

BILL OF MATERIALS				
ITEM	QUANTITY	MATERIALS	AS-BUILT QUANTITY	MANUFACTURER
24" WATER MAIN	460 LF +/- *	D.I.P.	371 LF	US PIPE & FOUNDRY
BLOW OFF MANHOLE	1 EA.	--	1	DFW PLASTICS
CATHODIC PROTECTION CONTIN. TEST STA.	2 EA.	COPPER (ROD)	2	PIPING & CORROSION

\* FINAL QUANTITY DEPENDENT ON LOCATION OF JOINTS AT CONNECTIONS TO EXISTING PCCP. SPECIALTIES

**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.
- TOPOGRAPHIC FIELD SURVEYS WERE PERFORMED IN SEPTEMBER 2013 BY WHITMAN, REQUARDT & ASSOCIATES LLP.
- HORIZONTAL AND VERTICAL SURVEY CONTROLS: THE COORDINATES SHOWN ON THE DRAWINGS ARE BASED ON MARYLAND STATE COORDINATE SYSTEM NAD '83 AS PROJECTED BY AB CONSULTANTS CONTROL STATIONS NO. AB100 AND NO. AB202. ALL VERTICAL CONTROLS ARE BASED ON NAVD '88 AND WERE DERIVED FROM SURVEY CONTROL STATION NO. AB100 AND NO. AB202. SEE SURVEY INFORMATION TABLE ON THIS DRAWING.
- ALL PIPE ELEVATIONS SHOWN ARE INVERT ELEVATIONS UNLESS OTHERWISE NOTED ON THE PLANS.
- CLEAR ALL UTILITIES BY A MINIMUM OF 12". CLEAR ALL POLES BY 5'-0" MINIMUM, OR TUNNEL AS REQUIRED UNLESS OTHERWISE NOTED. THE OWNER HAS CONTACTED UTILITY COMPANIES AND HAS MADE ARRANGEMENTS FOR BRACING OF THE 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 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 [X] AT THE LOCATION OF THE TEST PIT. 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 BY TEST PIT TWO WEEKS IN ADVANCE OF CONSTRUCTION OPERATIONS AT HIS OWN EXPENSE.
- THE CONTRACTOR SHALL NOTIFY THE FOLLOWING UTILITY COMPANIES OR AGENCIES AT LEAST FIVE WORKING DAYS BEFORE STARTING WORK SHOWN ON THESE PLANS.
 

AT&T	1-800-252-1133
BGE (CONSTRUCTION SERVICES)	410-637-8713
BGE (EMERGENCY)	410-685-0123
BUREAU OF UTILITIES	410-313-4900
COLONIAL PIPELINE CO.	410-795-1390
MISS UTILITY	1-800-257-7777
STATE HIGHWAY ADMINISTRATION	410-531-5533
VERIZON	1-800-743-0033/410-224-9210
- 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 WATER 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(c) OF THE HOWARD COUNTY CODE.

**WATER NOTES:**

- ALL WATER MAINS SHALL BE D.I.P. CLASS 54 WITH EXTERNAL COATING FOR CORROSION PROTECTION PER THE SPECIFICATIONS.
- TOPS OF ALL WATER MAINS SHALL HAVE A MINIMUM OF 3'-6" OF COVER UNLESS OTHERWISE NOTED.
- ALL FITTINGS SHALL BE BUTTRESSED OR ANCHORED WITH CONCRETE IN ACCORDANCE WITH STANDARD DETAILS UNLESS OTHERWISE PROVIDED FOR ON THE DRAWINGS.
- THE CONTRACTOR SHALL NOT OPERATE ANY WATER MAIN VALVES ON THE EXISTING WATER SYSTEM.
- TRACER WIRES AND CONTINUITY TEST STATIONS SHALL BE INSTALLED ON ALL DIP WATER MAINS IN ACCORDANCE WITH THE HOWARD COUNTY DESIGN MANUAL.

THE DRAWINGS IN THIS SET ARE RECORD DRAWINGS. THEY ARE CONSTRUCTION CONTRACT DRAWINGS WHICH HAVE BEEN REVISED ON THE BASIS OF AVAILABLE FIELD INFORMATION RECORDED BY OTHERS AND/OR BY WRA DURING CONSTRUCTION OF THE CONTRACT.

EP-14-017

NAME OF UTILITY CONTRACTOR:

SEDIMENT CONTROL MEASURES FOR THIS CONTRACT WILL BE IMPLEMENTED IN ACCORDANCE WITH THE SPECIFICATIONS AND AS SHOWN ON THE DRAWINGS.

**HOWARD SOIL CONSERVATION DISTRICT CERTIFICATION**

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

*J. R. Redman* 11/25/14  
HOWARD SOIL CONSERVATION DISTRICT DATE

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. 27029, EXPIRATION DATE: 01-25-2016.

*J. A. J. J.* 12/15/15  
DIRECTOR OF PUBLIC WORKS DATE

*M. E. Kuttler* 12/15/15  
CHIEF, BUREAU OF ENGINEERING DATE

*S. C. G.* 11/25/14  
CHIEF, BUREAU OF UTILITIES DATE

*D. J. J.* 12/15/15  
CHIEF, UTILITY DESIGN DIVISION DATE

DRAWING/SHEET INDEX		
DWG.	SHEET	DESCRIPTION
G-1	1	VICINITY MAP, TITLE, BILL OF MATERIALS AND SHEET INDEX
C-1	2	UTILITY PLAN
C-2	3	UTILITY PROFILE
C-3	4	CIVIL DETAILS
SC-1	5	EROSION AND SEDIMENT CONTROL: GENERAL NOTES AND DETAILS
SC-2	6	EROSION AND SEDIMENT CONTROL: STABILIZATION NOTES
SC-3	7	EROSION AND SEDIMENT CONTROL: STREAM CROSSING DETAILS
RT-1	8	ROADSIDE TREE PLAN
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CP-1	10	CORROSION CONTROL LAYOUT FOR DUCTILE IRON PIPE
CP-2	11	CORROSION CONTROL DETAILS-1
CP-3	12	CORROSION CONTROL DETAILS-2
CP-4	13	CORROSION CONTROL DETAILS-3

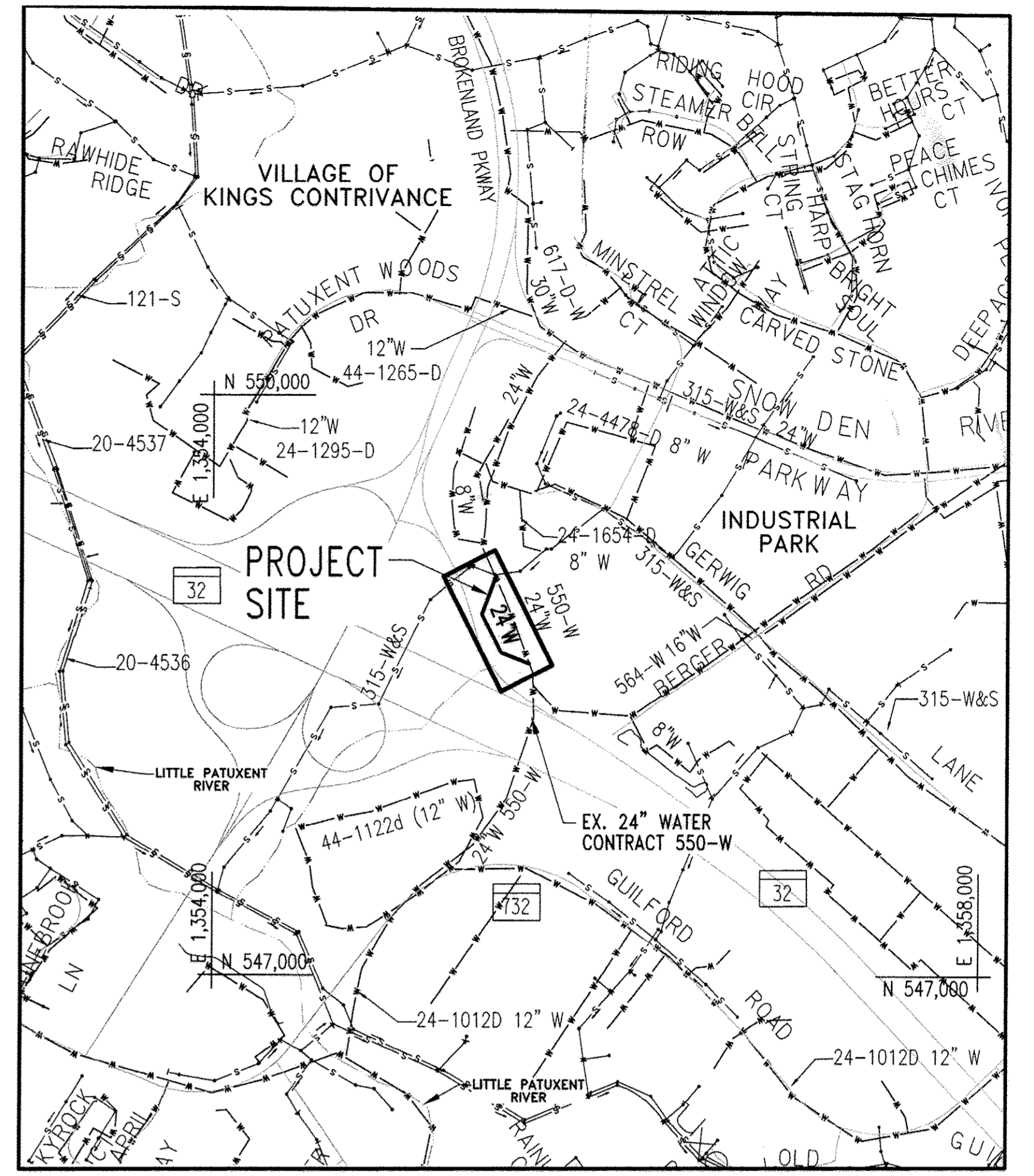
**LEGEND**

<b>EXISTING</b>	<b>NEW</b>
— W —	WATER LINE
— S —	WATER LINE (TO BE ABANDONED)
— E —	SEWER LINE
— T —	ELECTRIC
— U —	TELEPHONE
— P —	UTILITY POLE
— H —	FIRE HYDRANT
— C —	CLEANOUT
— X —	FENCE
— T —	TREE
— E —	EASEMENT LINE
— R/O/W —	R/O/W OR PROPERTY LINE
— P —	PROPERTY MONUMENT
— T —	TRAVERSE PI
— B —	BENCHMARK
— 310 —	CONTOUR LINE (MAJOR)
— 310 —	CONTOUR LINE (MINOR)
— P —	PERMANENT EASEMENT
— T —	TEMPORARY CONSTRUCTION EASEMENT
— TP-1 —	TEST PIT
— B-1 —	BORING
— L —	LIMIT OF DISTURBANCE
— SF —	SILT FENCE
— SSF —	SUPER SILT FENCE

TYPE OF BUILDING: N/A  
 NUMBER OF PARCELS: N/A  
 WATER HOUSE CONNECTIONS: N/A  
 SEWER HOUSE CONNECTIONS: N/A  
 DRAINAGE AREA: LITTLE PATUXENT  
 PRESSURE ZONE: ELEV. 550  
 WATER TEST GRADIENT: ELEV. 750

**SURVEY INFORMATION TABLE**

CONTROL STA.	NORTHING	EASTING	ELEV.
AB100	548,959.17	1,355,462.79	320.75
AB202	548,838.14	1,355,474.73	311.83



**VICINITY MAP**

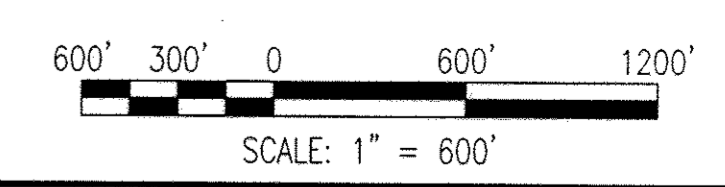
SCALE: 1"=600'

