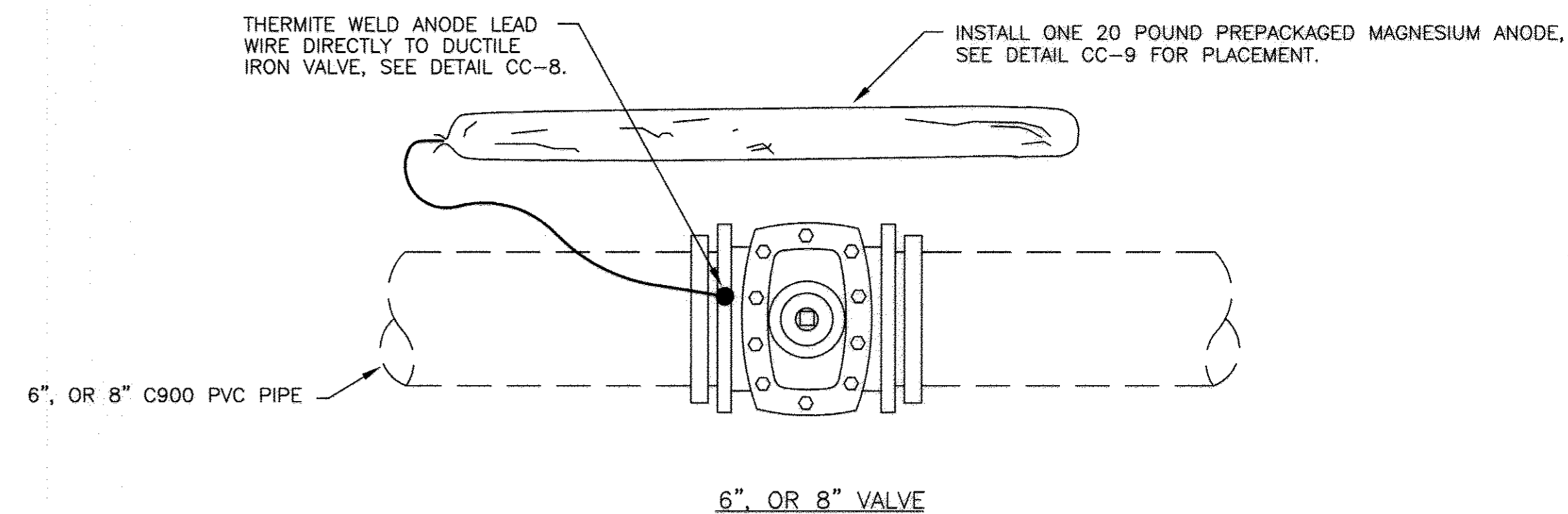


**NOTES:**

1. ANODES PLACED AT SAME DEPTH AS THE BOTTOM OF PIPE AND AT A MINIMUM OF 12" FROM EDGE OF PIPE, SEE DETAIL CC-10.
2. DO NOT THERMITE WELD TO PVC PIPE.