**ABBREVIATIONS**

AC	ACRE(S)	MSMT	MEASUREMENT
APPROX.	APPROXIMATE	N	NORTH
AR, ARV	AIR RELEASE VALVE	NA, N/A	NOT APPLICABLE
AWWA	AMERICAN WATER WORKS ASSOCIATION	NAD	NORTH AMERICAN DATUM (HORIZ.)
@	CENTERLINE	NAVD	NORTH AMERICAN VERTICAL DATUM
CT.	COURT	NO.	NUMBER
CTS	CONTINUITY TEST STATION	NRCS	NATIONAL RESOURCE CONSERVATION SERVICE
D	DRAIN	OD	OUTSIDE DIAMETER
DIP	DUCTILE IRON PIPE	PC	POINT OF CURVE
DPW	DEPARTMENT OF PUBLIC WORKS	PI	POINT OF INTERSECTION
DWG.	DRAWING	P	PROPERTY LINE
E	ELECTRIC, EAST	POP.	POPLAR
EA.	EACH	PSI	POUNDS PER SQUARE INCH
ELEV., EL.	ELEVATION	PT	POINT OF TANGENCY
ETC.	ETCETERA	R	RADIUS
EX.	EXISTING	R/C	REBAR & CAP
FH	FIRE HYDRANT	RD	ROAD
FIG.	FIGURE	R/W	RIGHT-OF-WAY
FT	FOOT, FEET	S	SEWER, SOUTH
G	GAS	SC	SEDIMENT CONTROL
GAB	GRADED AGGREGATE BASE	SCE	STABILIZED CONSTRUCTION ENTRANCE
HB	HORIZONTAL BEND	SF	SILT FENCE, SQUARE FOOT/FEET
HG	HYDRAULIC GRADIENT	STA.	STATION
HORIZ.	HORIZONTAL	SWM	STORMWATER MANAGEMENT
INV.	INVERT	T	TANGENT
L	LENGTH	TP	TEST PIT
LB	POUND(S)	TYP	TYPICAL
LF	LINEAR FOOT/FEET	V	VALVE
LOD	LIMIT OF DISTURBANCE	VB	VERTICAL BEND
MAX.	MAXIMUM	VERT.	VERTICAL
MD	MARYLAND	W	WATER, WEST
MIN.	MINIMUM	L	ANGLE
MON.	MONUMENT (PROPERTY)		

# GERWIG LANE 24" WATER MAIN RELOCATION CAPITAL PROJECT NO. W-8248 CONTRACT NO. 44-4841 HOWARD COUNTY, MARYLAND

**AS-BUILT**



**ENGINEERS/ARCHITECT DESIGN CERTIFICATION**

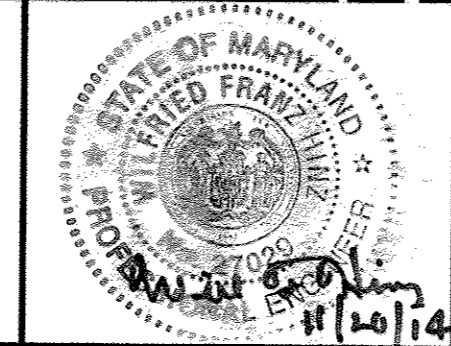
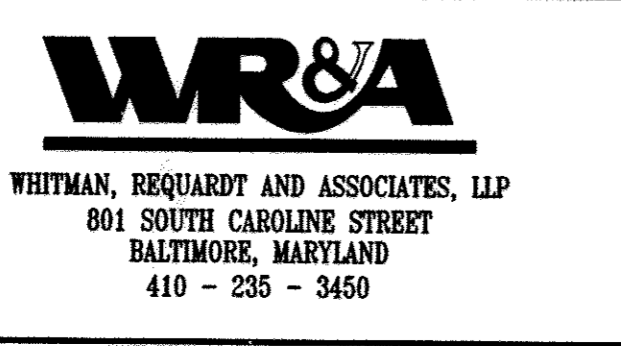
"I CERTIFY THAT THIS PLAN FOR EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT."

*W. J. J.* 27029 11/20/14  
SIGNATURE REGISTRATION NUMBER DATE

**OWNERS/DEVELOPERS CERTIFICATION:**

"I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN, AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT."

*J. J. J.* 11/24/14  
SIGNATURE DATE



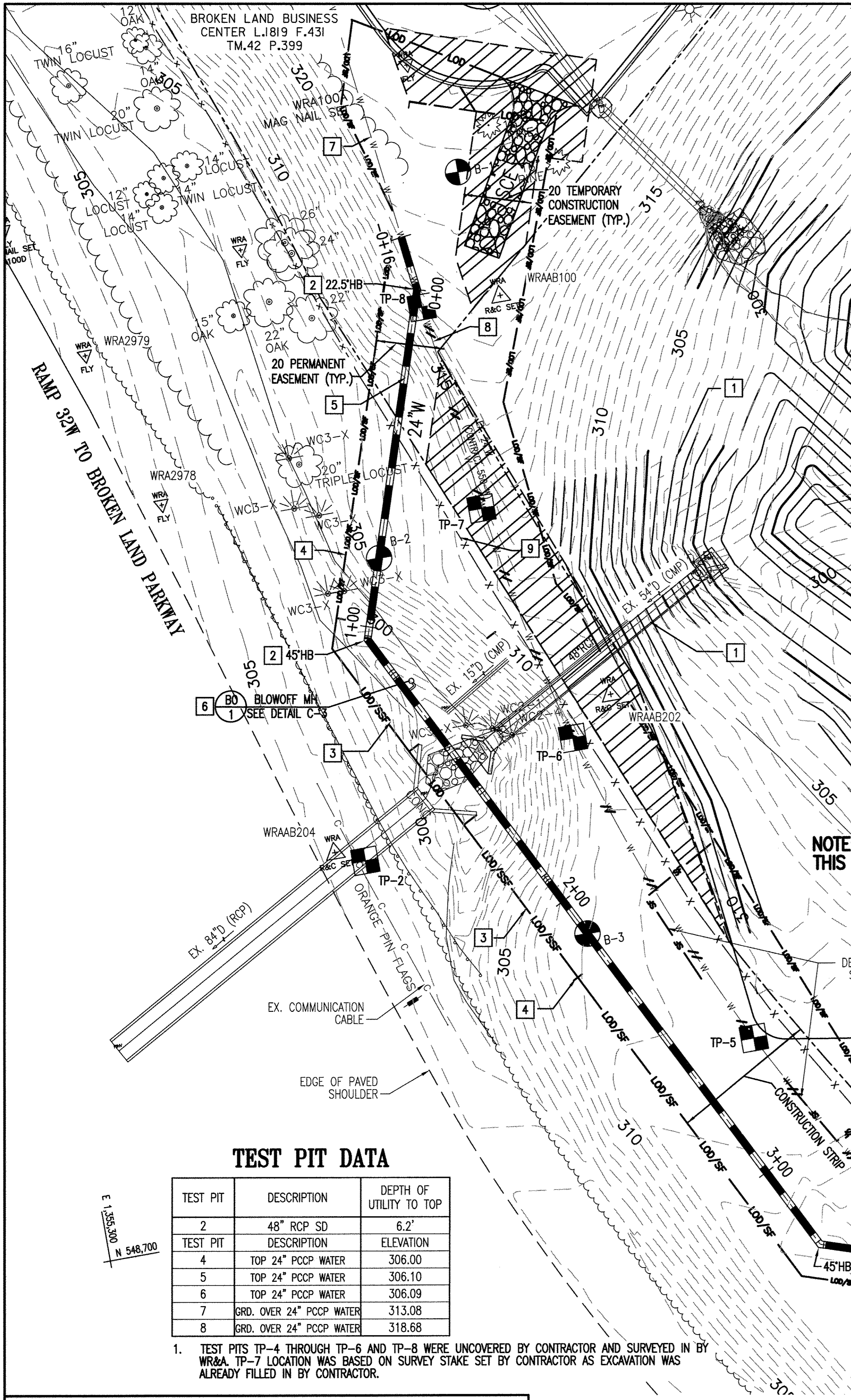
DES:	DRN:	CHK:	NOV. 2014
FJB	PJA	PAC	
WRA			
AS-BUILTS			
2/17			
BY	NO.	REVISION	DATE

VICINITY MAP, TITLE,  
BILL OF MATERIALS AND SHEET INDEX

GERWIG LANE 24" WATER MAIN RELOCATION  
 CAPITAL PROJECT NO. W-8248  
 CONTRACT NO. 44-4841  
 2ND ELECTION DISTRICT  
 HOWARD COUNTY, MARYLAND

G-1  
 SCALE  
 1" = 600'  
 SHEET  
 1 OF 13  
 FINAL

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**WATER MAIN STAKEOUT GEOMETRY**

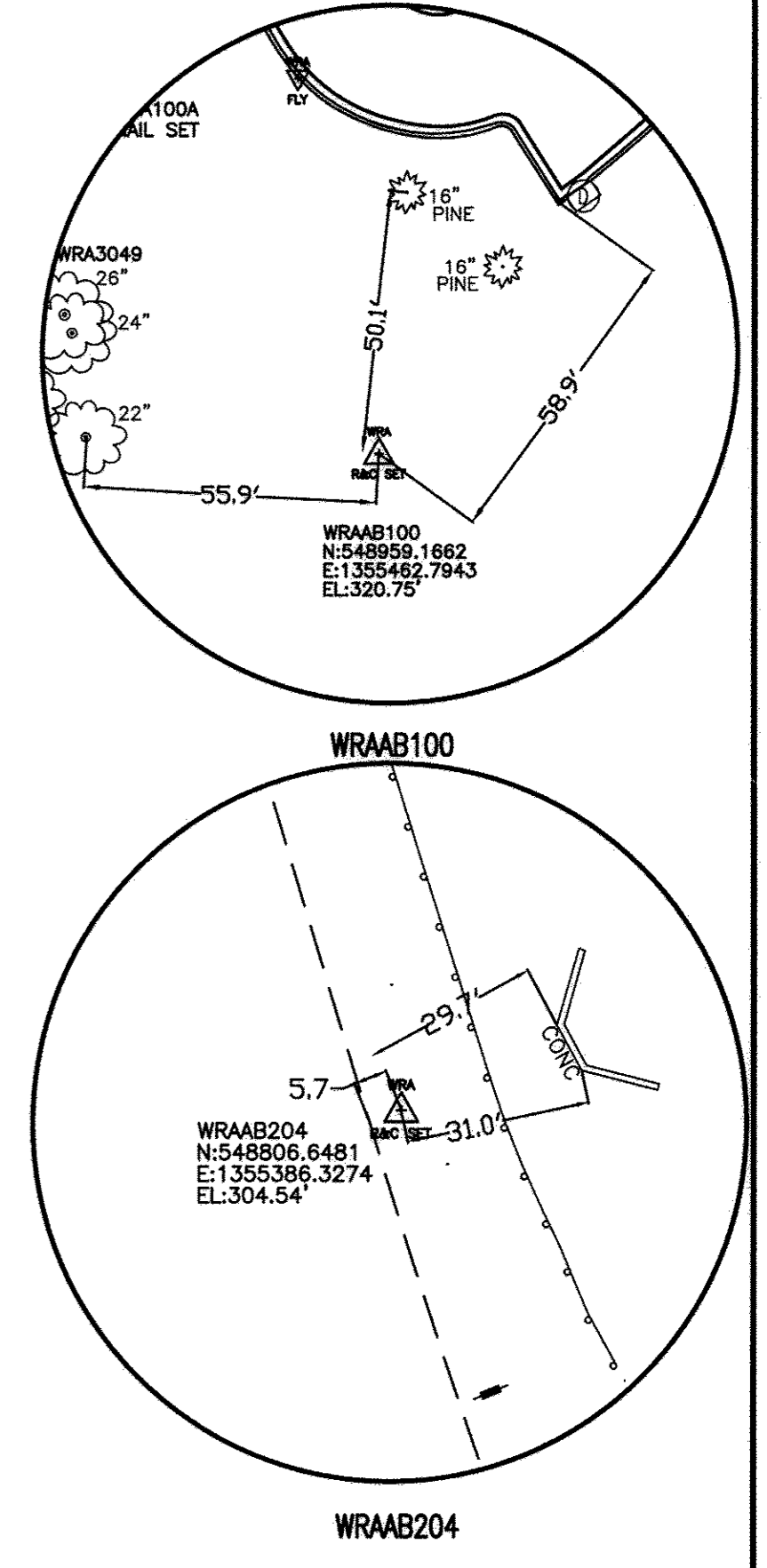
STA	NAME	NORTHING	EASTING
0+00	22.5" HB	548,965.19	1,355,438.88
1+04	45" HB	548,866.59	1,355,406.71
1+16	22-1/2" VB	548,859.47	1,355,410.33
1+23	24"X12" TEE TO BLOWOFF	548,852.33	1,355,413.96
1+59	22-1/2" VB	548,817.02	1,355,431.90
1+99	22-1/2" VB	548,787.18	1,355,447.06
3+27	45" HB	548,667.96	1,355,507.63
3+66	45" HB	548,655.70	1,355,545.20

**CONSTRUCTION NOTES:**

- ALL OUTFALL PIPE AND GRADING ASSOCIATED WITH OUTFALL PIPE AND EXISTING STORMWATER MANAGEMENT FACILITY IS BY OTHERS AND INDICATED FOR COORDINATION PURPOSES ONLY. PROPOSED CONTOURS FOR WORK BY OTHERS IS NOT INDICATED WITHIN THE PROJECT'S LOD.
- ALL PIPE AND FITTING JOINTS SHALL BE RESTRAINED.
- INSTALL SUPER SILT FENCE.
- LIMIT OF SUPER SILT FENCE INSTALLATION.
- REGRADE AS REQUIRED TO MAINTAIN 4' MIN. COVER OVER PIPELINE.
- INSTALL BLOW OFF MANHOLE. SEE DETAIL A ON DWG C-3.
- TEST PIT EXISTING PIPELINE TO LOCATE EXISTING PIPE JOINTS. REMOVE AND REPLACE EXISTING PCCP TO NEAREST JOINT AS REQUIRED TO INSTALL PCCP TO DIP ADAPTOR. REPLACEMENT OF ONE 16-FOOT PIECE OF EX. PCCP IS INDICATED BASED ON WORST CASE REPLACEMENT.
- ABANDON EXISTING PIPELINE IN PLACE BETWEEN CONNECTION POINTS AT 0+00 AND 3+82 BY FILLING EXISTING PIPELINE WITH FLOWABLE FILL AND PROVIDING A PLUG OR BULKHEAD AT EACH END OF THE ABANDONED PIPELINE.
- REMOVE AND REPLACE EXISTING FENCE WITHIN THE LIMITS OF DISTURBANCE IN ACCORDANCE WITH SHA STANDARD MD 690.01.

**SEQUENCE OF CONSTRUCTION:**

- TEST PIT EXISTING MAINS AT PROPOSED CONNECTION POINTS TO LOCATE NEAREST JOINTS.
- INSTALL PROPOSED DUCTILE REPLACEMENT MAIN FROM 0+00 TO 3+82, EXCLUDING FINAL TIE-INS.
- PRESSURE TEST INSTALLED WATER MAIN.
- POUR QUICK BLOCKS (SEE DETAIL D ON DWG. C-3 FOR ADDITIONAL SEQUENCE OF CONSTRUCTION RELATED TO QUICK BLOCK INSTALLATION).
- COORDINATE WITH HOWARD COUNTY TO ISOLATE EXISTING LINE BY CLOSURE OF VALVES WITHIN THE EXISTING SYSTEM. CLOSURE TIME FOR WATER MAIN SHALL BE LIMITED TO 8 HOURS.
- PROVIDE TWO PIPE CREWS AS NECESSARY TO MAKE SIMULTANEOUS CONNECTION TO EX. PCCP MAIN AT BOTH STA. 0+00 AND 3+82, WHILE MINIMIZING WATER MAIN DOWN TIME.
- REMOVE EXISTING PCCP TO NEAREST JOINT WEST OF STATION 0+00 AND EAST OF STATION 3+82.
- INSTALL PCCP TO DIP ADAPTOR PER DETAIL B ON DWG. C-3.
- PUT WATERMAIN BACK IN SERVICE AND PERFORM VISUAL TEST OF NEW PIPELINE AND ADAPTORS IN PREVIOUSLY UNTESTED SECTIONS.
- ABANDON EXISTING PCCP MAIN BETWEEN CONNECTION POINTS PER CONSTRUCTION NOTES.
- PLANT TREES AS REQUIRED FOR REFORESTATION PLAN AS REQUIRED BY PLANTING SELECTION SCHEDULE. SEE PLANTING SCHEDULE ON DWG. RT-2 FOR SIZE AND TYPE.

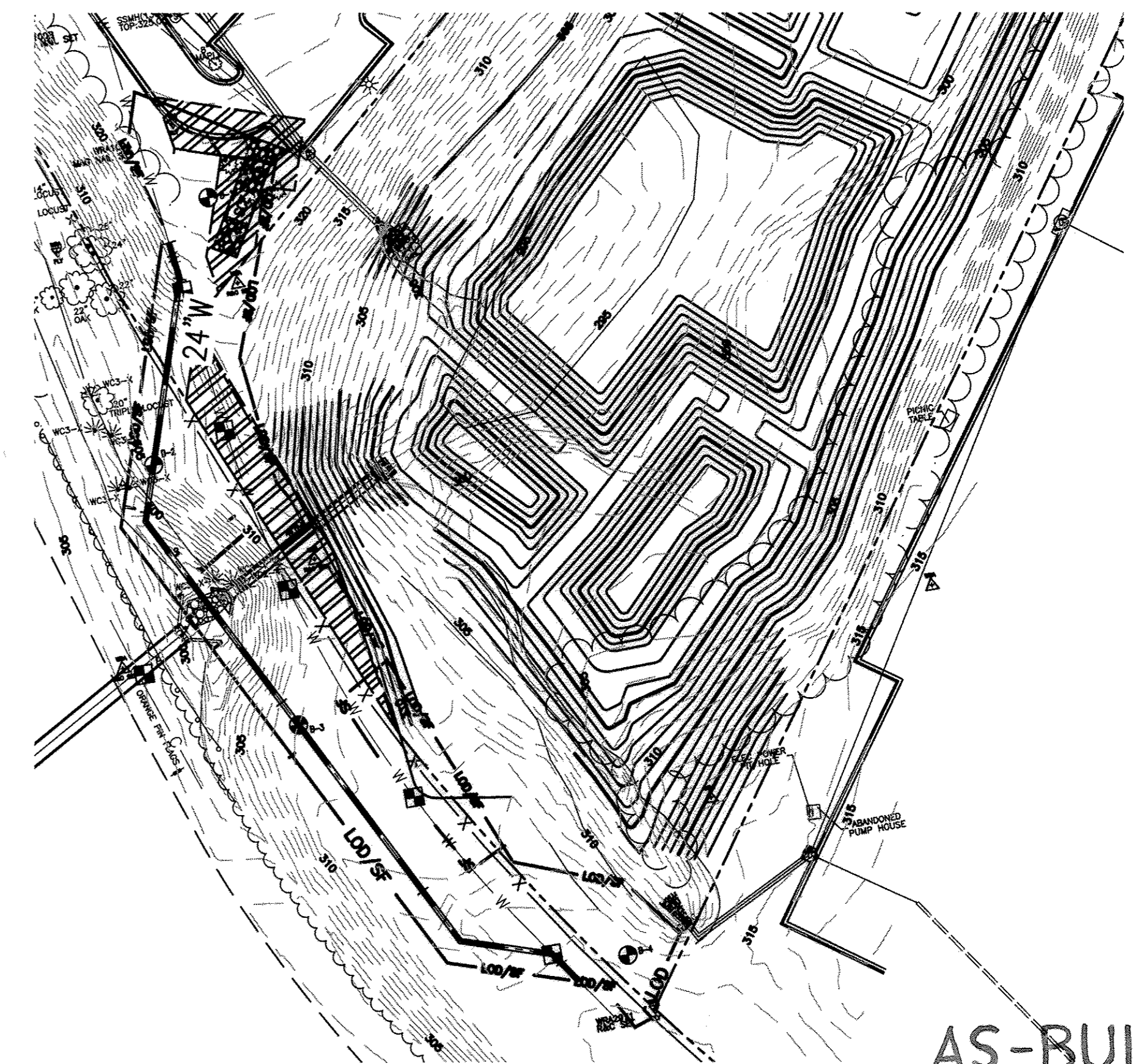


**NOTE: NO WORK SHALL BE PERFORMED UNDER THIS PLAN OTHER THAN THE WATER MAIN RELOCATION.**

**TEST PIT DATA**

TEST PIT	DESCRIPTION	DEPTH OF UTILITY TO TOP
2	48" RCP SD	6.2'
TEST PIT	DESCRIPTION	ELEVATION
4	TOP 24" PCCP WATER	306.00
5	TOP 24" PCCP WATER	306.10
6	TOP 24" PCCP WATER	306.09
7	GRD. OVER 24" PCCP WATER	313.08
8	GRD. OVER 24" PCCP WATER	318.68

1. TEST PITS TP-4 THROUGH TP-6 AND TP-8 WERE UNCOVERED BY CONTRACTOR AND SURVEYED IN BY WRA. TP-7 LOCATION WAS BASED ON SURVEY STAKE SET BY CONTRACTOR AS EXCAVATION WAS ALREADY FILLED IN BY CONTRACTOR.



**AS-BUILT**

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DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

*[Signature]* 3/20/17  
DIRECTOR OF PUBLIC WORKS DATE

*[Signature]* 3/20/17  
CHIEF, BUREAU OF ENGINEERING DATE

*[Signature]* 3/20/17  
CHIEF, BUREAU OF UTILITIES DATE

*[Signature]* 3/20/17  
CHIEF, UTILITY DESIGN DIVISION DATE

**PLAN**  
SCALE: 1"=20'

**Whitman, Reardon & Associates, LLP**  
801 South Caroline Street, Baltimore, Maryland 21231

DFE: FJB	WRA	CONSTRUCTION ADJUSTMENT FROM TEST PIT DATA	2/16
DRN: PJA/GWG	WRA	AS-BUILTS	3/17
CHK: WFH			
FEB. 2016	BY NO.	REVISION	DATE