**CC-1: CORROSION PROTECTION OF TAPPING SLEEVE AND VALVE**

SCALE: NONE

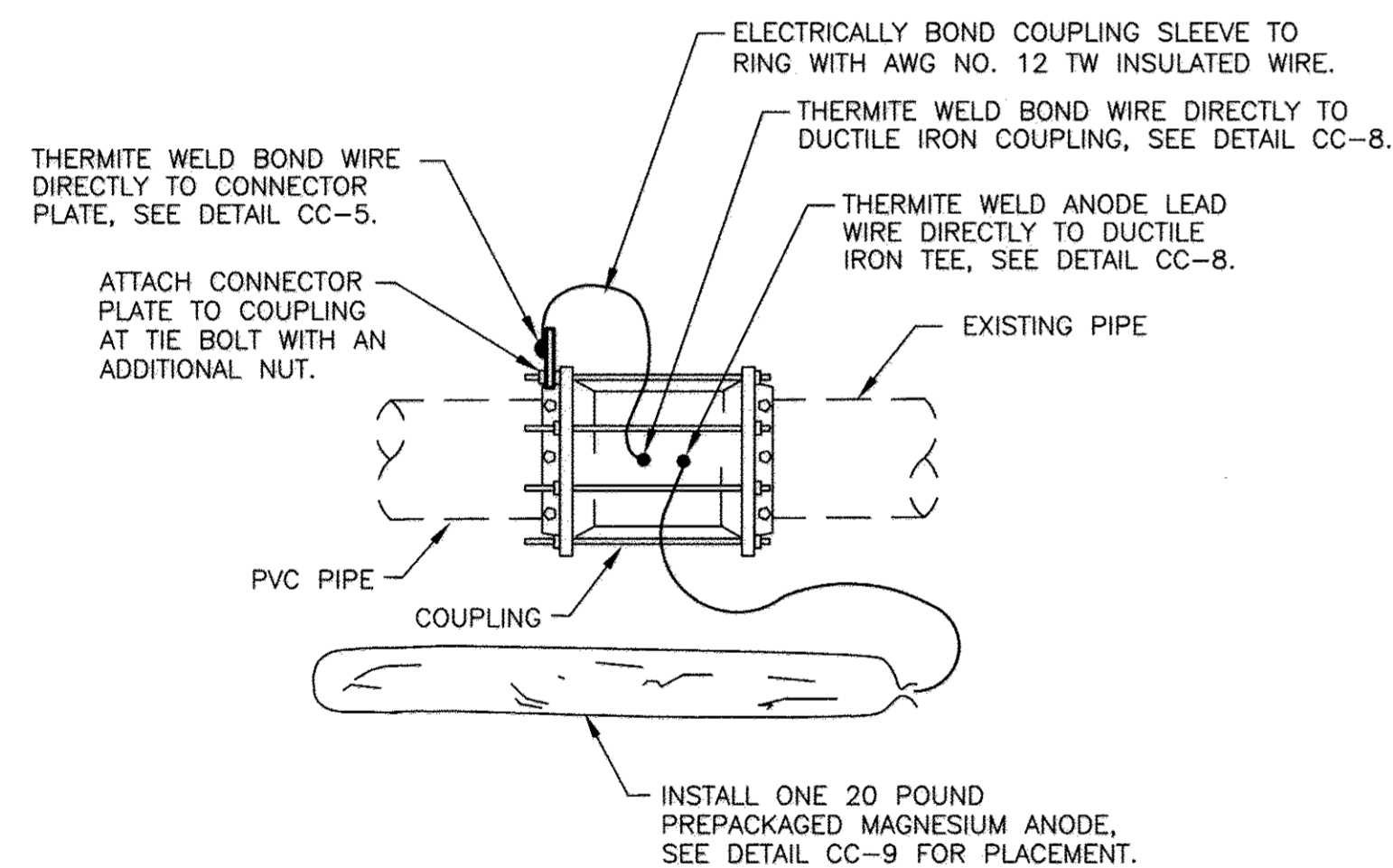


**NOTES:**

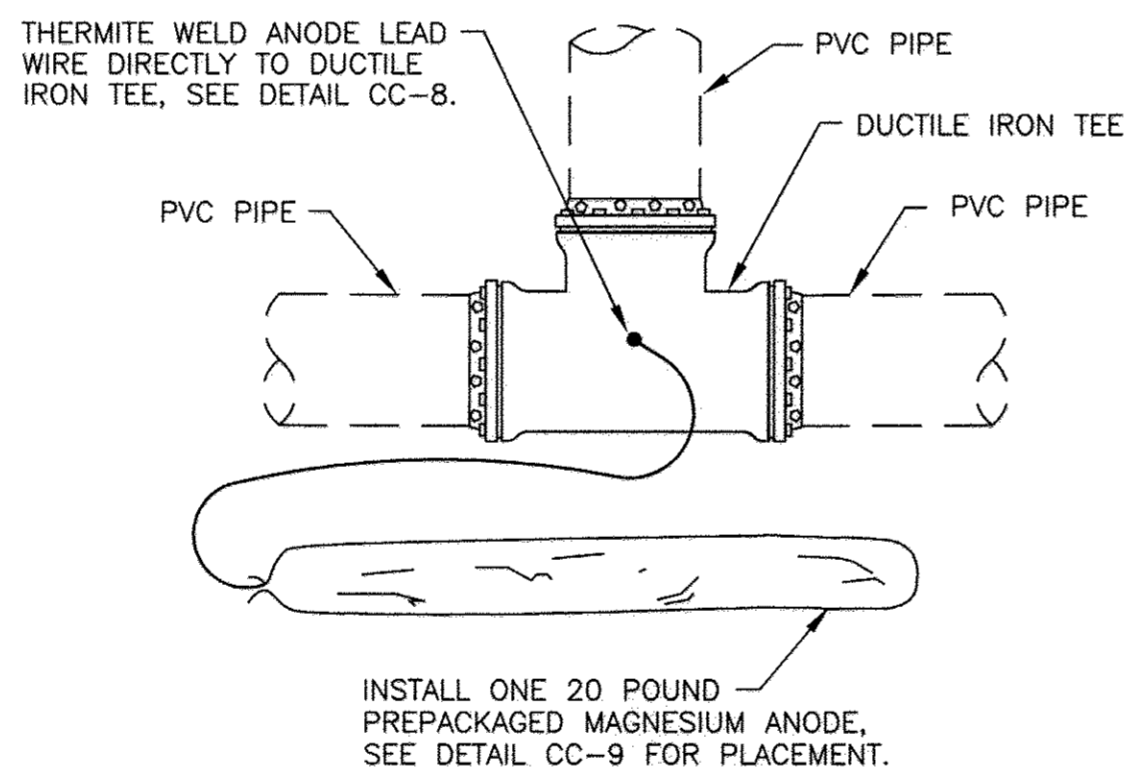
1. ANODE PLACED AT SAME DEPTH AS THE BOTTOM OF PIPE AND AT A MINIMUM OF 12" FROM EDGE OF PIPE, SEE DETAIL CC-9.
2. DO NOT THERMITE WELD TO PVC PIPE.

**CC-2: CORROSION PROTECTION OF DUCTILE IRON VALVES**

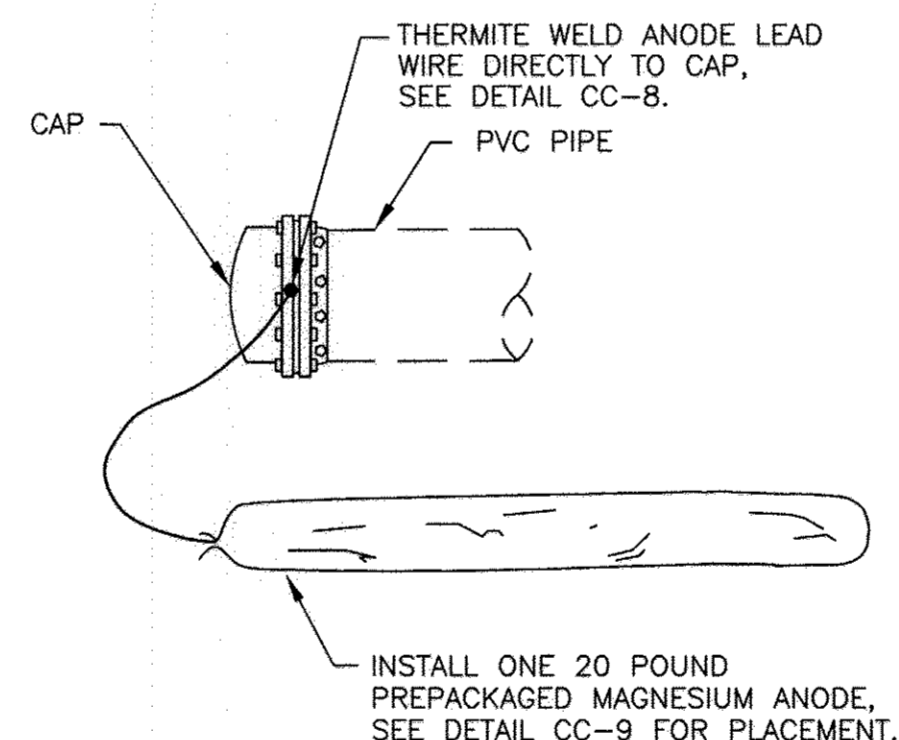
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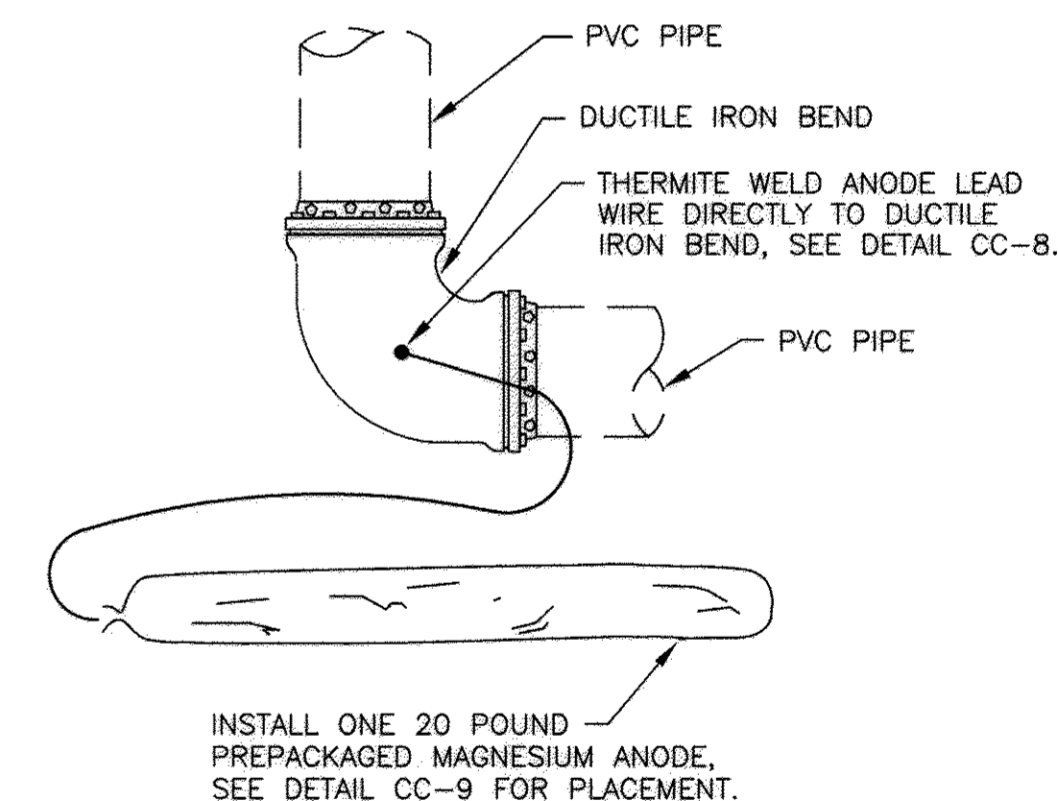
COUPLING



TEE



CAP



BEND

**NOTES:**

1. ANODES REQUIRED ONLY IF TEE, CROSS, CAP, OR BEND IS DUCTILE IRON.
2. ANODES PLACED AT SAME DEPTH AS THE BOTTOM OF PIPE AND AT A MINIMUM OF 12" FROM EDGE OF PIPE, SEE DETAIL CC-9.
3. DO NOT THERMITE WELD TO PVC PIPE.

**CC-3: CORROSION PROTECTION FOR DUCTILE IRON PIPE AND FITTINGS**

NOT TO SCALE

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\*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. 17083, EXPIRATION DATE: 9/27/2010\*

DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

DEPARTMENT OF PLANNING & ZONING  
HOWARD COUNTY, MARYLAND

Patton Harris Rust & Associates, pc  
Engineers, Surveyors, Planners, Landscape Architects.  
PHRA  
8818 Centre Park Drive  
Columbia, MD 21045  
T 410.997.8900  
F 410.997.9282

RUSSELL CORROSION CONSULTANTS, INC.  
Columbia, Maryland



DES:	MJS				
DRN:	DJD				
CHK:	MJS				
DATE:	2/23/09	BY	NO.	REVISION	DATE

**CORROSION CONTROL  
DETAILS - 1**

600' SCALE MAP NO. \_\_\_\_\_ BLOCK NO. \_\_\_\_\_

**NORTH LAUREL COMMUNITY CENTER  
PARCELS 762 & 1065 ZONED R-SC**  
CAPITAL PROJECT: C-0304  
CONTRACT NO.: 24-4590-D  
6TH ELECTION DISTRICT  
HOWARD COUNTY, MARYLAND

CP-2

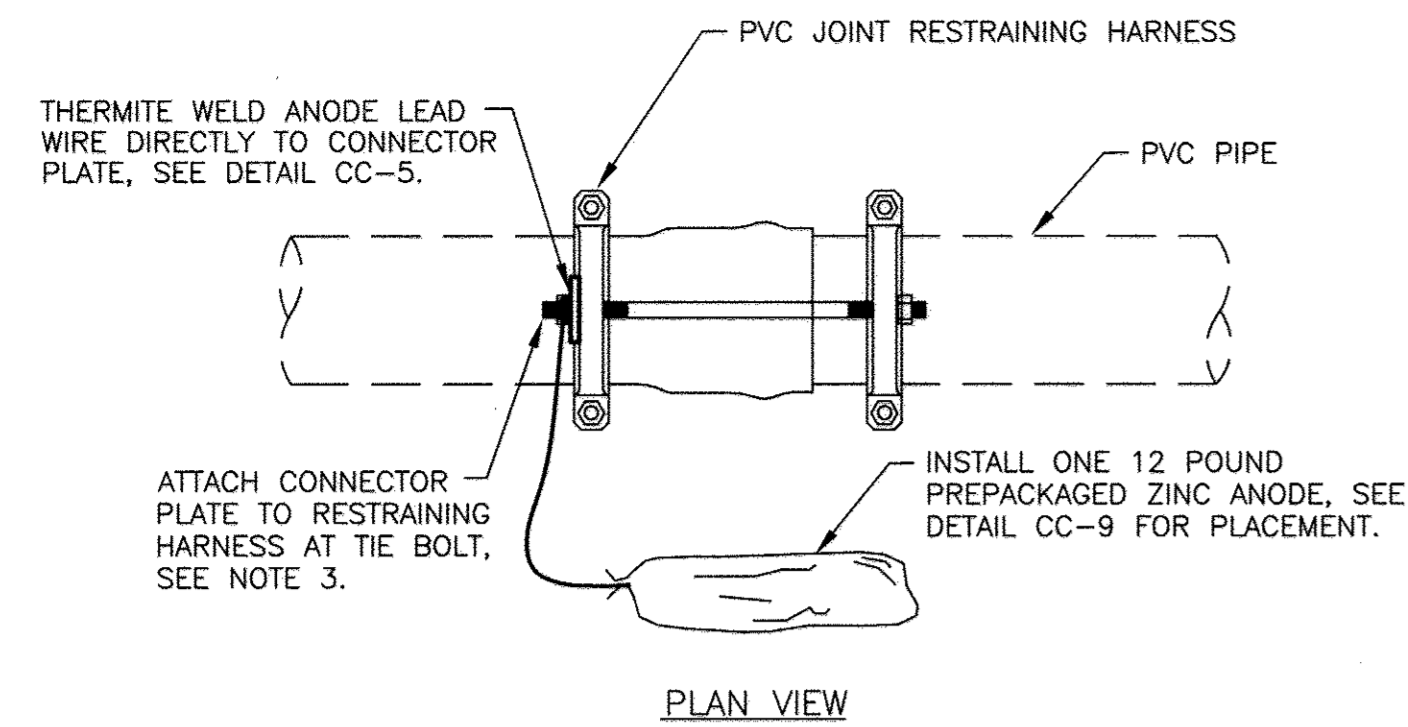
SCALE  
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SHEET  
8 OF 10