UTILITY PLAN

600' SCALE MAP NO. 30 BLOCK NO. 10

**PLAN**  
SCALE: 1"=50'

AS BUILT REPLACEMENT SHEET 2/17

**GERWIG LANE 24" WATER MAIN RELOCATION**  
CAPITAL PROJECT NO. W-8248  
CONTRACT NO. 44-4841

2ND ELECTION DISTRICT  
HOWARD COUNTY, MARYLAND

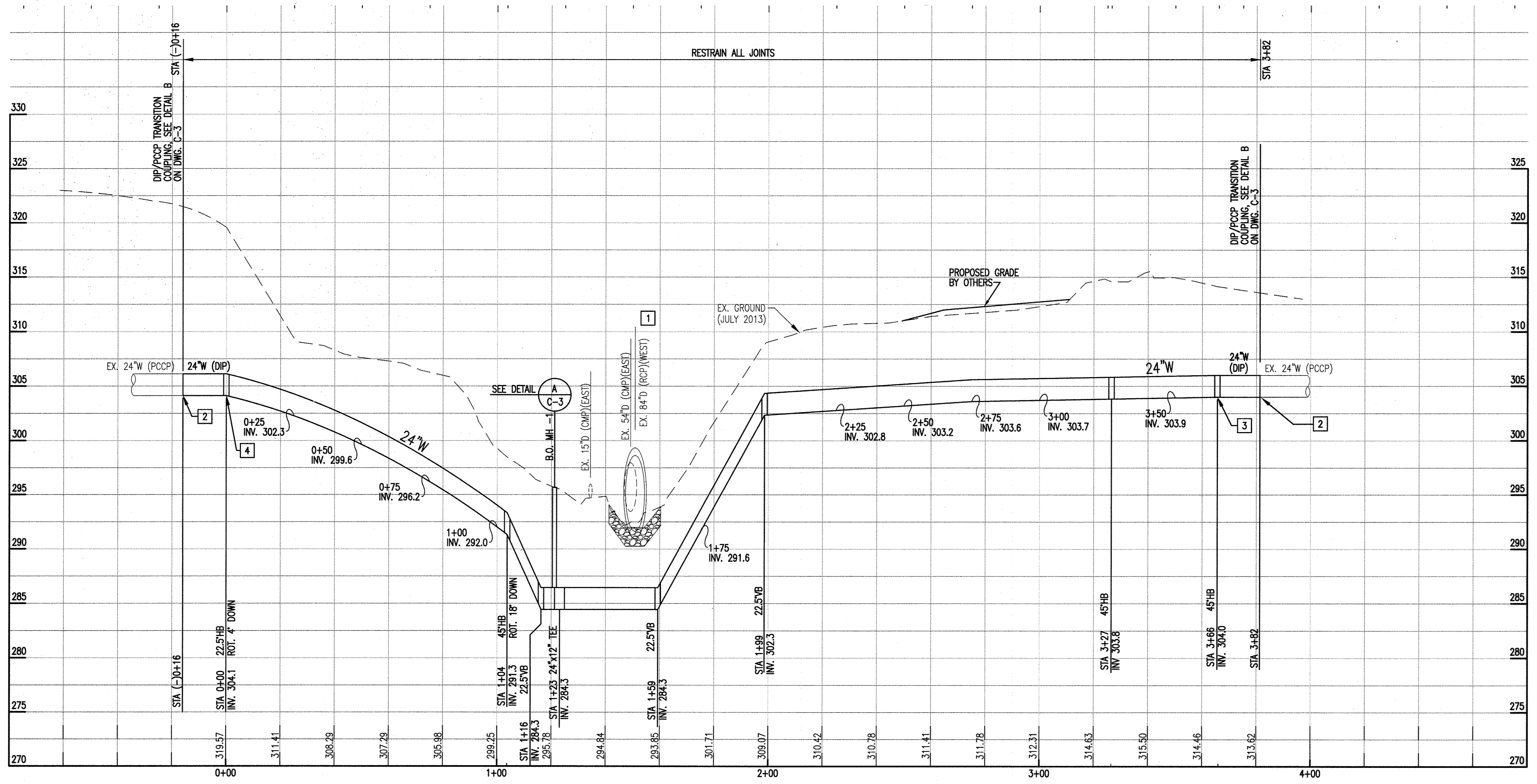
**C-1**

SCALE AS SHOWN

SHEET 2 OF 13

FINAL

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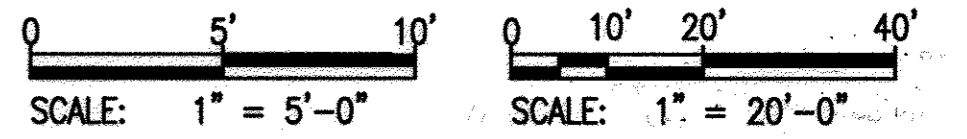
**PROFILE**

SCALE: HORIZ. 1"=20'  
VERT. 1"=5'

**CONSTRUCTION NOTES:**

- 1 RCP DRAINAGE PIPES ARE INDICATED FOR COORDINATION/REFERENCES PURPOSES ONLY. PIPELINE IS INSTALLED BETWEEN OUTFALL PIPES AND DOES NOT GO UNDERNEATH DRAINAGE.
- 2 TEST PIT EXISTING MAIN AND INSTALL PCCP TO DIP TRANSITION AT NEAREST JOINT. LOCATION OF DIP/PCCP ADAPTER IS APPROXIMATE AS SHOWN AT WORST CASE.
- 3 INSTALL QUICK BLOCK AT NEW RESTRAINED JOINT 45 H.B. IN ACCORDANCE WITH DETAIL D ON DWG. C-3.
- 4 INSTALL QUICK BLOCK AT NEW RESTRAINED JOINT 22.5 H.B. AND CRUSHER RUN BACKFILL IN ACCORDANCE WITH DETAIL D ON DWG. C-3.

**AS-BUILT**



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**DEPARTMENT OF PUBLIC WORKS**  
HOWARD COUNTY, MARYLAND

Director of Public Works: *Jan 7/17* 3/17/17  
 Chief, Bureau of Engineering: *Thomas S. Seaton* 3/16/17  
 Chief, Bureau of Utilities: *Steve C. Green* 3/17/17  
 Chief, Utility Design Division: *[Signature]* 3/17/17

**WRA**  
Whitman, Requardt & Associates, LLP  
801 South Caroline Street, Baltimore, Maryland 21231

DES: FJB	WRA	CONSTRUCTION ADJUSTMENT FROM TEST PIT DATA	2/16
DRN: PJA/GWG	WRA	AS-BUILTS	2/17
CHK: WFH			
FEB. 2016	BY NO.	REVISION	DATE

UTILITY PROFILE

600' SCALE MAP NO. 30 BLOCK NO. 10

**GERWIG LANE 24" WATER MAIN RELOCATION**  
 CAPITAL PROJECT NO. W-8248  
 CONTRACT NO. 44-4841

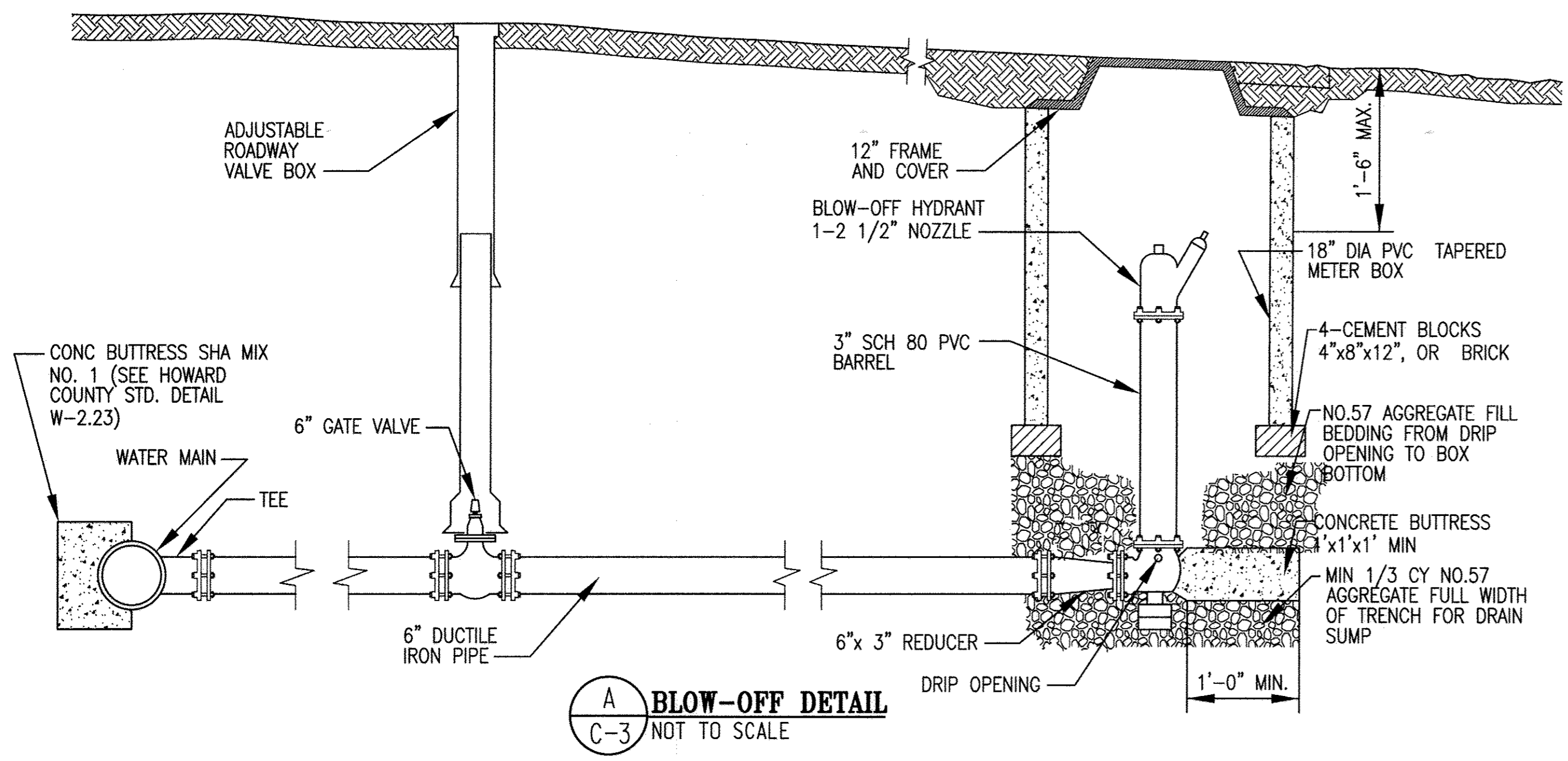
2ND ELECTION DISTRICT  
 HOWARD COUNTY, MARYLAND