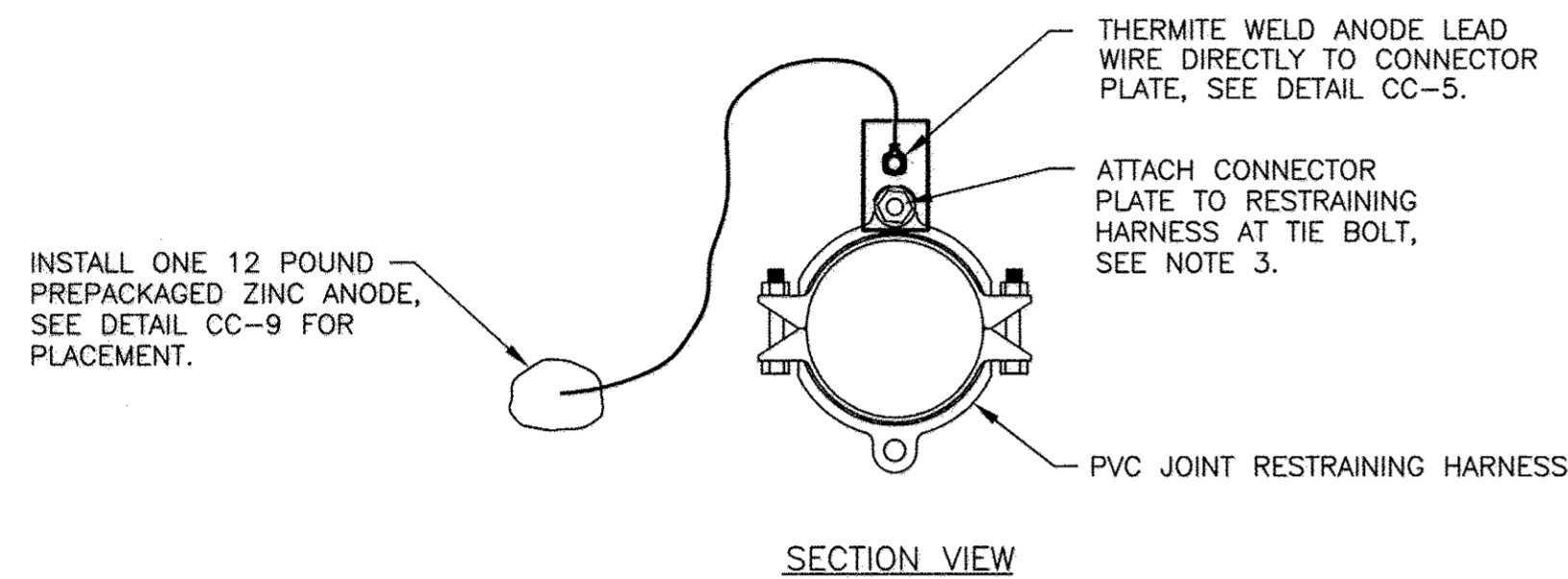
Chief, Bureau of Utilities  
DATE

Chief, Development Engineering Division  
DATE





PLAN VIEW



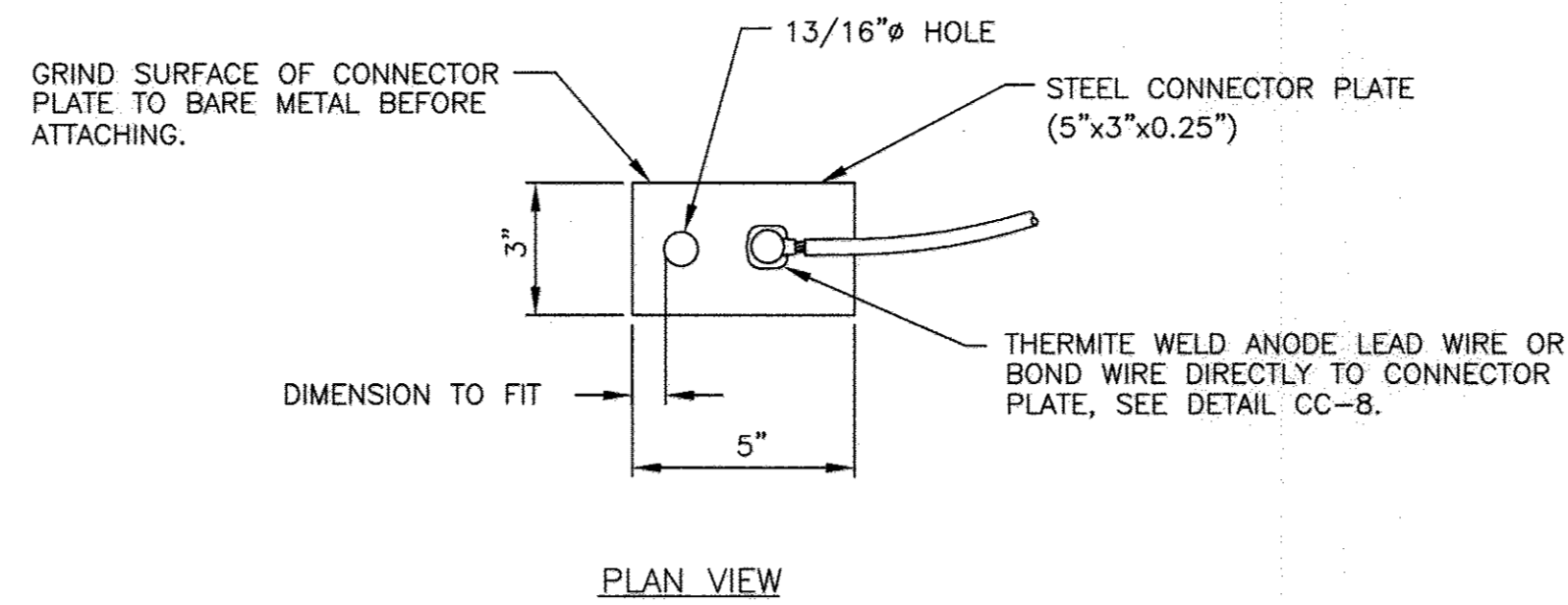
SECTION VIEW

**NOTES:**

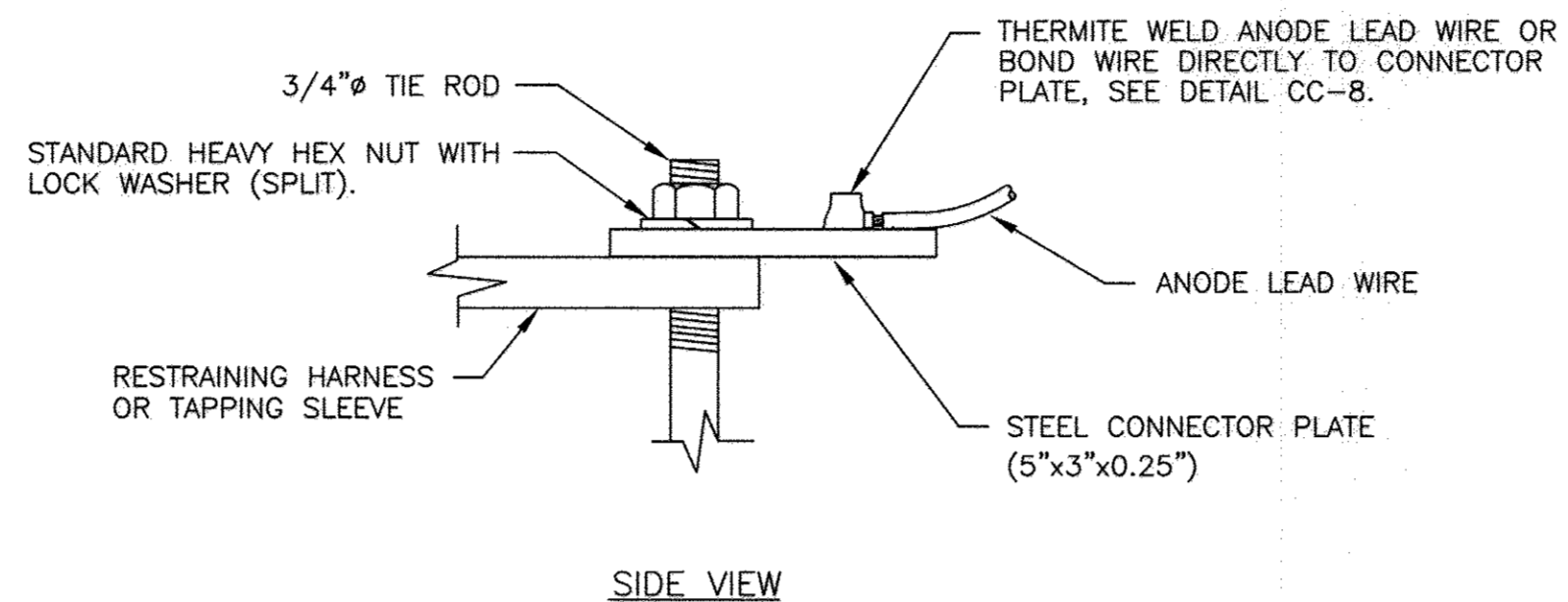
1. ANODE LEAD WIRE TO BE THERMITE WELDED TO CONNECTOR PLATE PRIOR TO ATTACHING CONNECTOR PLATE TO RESTRAINING HARNESS.
2. ANODES PLACED AT SAME DEPTH AS THE BOTTOM OF PIPE AND AT A MINIMUM OF 12" FROM EDGE OF PIPE, SEE DETAIL CC-9.
3. REMOVE COATING FROM RESTRAINING HARNESS WHERE CONNECTOR PLATE IS TO BE MOUNTED. REMOVE COATING IMMEDIATELY PRIOR TO ATTACHING THE CONNECTOR PLATE.