C-2

SCALE AS SHOWN

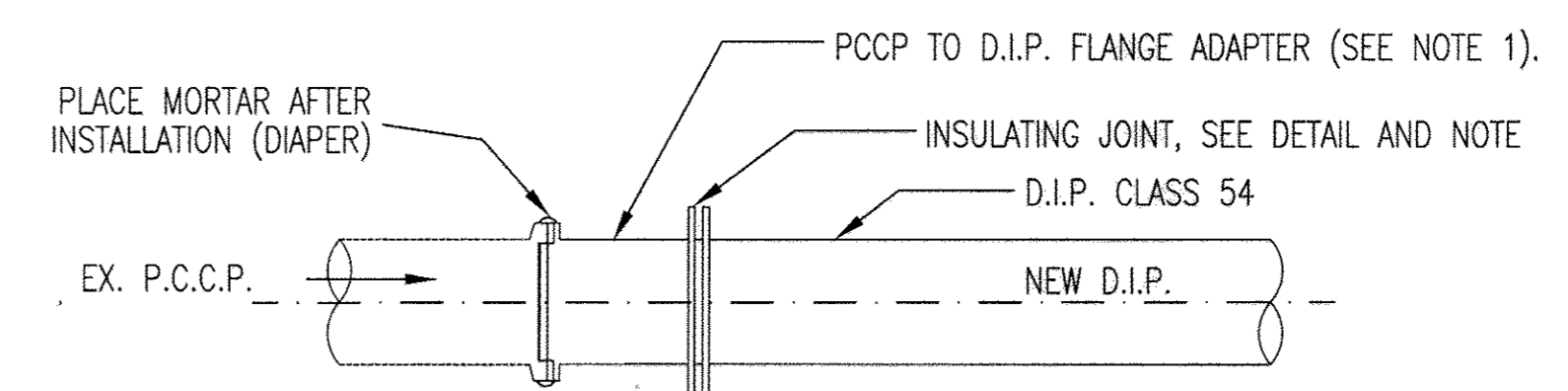
SHEET 3 OF 13

FINAL



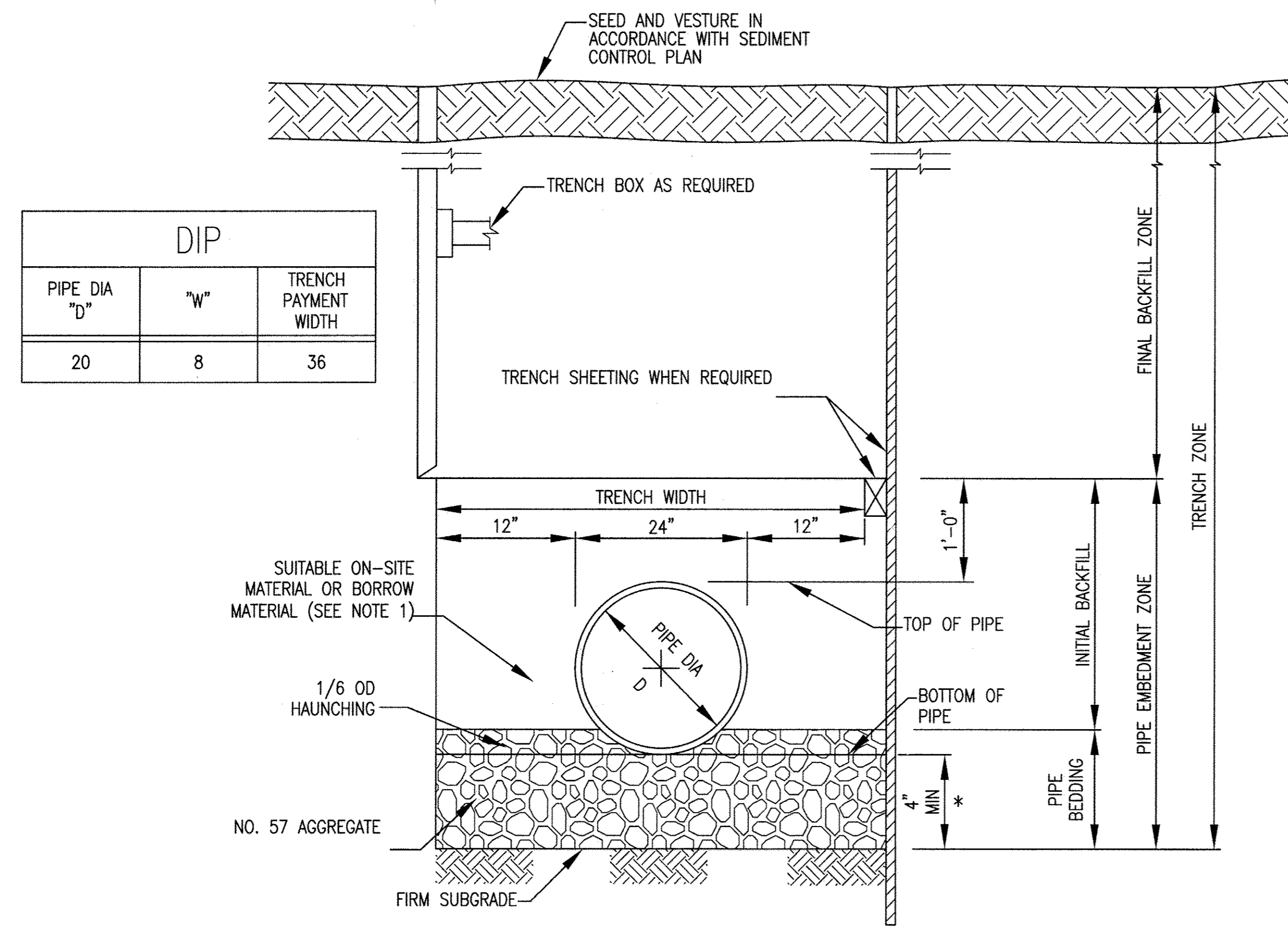
SEE HOWARD COUNTY STANDARD DETAIL W-4.13

**A BLOW-OFF DETAIL**  
C-3 NOT TO SCALE



1. INSTALL ADAPTER AT PIPE JOINT. DO NOT CUT PCCP
2. CONTRACTOR SHALL VERIFY ELECTRICAL ISOLATION OF INSULATING JOINT BEFORE COATING AND BURIAL.
3. APPLICABLE MANUFACTURERS' RECOMMENDATION SHALL BE FOLLOWED FOR INSTALLATION OF ADAPTER AND INSULATING FLANGE ASSEMBLIES. SEE INSULATING FLANGE DETAIL ON DRAWING CP-3.

**B PLAN-TIE-IN**  
C-3 NOT TO SCALE



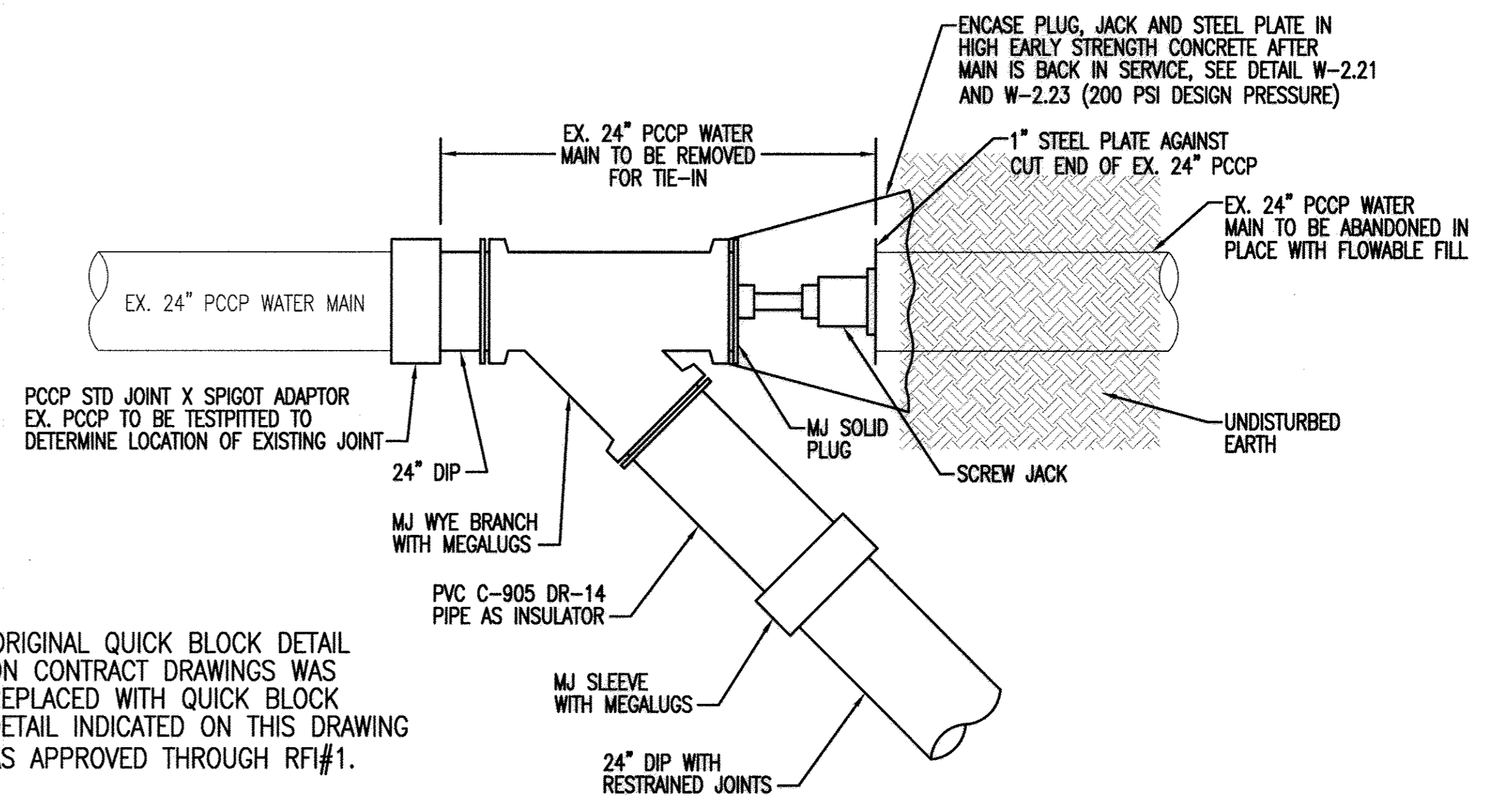
DIP		
PIPE DIA "D"	"W"	TRENCH PAYMENT WIDTH
20	8	36

\* FOR TRENCHES IN ROCK, MINIMUM BEDDING DEPTH IS 6 INCHES.

**NOTES:**

1. OPEN GRADED AGGREGATE SHALL NOT BE USED FOR INITIAL/FINAL BACKFILL.
2. FOR TRENCHES WHERE TRENCH BOX OR TRENCH SHEETING IS NOT REQUIRED, MEASUREMENT FOR CONTINGENT BORROW MATERIALS WILL BE BASED ON THE TRENCH WIDTH SHOWN.
3. FOR TRENCHES WHERE TRENCH BOX OR TRENCH SHEETING IS REQUIRED, MEASUREMENT FOR CONTINGENT BORROW MATERIALS WILL BE BASED ON THE TRENCH WIDTH SHOWN PLUS 24 INCHES.

**C TRENCH DETAIL**  
C-3 NOT TO SCALE



NOTE: ORIGINAL QUICK BLOCK DETAIL ON CONTRACT DRAWINGS WAS REPLACED WITH QUICK BLOCK DETAIL INDICATED ON THIS DRAWING AS APPROVED THROUGH RFI#1.

**D GERWIG LANE 24" WATER MAIN RELOCATION - QUICK BLOCK & INSULATOR FLANGE ALTERNATIVE**  
AT STATION +/- 0+00, STATION +/- 3+82 SIMILAR EXCEPT REVERSED  
NOT TO SCALE

REV 14250-0000 CADD\1425000001-08.dwg  
 Mar 01, 2017 - 7:40am

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DEPARTMENT OF PUBLIC WORKS  
 HOWARD COUNTY, MARYLAND  
 Director of Public Works: *[Signature]* 3/20/17  
 Chief, Bureau of Engineering: *[Signature]* 3/20/17  
 Chief, Bureau of Utilities: *[Signature]* 3/20/17  
 Chief, Utility Design Division: *[Signature]* 3/20/17

**WRA**  
Whitman, Reardon & Associates, LLP  
801 South Caroline Street, Baltimore, Maryland 21231



DES: FJB	WRA	AS-BUILTS	2/17
DRN: PJA			
CHK: PAC			
FEB. 2016	BY NO.	REVISION	DATE

CIVIL DETAILS  
600' SCALE MAP NO. 30  
BLOCK NO. 10

AS-BUILT REPLACEMENT SHEET 2/17

**AS-BUILT**

GERWIG LANE 24" WATER MAIN RELOCATION  
CAPITAL PROJECT NO. W-8248  
CONTRACT NO. 44-4841  
2ND ELECTION DISTRICT  
HOWARD COUNTY, MARYLAND