4. DO NOT THERMITE WELD TO PVC PIPE.

**CC-4: CORROSION PROTECTION OF RESTRAINING HARNESS**

NOT TO SCALE



PLAN VIEW



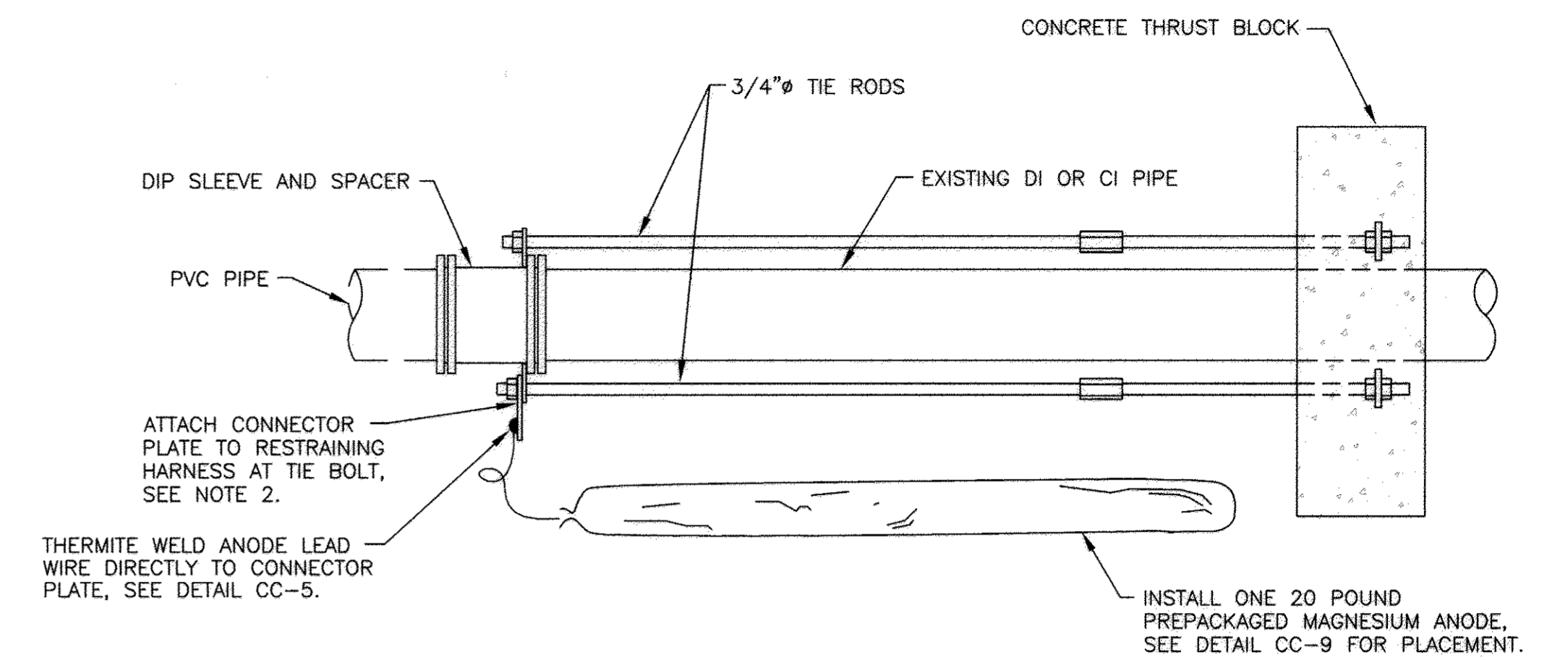
SIDE VIEW

**NOTES:**

1. ANODE LEAD WIRE TO BE THERMITE WELDED TO CONNECTOR PLATE PRIOR TO ATTACHING CONNECTOR PLATE TO RESTRAINING HARNESS OR TAPPING SLEEVE.
2. BOND WIRE TO BE THERMITE WELDED TO CONNECTOR PLATE PRIOR TO ATTACHING CONNECTOR PLATE TO COUPLING.
3. THERMITE WELDS SHALL BE COATED WITH A PREFABRICATED ONE PIECE PLASTIC CAP FILLED WITH ELASTOMERIC MATERIAL, ROYSTON HANDY-CAP OR APPROVED EQUAL.