**C-3**  
SCALE AS SHOWN  
SHEET 4 OF 13  
FINAL

STANDARD SEDIMENT CONTROL NOTES

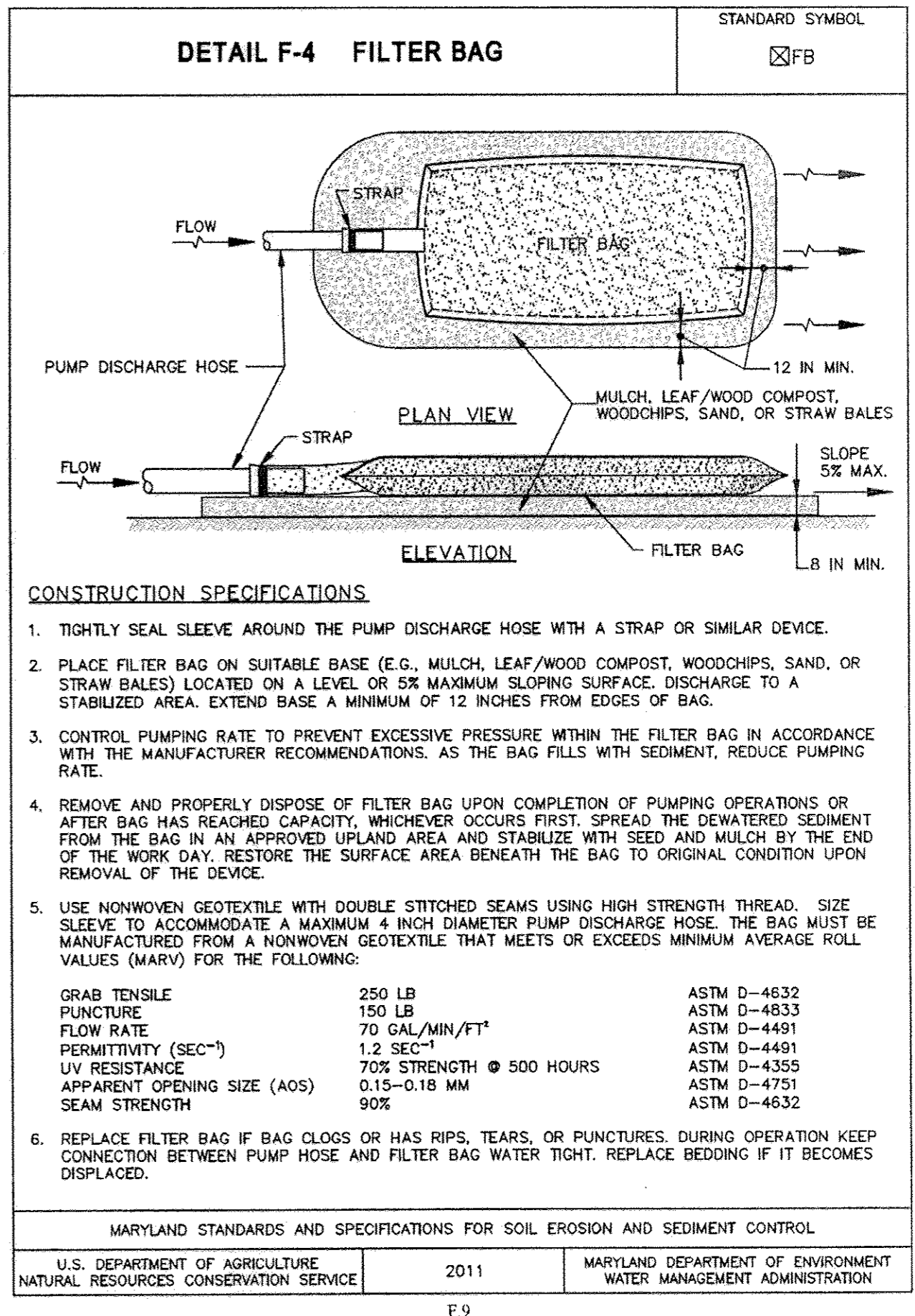
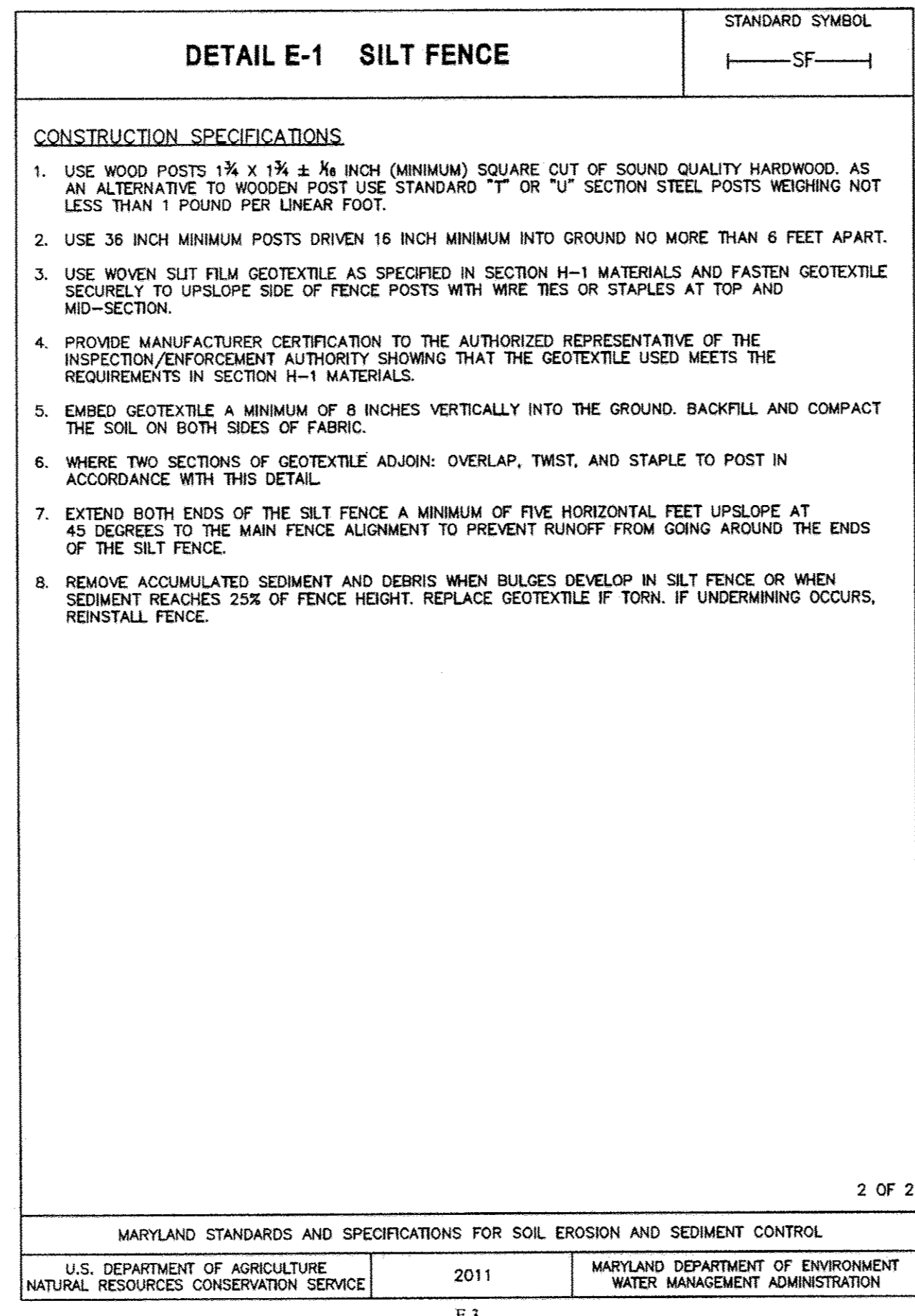
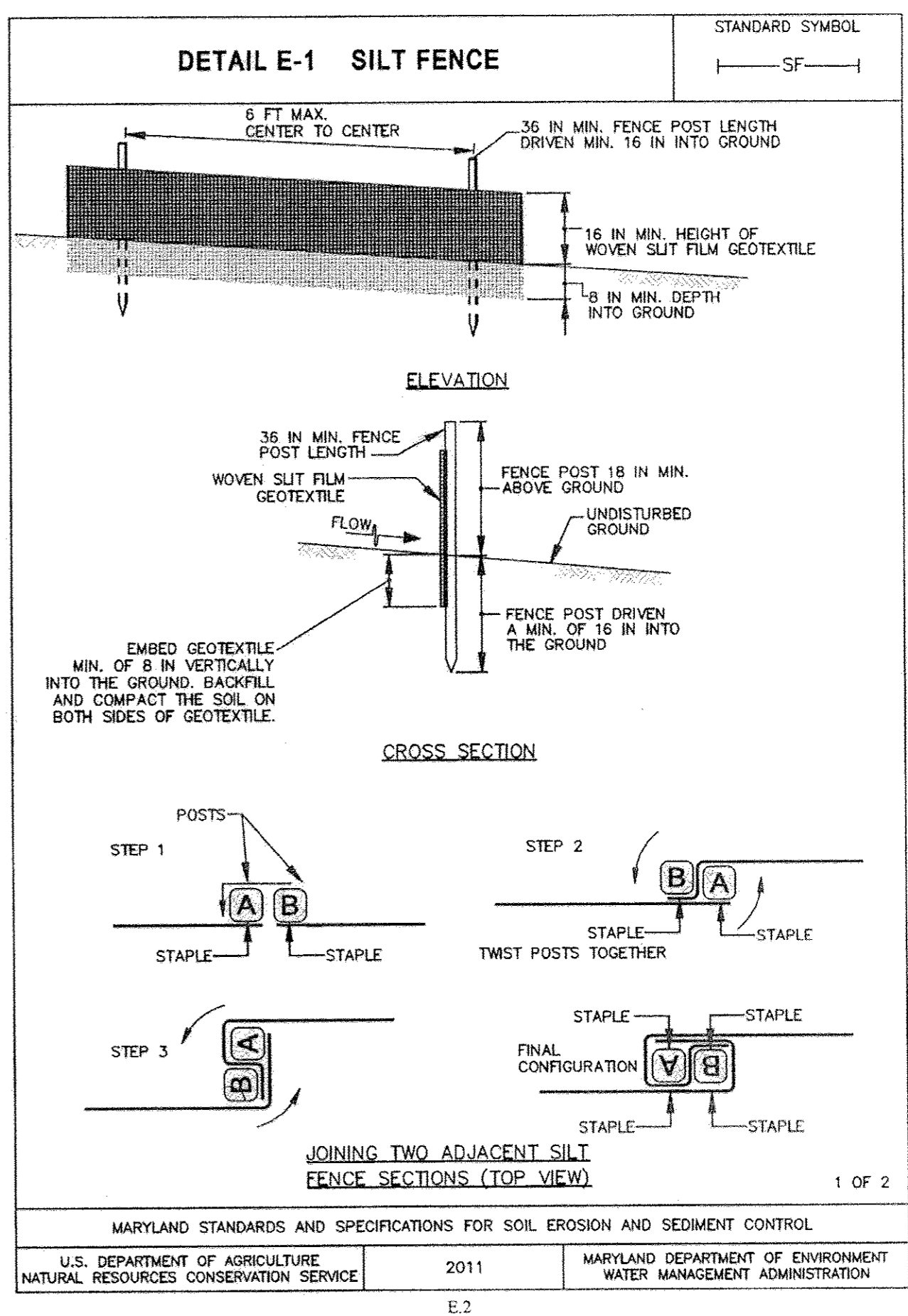
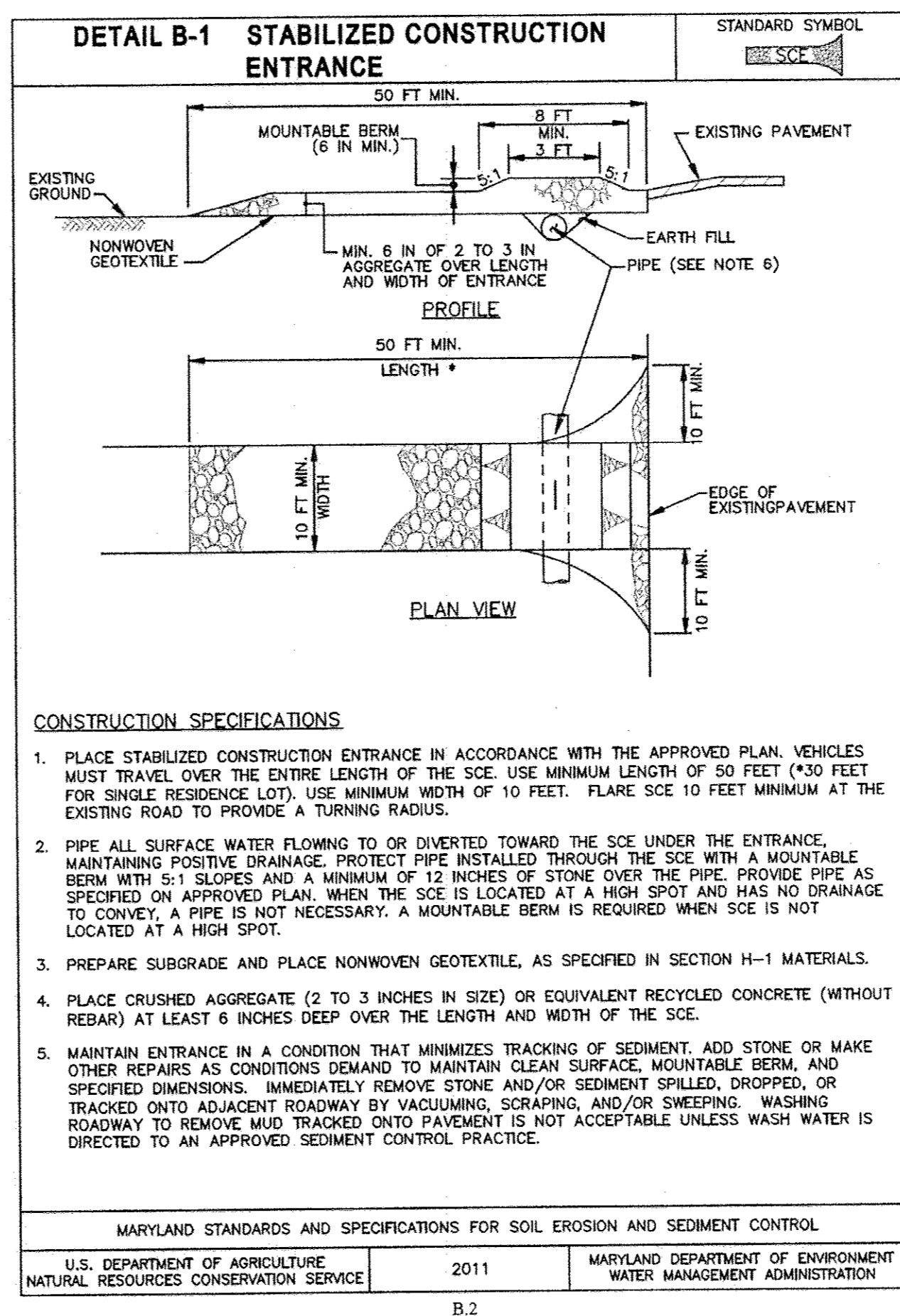
1. A MINIMUM OF 48 HOURS NOTICE MUST BE GIVEN TO THE HOWARD COUNTY DEPARTMENT OF INSPECTIONS, LICENSES AND PERMITS, SEDIMENT CONTROL DIVISION PRIOR TO THE START OF ANY CONSTRUCTION (410-313-1855).
2. ALL VEGETATIVE AND STRUCTURAL PRACTICES ARE TO BE INSTALLED ACCORDING TO THE PROVISIONS OF THIS PLAN AND ARE TO BE IN CONFORMANCE WITH THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL AND ALL REVISIONS THERETO.
3. FOLLOWING INITIAL SOIL DISTURBANCE OR RE-DISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN A) THREE (3) CALENDAR DAYS FOR ALL PERIMETER DIKES, SWALES, DITCHES, PERIMETER SLOPES AND ALL SLOPES GREATER THAN 3 HORIZONTAL TO 1 VERTICAL (3:1); AND B) SEVEN (7) CALENDAR DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE NOT UNDER ACTIVE GRADING.
4. ALL DISTURBED AREAS MUST BE STABILIZED WITHIN THE TIME PERIOD SPECIFIED ABOVE IN ACCORDANCE WITH THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL FOR PERMANENT SEEDING (SEC B-4-5), TEMPORARY SEEDING (SEC. B-4-4) AND MULCHING (SEC. B-4-3). TEMPORARY STABILIZATION WITH MULCH ALONE CAN ONLY BE DONE WHEN RECOMMENDED SEEDING DATES DO NOT ALLOW FOR PROPER GERMINATION AND ESTABLISHMENT OF GRASSES.
5. ALL SEDIMENT CONTROL STRUCTURES ARE TO REMAIN IN PLACE AND ARE TO BE MAINTAINED IN OPERATIVE CONDITION UNTIL PERMISSION FOR REMOVAL HAS BEEN OBTAINED FROM THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.
6. SITE ANALYSIS  
TOTAL AREA OF SITE 0.60 ACRES  
AREA DISTURBED 0.60 ACRES  
AREA TO BE ROOFED OR PAVED 0.00 ACRES  
TOTAL CUT 500 CU. YDS.  
TOTAL FILL 500 CU. YDS.  
OFFSITE WASTE/BORROW AREA LOCATION (IF KNOWN) ACRES
7. ANY SEDIMENT CONTROL PRACTICE THAT IS DISTURBED BY GRADING ACTIVITY FOR PLACEMENT OF UTILITIES MUST BE REPAIRED ON THE SAME DAY OF DISTURBANCE.
8. ADDITIONAL SEDIMENT CONTROL MUST BE PROVIDED, IF DEEMED NECESSARY BY THE SEDIMENT AND EROSION CONTROL INSPECTOR.
9. ON ALL SITES WITH DISTURBED AREAS IN EXCESS OF 2 ACRES, APPROVAL OF THE INSPECTION AGENCY SHALL BE REQUESTED UPON COMPLETION OF INSTALLATION OF PERIMETER EROSION AND SEDIMENT CONTROLS, BUT BEFORE PROCEEDING WITH ANY OTHER EARTH DISTURBANCE OR GRADING, OTHER BUILDING OR GRADING INSPECTION APPROVALS MAY NOT BE AUTHORIZED UNTIL THIS INITIAL APPROVAL BY THE INSPECTION AGENCY IS MADE.
10. TRENCHES FOR THE CONSTRUCTION OF UTILITIES SHALL BE LIMITED TO THREE PIPE LENGTHS OR THAT WHICH SHALL BE BACK-FILLED AND STABILIZED AT THE END OF EACH WORKING DAY, WHICHEVER IS SHORTER.
11. ANY CHANGES OR REVISIONS TO THE SEQUENCE OF CONSTRUCTION MUST BE REVIEWED AND APPROVED BY THE PLAN APPROVAL AUTHORITY PRIOR TO PROCEEDING WITH CONSTRUCTION.
12. A PROJECT IS TO BE SEQUENCED SO THAT GRADING ACTIVITIES BEGIN ON ONE GRADING UNIT (MAXIMUM ACREAGE OF 20 AC. PER GRADING UNIT) AT A TIME. WORK MAY PROCEED TO A SUBSEQUENT GRADING UNIT WHEN AT LEAST 50 PERCENT OF THE DISTURBED AREA IN THE PROCEEDING UNIT HAS BEEN STABILIZED AND APPROVED BY THE ENFORCEMENT AUTHORITY. UNLESS OTHERWISE SPECIFIED AND APPROVED BY THE APPROVAL AUTHORITY, NO MORE THAN 30 ACRES CUMULATIVELY MAY BE DISTURBED AT A GIVEN TIME.