**CC-5: CONNECTOR PLATE DETAIL**

NOT TO SCALE

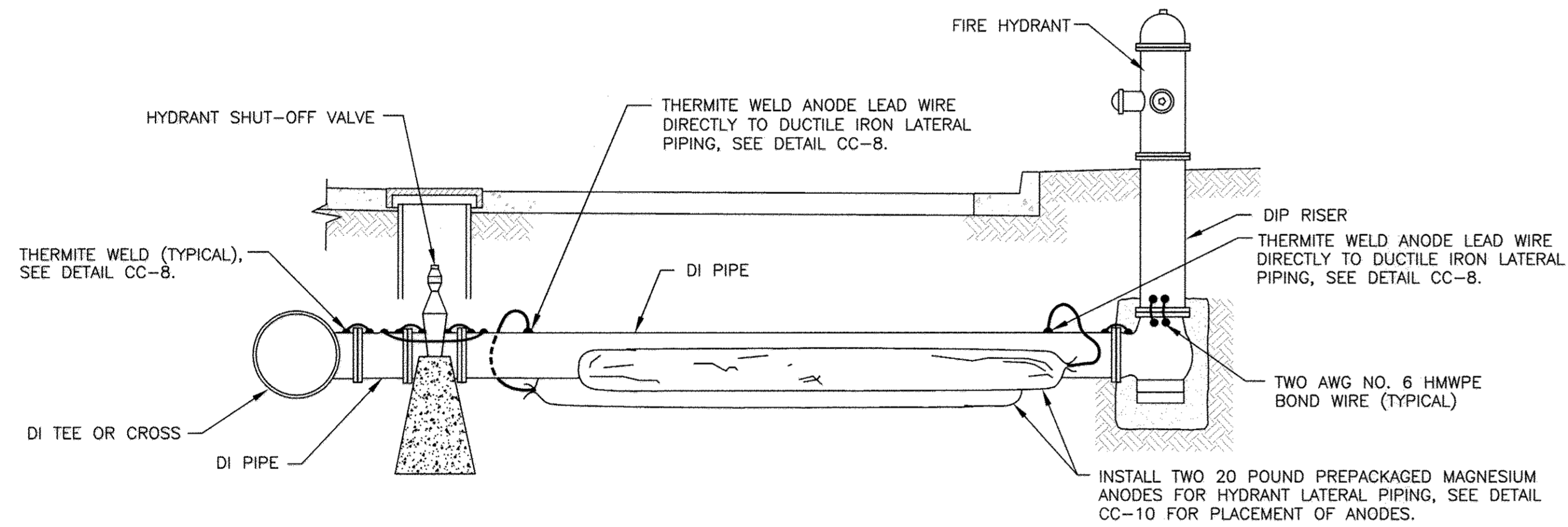


**NOTES:**

1. ANODES PLACED AT SAME DEPTH AS THE BOTTOM OF PIPE AND AT A MINIMUM OF 12" FROM EDGE OF PIPE, SEE DETAIL CC-9.
2. REMOVE COATING FROM RESTRAINING HARNESS WHERE CONNECTOR PLATE IS TO BE MOUNTED. REMOVE COATING IMMEDIATELY PRIOR TO ATTACHING THE CONNECTOR PLATE.
3. DO NOT THERMITE WELD TO PVC PIPE.

**CC-6: CORROSION PROTECTION AT IN-LINE THRUST BLOCK**

NOT TO SCALE



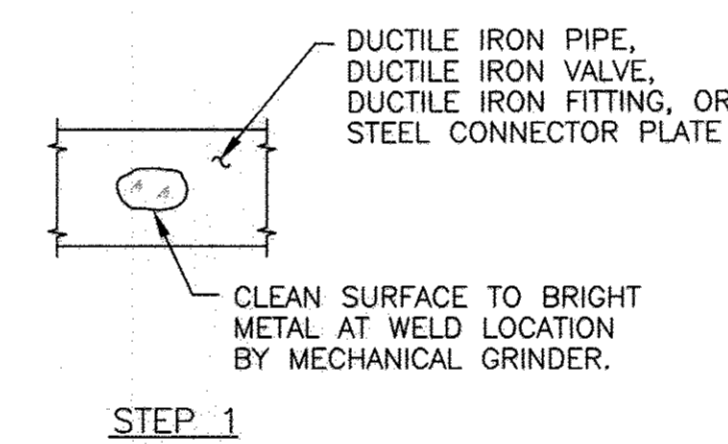
**NOTES:**

1. BOND ALL DUCTILE IRON COMPONENTS TOGETHER WITH AWG NO. 6 HMWPE CABLES. INSTALL A MINIMUM OF TWO BOND CABLES ACROSS EACH DUCTILE IRON PIPE JOINT.
2. INSTALL BOND WIRES ON TOP OF DUCTILE IRON PIPE OR DUCTILE IRON FITTING WHERE POSSIBLE.
3. ANODES PLACED AT SAME DEPTH AS THE BOTTOM OF PIPE AND AT A MINIMUM OF 12 INCHES FROM EDGE OF PIPE, SEE DETAIL CC-10.
4. INSTALL BOND CABLES ON HYDRANT RISER PIPE AND RISER BEND BEFORE INSTALLING HYDRANT.
5. DO NOT THERMITE WELD TO PVC PIPE.

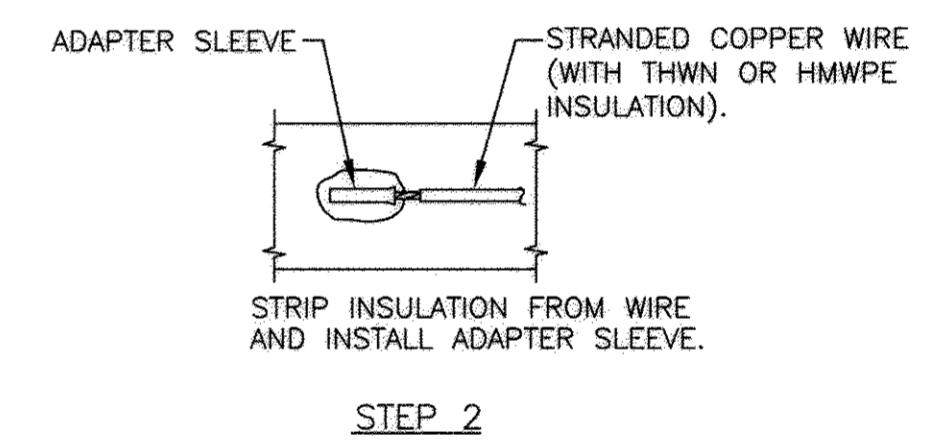
**CC-7: CORROSION PROTECTION AT FIRE HYDRANT**

SCALE: NONE

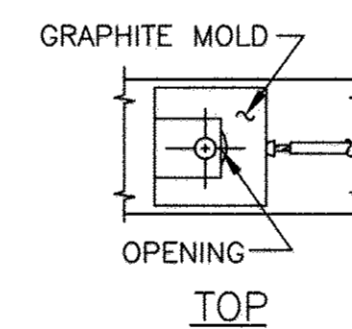
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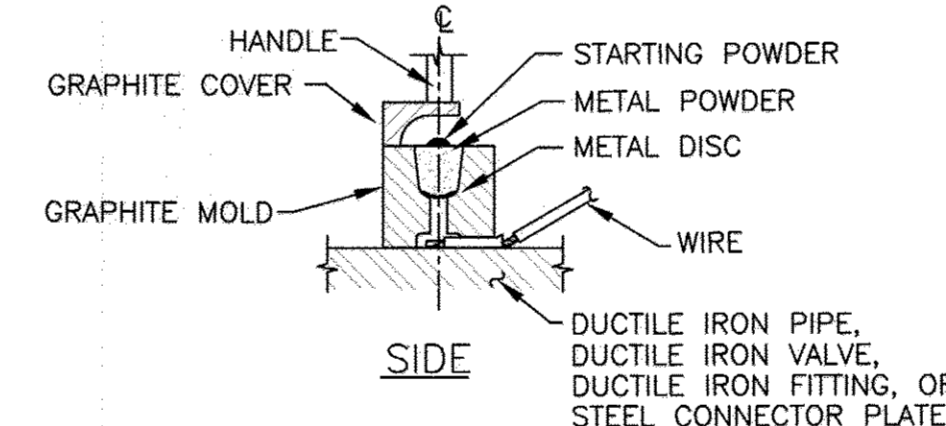
STEP 1