OVERALL PROJECT SEQUENCE OF CONSTRUCTION

1. OBTAIN A GRADING PERMIT FROM HOWARD COUNTY.
2. CALL 'MISS UTILITY' AT 1-800-257-7777 48 HOURS BEFORE ANY CONSTRUCTION IS TO BEGIN.
3. NOTIFY THE HOWARD COUNTY CONSTRUCTION INSPECTION DIVISION AT LEAST 2 DAYS PRIOR TO THE START OF CONSTRUCTION TO ARRANGE A PRE CONSTRUCTION MEETING. NO WORK SHALL BE PERMITTED IN ANY STREAMS BETWEEN MARCH 1 AND MAY 1.
4. INSTALL AND STABILIZE SEDIMENT CONTROL MEASURES AS REQUIRED BY PLAND SEDIMENT AND EROSION CONTROL INSPECTOR.
5. BEFORE PROCEEDING WITH ANY EARTH DISTURBANCE OR GRADING, NOTIFY THE HOWARD COUNTY CONSTRUCTION INSPECTION DIVISION UPON INSTALLATION OF SEDIMENT CONTROL MEASURES.
6. EXCAVATE FOR AND INSTALL SEWER MAINS. EXCAVATION FROM TRENCHING OPERATIONS SHALL BE PLACED ON THE UPHILL SIDE OF THE TRENCH.
7. VEGETATIVELY STABILIZE BACKFILLED TRENCH OR TEMPORARY STABILIZE ANY PAVED AREAS DISTURBED AS WORK PROGRESSES.
8. NOTIFY HOWARD COUNTY CONSTRUCTION INSPECTION DIVISION (CID, 410-313-1880) AND OBTAIN APPROVAL TO REMOVE EROSION AND SEDIMENT CONTROL MEASURES
9. REMOVE CONTROLS AND PERMANENTLY STABILIZE ANY AREAS DISTURBED DURING REMOVAL OF CONTROLS.

BEST MANAGEMENT PRACTICES FOR WORKING IN NONTIDAL WETLANDS, NONTIDAL WETLANDS BUFFERS, WATERWAYS, AND/OR 100-YEAR FLOODPLAINS