STEP 2



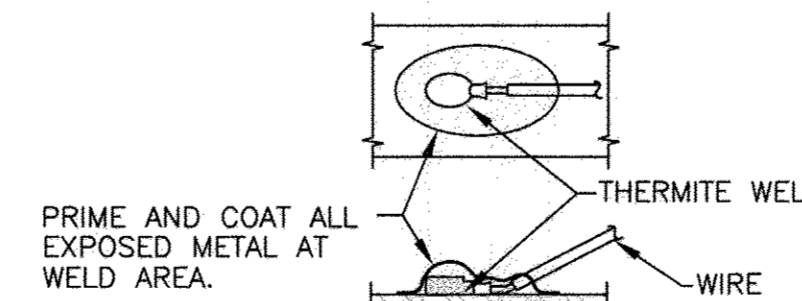
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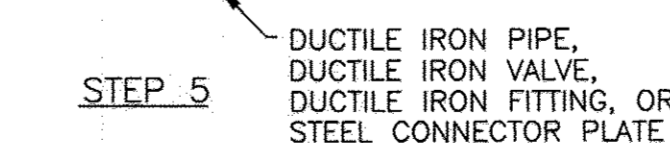
SIDE

HOLD GRAPHITE MOLD FIRMLY OVER ADAPTER SLEEVE WITH OPENING AWAY FROM OPERATOR - IGNITE STARTING POWDER.

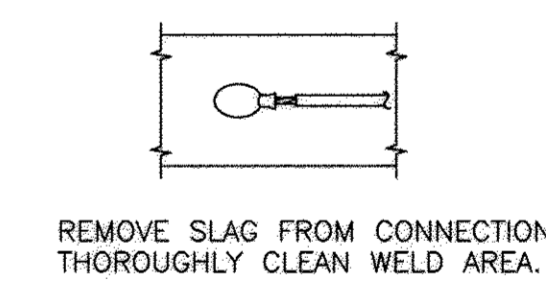
STEP 3



STEP 4



STEP 5



STEP 4

**NOTES:**

1. THERMITE WELDS SHALL BE COATED WITH A PREFABRICATED ONE PIECE PLASTIC CAP FILLED WITH ELASTOMERIC MATERIAL, ROYSTON HANDY-CAP OR APPROVED EQUAL.
2. DO NOT THERMITE WELD TO PVC PIPE.

**CC-8: HORIZONTAL THERMITE WELD**

SCALE: NONE

DES: MJS				
DRN: DJD				
CHK: MJS				
DATE: 2/23/09	BY	NO.	REVISION	DATE

**CORROSION CONTROL DETAILS - 2**

600' SCALE MAP NO. \_\_\_\_\_ BLOCK NO. \_\_\_\_\_

**NORTH LAUREL COMMUNITY CENTER PARCELS 762 & 1065 ZONED R-SC**  
 CAPITAL PROJECT: C-0304  
 CONTRACT NO.: 24-4590-D  
 6TH ELECTION DISTRICT  
 HOWARD COUNTY, MARYLAND

CP-3

SCALE NONE

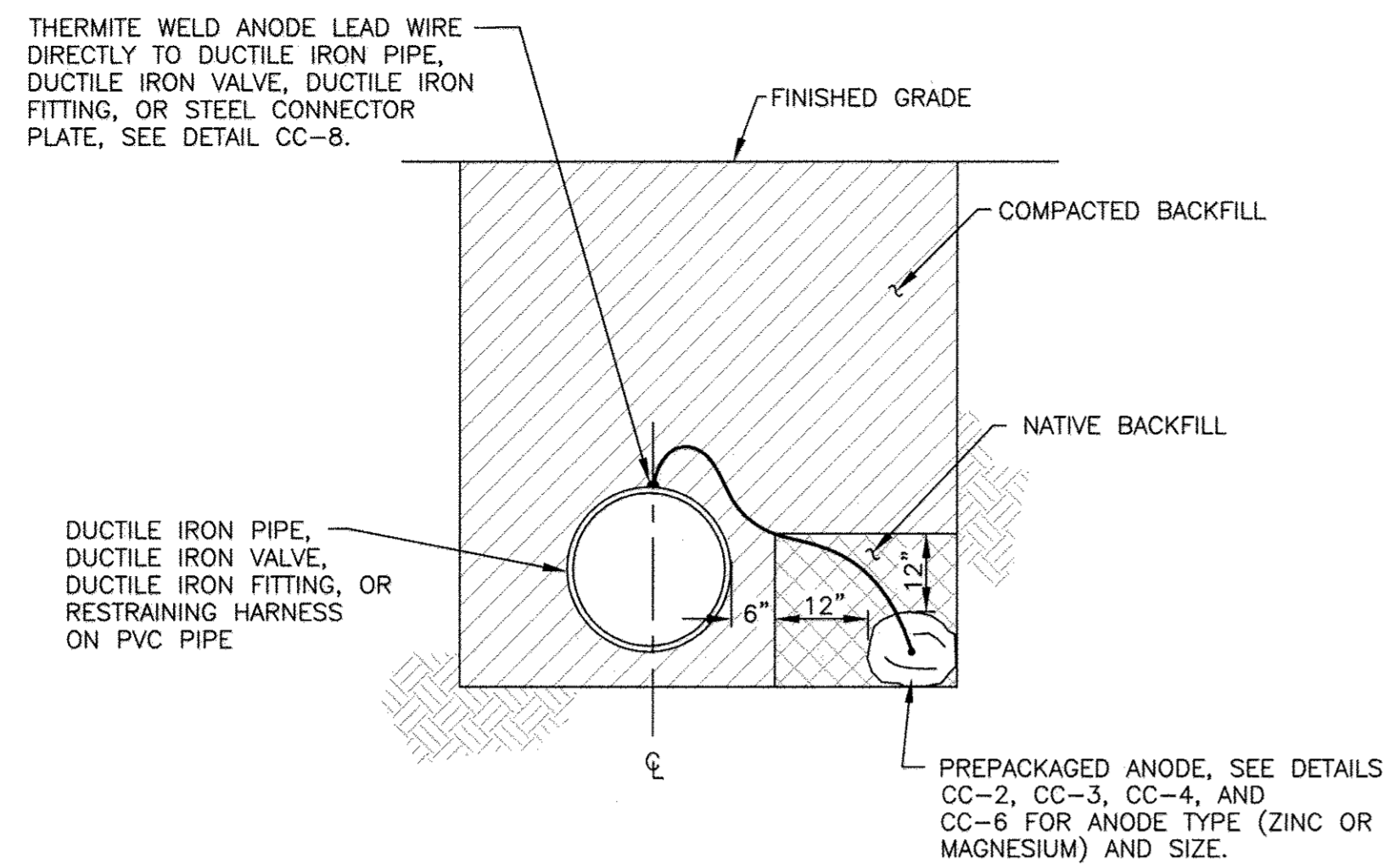
SHEET 9 OF 10

DEPARTMENT OF PUBLIC WORKS  
 HOWARD COUNTY, MARYLAND  
 S. J. C. [Signature]  
 CHIEF, BUREAU OF UTILITIES

DEPARTMENT OF PLANNING & ZONING  
 HOWARD COUNTY, MARYLAND  
 [Signature]  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION

Patton Harris Rust & Associates, PC  
 Engineers, Surveyors, Planners, Landscape Architects.  
 PHRA  
 8818 Centre Park Drive  
 Columbia, MD 21045  
 T 410.987.8900  
 F 410.987.9282  
 RUSSELL CORROSION CONSULTANTS, INC.  
 Columbia, Maryland

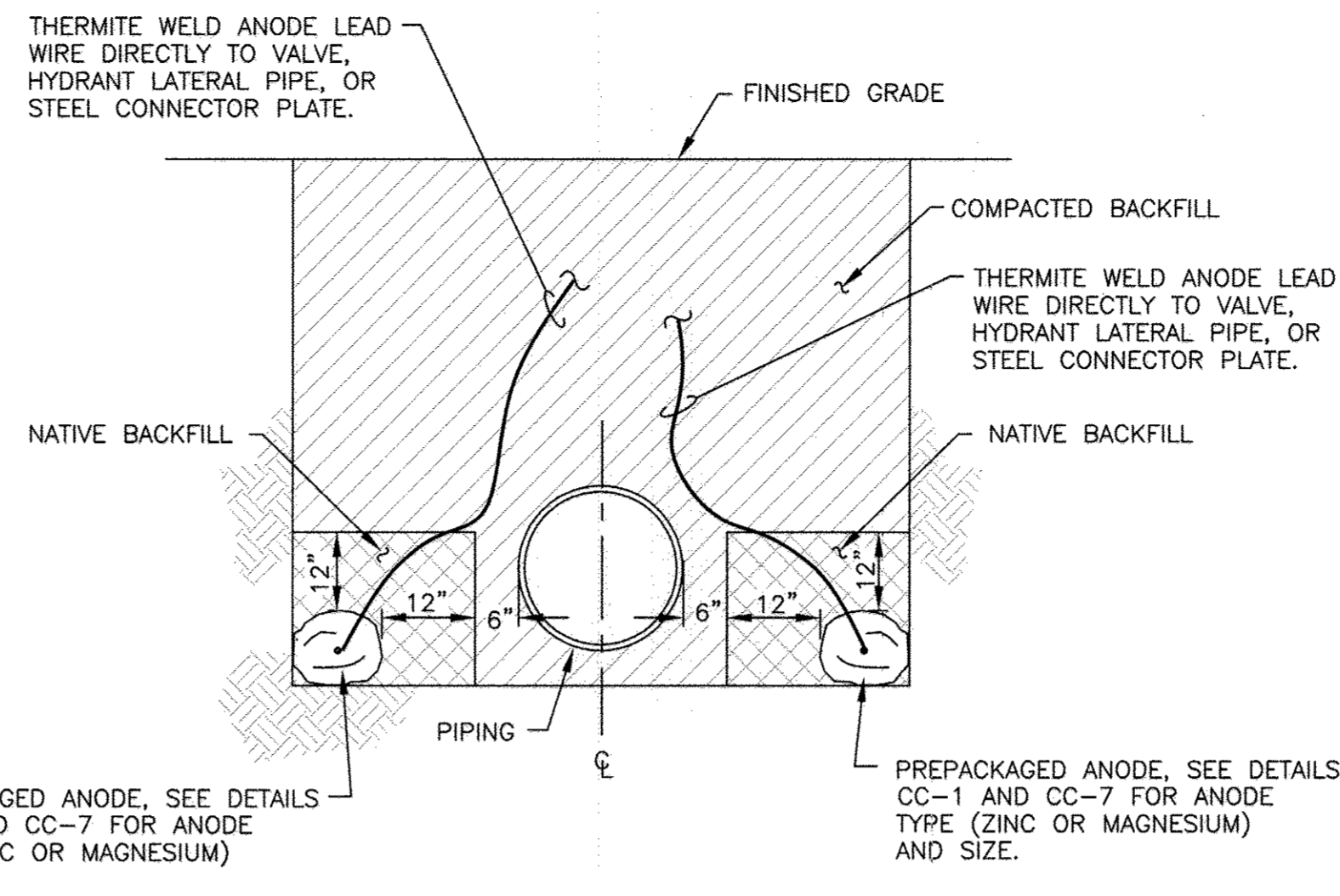




- NOTES:
1. INSTALL ANODE IN NATIVE SOIL. DO NOT BACKFILL ANODE WITH SAND OR STONE.
  2. DO NOT THERMITE WELD TO PVC PIPE.

**CC-9: SINGLE ANODE PLACEMENT**

NOT TO SCALE



- NOTES:
1. WHEN INSTALLING ANODES AT HYDRANTS, ATTACH BOTH ANODE LEADS TO HYDRANT LATERAL PIPE. SEE DETAIL CC-7.
  2. INSTALL ANODES A MINIMUM OF 12 INCHES FROM PIPE.
  3. BACKFILL ANODES WITH NATIVE SOIL FOR A MINIMUM OF 12 INCHES ON ALL SIDES. DO NOT BACKFILL ANODES WITH SAND OR STONE.
  4. DO NOT THERMITE WELD TO PVC PIPE.

**CC-10: DOUBLE ANODE PLACEMENT**

NOT TO SCALE

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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. 17083, EXPIRATION DATE: 9/27/2010

DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

DEPARTMENT OF PLANNING & ZONING  
HOWARD COUNTY, MARYLAND

Patton Harris Rust & Associates, pc  
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PHRA  
8818 Centre Park Drive  
Columbia, MD 21045  
T 410.997.8900  
F 410.997.9282

RUSSELL CORROSION CONSULTANTS, INC.  
Columbia, Maryland



DES:	MJS				
DRN:	DJD				
CHK:	MJS				
DATE:	2/23/09	BY	NO.	REVISION	DATE

**CORROSION CONTROL  
DETAILS - 3**

**NORTH LAUREL COMMUNITY CENTER  
PARCELS 762 & 1065 ZONED R-SC**

CAPITAL PROJECT: C-0304  
CONTRACT NO.: 24-4590-D  
6TH ELECTION DISTRICT  
HOWARD COUNTY, MARYLAND

CP-4

SCALE  
NONE

SHEET  
10 OF 10

Stacy C. Green  
CHIEF, BUREAU OF UTILITIES

DATE: 3/19/09  
M.A.  
CHIEF, DEVELOPMENT ENGINEERING DIVISION

600' SCALE MAP NO. \_\_\_\_\_ BLOCK NO. \_\_\_\_\_