1. NO EXCESS FILL, CONSTRUCTION MATERIAL, OR DEBRIS IS TO BE STOCKPILED OR STORED IN NONTIDAL WETLANDS, NONTIDAL WETLANDS BUFFERS, WATERWAYS, OR THE 100-YEAR FLOODPLAIN.
2. PLACE MATERIALS IN A LOCATION AND MANNER WHICH DOES NOT ADVERSELY IMPACT SURFACE OR SUBSURFACE WATER FLOW INTO OR OUT OF NONTIDAL WETLANDS, NONTIDAL WETLANDS BUFFERS, WATERWAYS, OR THE 100-YEAR FLOODPLAIN.
3. DO NOT USE THE EXCAVATED MATERIAL AS BACKFILL IF IT CONTAINS WASTE METAL PRODUCTS, UNSIGHTLY DEBRIS, TOXIC MATERIAL OR ANY OTHER DELETERIOUS SUBSTANCE. IF ADDITIONAL BACKFILL MATERIAL IS REQUIRED, USE CLEAN MATERIAL FREE OF WASTE METAL PRODUCTS, UNSIGHTLY DEBRIS, TOXIC MATERIAL OR ANY OTHER DELETERIOUS SUBSTANCE.
4. PLACE HEAVY EQUIPMENT ON MATS OR SUITABLY OPERATE THE EQUIPMENT TO PREVENT DAMAGE TO NONTIDAL WETLANDS, NONTIDAL WETLANDS BUFFERS, WATERWAYS, OR THE 100-YEAR FLOODPLAIN.
5. REPAIR AND MAINTAIN ANY SERVICEABLE STRUCTURE OR FILL SO THERE IS NO PERMANENT LOSS OF NONTIDAL WETLANDS, NONTIDAL WETLANDS BUFFERS, OR WATERWAYS OR PERMANENT MODIFICATION OF THE 100-YEAR FLOODPLAIN IN EXCESS OF THAT LOST UNDER THE ORIGINALLY AUTHORIZED STRUCTURE.
6. RECTIFY ANY NONTIDAL WETLANDS, NONTIDAL WETLANDS BUFFERS, WATERWAYS, OR 100-YEAR FLOODPLAIN TEMPORARILY IMPACTED BY ANY CONSTRUCTION.
7. ALL STABILIZATION IN THE NONTIDAL WETLAND AND NONTIDAL WETLAND BUFFER SHALL CONSIST OF THE FOLLOWING RECOMMENDED SPECIES: ANNUAL RYE GRASS (LOLIUM MULTIFLORUM), MILLET (SETARIA ITALICA), BARLEY (HORDEUM SP.), OATS (UNIOLA SP.) AND/OR RYE (SECALE CEREALE). THESE SPECIES WILL ALLOW FOR THE STABILIZATION OF THE SITE WHILE ALSO ALLOWING FOR THE VOLUNTARY REVEGETATION OF NATURAL WETLAND SPECIES. OTHER NON-PERSISTENT VEGETATION MAY BE ACCEPTABLE, BUT MUST BE APPROVED BY THE NONTIDAL WETLANDS AND WATERWAYS DIVISION. KENTUCKY 31 FESCUE SHALL NOT BE UTILIZED IN THE WETLAND OR BUFFER AREAS. THE AREA SHOULD BE SEEDED AND MULCHED TO REDUCE EROSION AFTER CONSTRUCTION ACTIVITIES HAVE BEEN COMPLETED.
8. AFTER INSTALLATION HAS BEEN COMPLETED, MAKE POST CONSTRUCTION GRADES AND ELEVATIONS THE SAME AS THE ORIGINAL GRADES AND ELEVATIONS IN TEMPORARILY IMPACTED AREAS.
9. TO PROTECT IMPORTANT AQUATIC SPECIES, IN-STREAM WORK IS PROHIBITED AS DETERMINED BY THE CLASSIFICATION OF THE STREAM AS FOLLOWS:  
CLASS IV WATERS - IN-STREAM WORK MAY NOT BE CONDUCTED DURING THE PERIOD OF MARCH 1 THROUGH MAY 31, INCLUSIVE, DURING ANY YEAR.
10. STORMWATER RUNOFF FROM IMPERVIOUS SURFACES SHALL BE CONTROLLED TO PREVENT THE WASHING OF DEBRIS INTO THE WATERWAY.
11. CULVERT(S) SHALL BE CONSTRUCTED AND ANY RIPRAP PLACED SO AS NOT TO OBSTRUCT THE MOVEMENT OF AQUATIC SPECIES, UNLESS THE PURPOSE OF THE ACTIVITY IS TO IMPOUND WATER.



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. 27029, EXPIRATION DATE: 01-25-2016.

DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND  
Director of Public Works: [Signature] DATE: [Date]  
Chief, Bureau of Engineering: [Signature] DATE: [Date]  
Chief, Bureau of Utilities: [Signature] DATE: [Date]  
Chief, Utility Design Division: [Signature] DATE: [Date]

WR&A  
WHITMAN, REQUARDT AND ASSOCIATES, LLP  
801 SOUTH CAROLINE STREET  
BALTIMORE, MARYLAND  
410-235-3450

STATE OF MARYLAND  
REGISTERED PROFESSIONAL ENGINEER  
No. 27029  
11/20/14

DES: FJB	WRA	AS-BUILTS	2/17
DRN: PJA			
CHK: PAC			
NOV. 2014	BY NO.	REVISION	DATE

EROSION AND SEDIMENT CONTROL:  
GENERAL NOTES AND DETAILS

GERWIG LANE 24" WATER MAIN RELOCATION  
CAPITAL PROJECT NO. W-8248  
CONTRACT NO. 44-4841  
2ND ELECTION DISTRICT  
HOWARD COUNTY, MARYLAND

AS-BUILT SC-1  
SCALE AS SHOWN  
SHEET 5 OF 13  
FINAL

**B-4.2 STANDARDS AND SPECIFICATIONS**

**FOR**

**SOIL PREPARATION, TOPSOILING, AND SOIL AMENDMENTS**

**Definition**

The process of preparing the soils to sustain adequate vegetative stabilization.

**Purpose**

To provide a suitable soil medium for vegetative growth.

**Conditions Where Practice Applies**

Where vegetative stabilization is to be established.

**Criteria**

- A. Soil Preparation
1. Temporary Stabilization
    - a. Seedbed preparation consists of loosening soil to a depth of 3 to 5 inches by means of suitable agricultural or construction equipment, such as disc harrows or chisel plows or rippers mounted on construction equipment. After the soil is loosened, it must not be rolled or dragged smooth but left in the roughened condition. Slopes 3:1 or flatter are to be tracked with ridges running parallel to the contour of the slope.
    - b. Apply fertilizer and lime as prescribed on the plans.
    - c. Incorporate lime and fertilizer into the top 3 to 5 inches of soil by disking or other suitable means.
  2. Permanent Stabilization
    - a. A soil test is required for any earth disturbance of 5 acres or more. The minimum soil conditions required for permanent vegetative establishment are:
      - i. Soil pH between 6.0 and 7.0.
      - ii. Soluble salts less than 500 parts per million (ppm).
      - iii. Soil contains less than 40 percent clay but enough fine grained material (greater than 30 percent silt plus clay) to provide the capacity to hold a moderate amount of moisture. An exception: if lovegrass will be planted, then a sandy soil (less than 30 percent silt plus clay) would be acceptable.
      - iv. Soil contains 1.5 percent minimum organic matter by weight.
      - v. Soil contains sufficient pore space to permit adequate root penetration.
    - b. Application of amendments or topsoil is required if on-site soils do not meet the above conditions.
    - c. Graded areas must be maintained in a true and even grade as specified on the approved plan, then scarified or otherwise loosened to a depth of 3 to 5 inches.

B.12

- d. Apply soil amendments as specified on the approved plan or as indicated by the results of a soil test.
- e. Mix soil amendments into the top 3 to 5 inches of soil by disking or other suitable means. Rake lawn areas to smooth the surface, remove large objects like stones and branches, and ready the area for seed application. Loosen surface soil by dragging with a heavy chain or other equipment to roughen the surface where site conditions will not permit normal seedbed preparation. Track slopes 3:1 or flatter with tracked equipment leaving the soil in an irregular condition with ridges running parallel to the contour of the slope. Leave the top 1 to 3 inches of soil loose and friable. Seedbed loosening may be unnecessary on newly disturbed areas.

**B. Topsoiling**

1. Topsoil is placed over prepared subsoil prior to establishment of permanent vegetation. The purpose is to provide a suitable soil medium for vegetative growth. Soils of concern have low moisture content, low nutrient levels, low pH, materials toxic to plants, and/or unacceptable soil gradation.
2. Topsoil salvaged from an existing site may be used provided it meets the standards as set forth in these specifications. Typically, the depth of topsoil to be salvaged for a given soil type can be found in the representative soil profile section in the Soil Survey published by USDA-NRCS.
3. Topsoiling is limited to areas having 2:1 or flatter slopes where:
  - a. The texture of the exposed subsoil/parent material is not adequate to produce vegetative growth.
  - b. The soil material is so shallow that the rooting zone is not deep enough to support plants or furnish continuing supplies of moisture and plant nutrients.
  - c. The original soil to be vegetated contains material toxic to plant growth.
  - d. The soil is so acidic that treatment with limestone is not feasible.
4. Areas having slopes steeper than 2:1 require special consideration and design.
5. Topsoil Specifications: Soil to be used as topsoil must meet the following criteria:
  - a. Topsoil must be a loam, sandy loam, clay loam, silt loam, sandy clay loam, or loamy sand. Other soils may be used if recommended by an agronomist or soil scientist and approved by the appropriate approval authority. Topsoil must not be a mixture of contrasting textured subsoils and must contain less than 5 percent by volume of cinders, stones, slag, coarse fragments, gravel, sticks, roots, trash, or other materials larger than 1 1/2 inches in diameter.
  - b. Topsoil must be free of noxious plants or plant parts such as Bermuda grass, quack grass, Johnson grass, nut sedge, poison ivy, thistle, or others as specified.
  - c. Topsoil substitutes or amendments, as recommended by a qualified agronomist or soil scientist and approved by the appropriate approval authority, may be used in lieu of natural topsoil.
6. Topsoil Application
  - a. Erosion and sediment control practices must be maintained when applying topsoil.
  - b. Uniformly distribute topsoil in a 5 to 8 inch layer and lightly compact to a minimum thickness of 4 inches. Spreading is to be performed in such a manner that sodding or seeding can proceed with a minimum of additional soil preparation and tillage. Any irregularities in the surface resulting from topsoiling or other operations must be corrected in order to prevent the formation of depressions or water pockets.
  - c. Topsoil must not be placed if the topsoil or subsoil is in a frozen or muddy condition, when the subsoil is excessively wet or in a condition that may otherwise be detrimental to proper grading

B.13

and seedbed preparation.

**C. Soil Amendments (Fertilizer and Lime Specifications)**

1. Soil tests must be performed to determine the exact ratios and application rates for both lime and fertilizer on sites having disturbed areas of 5 acres or more. Soil analysis may be performed by a recognized private or commercial laboratory. Soil samples taken for engineering purposes may also be used for chemical analyses.
2. Fertilizers must be uniform in composition, free flowing and suitable for accurate application by appropriate equipment. Manure may be substituted for fertilizer with prior approval from the appropriate approval authority. Fertilizers must all be delivered to the site fully labeled according to the applicable laws and must bear the name, trade name or trademark and warranty of the producer.
3. Lime materials must be ground limestone (hydrated or burnt lime may be substituted except when hydroseeding) which contains at least 50 percent total oxides (calcium oxide plus magnesium oxide). Limestone must be ground to such fineness that at least 50 percent will pass through a #100 mesh sieve and 98 to 100 percent will pass through a #20 mesh sieve.
4. Lime and fertilizer are to be evenly distributed and incorporated into the top 3 to 5 inches of soil by disking or other suitable means.
5. Where the subsoil is either highly acidic or composed of heavy clays, spread ground limestone at the rate of 4 to 8 tons/acre (200-400 pounds per 1,000 square feet) prior to the placement of topsoil.

B.14

**B-4.3 STANDARDS AND SPECIFICATIONS**

**FOR**

**SEEDING AND MULCHING**

**Definition**

The application of seed and mulch to establish vegetative cover.

**Purpose**

To protect disturbed soils from erosion during and at the end of construction.

**Conditions Where Practice Applies**

To the surface of all perimeter controls, slopes, and any disturbed area not under active grading.

**Criteria**

- A. Seeding
1. Specifications
    - a. All seed must meet the requirements of the Maryland State Seed Law. All seed must be subject to re-testing by a recognized seed laboratory. All seed used must have been tested within the 6 months immediately preceding the date of sowing such material on any project. Refer to Table B.4 regarding the quality of seed. Seed tags must be available upon request to the inspector to verify type of seed and seeding rate.
    - b. Mulch alone may be applied between the fall and spring seeding dates only if the ground is frozen. The appropriate seeding mixture must be applied when the ground thaws.
    - c. Inoculants: The inoculant for treating legume seed in the seed mixtures must be a pure culture of nitrogen fixing bacteria prepared specifically for the species. Inoculants must not be used later than the date indicated on the container. Add fresh inoculants as directed on the package. Use four times the recommended rate when hydroseeding. Note: It is very important to keep inoculant as cool as possible until used. Temperatures above 75 to 80 degrees Fahrenheit can weaken bacteria and make the inoculant less effective.
    - d. Sod or seed must not be placed on soil which has been treated with soil sterilants or chemicals used for weed control until sufficient time has elapsed (14 days min.) to permit dissipation of phytotoxic materials.
  2. Application
    - a. Dry Seeding: This includes use of conventional drop or broadcast spreaders.
      - i. Incorporate seed into the subsoil at the rates prescribed on Temporary Seeding Table B.1, Permanent Seeding Table B.3, or site-specific seeding summaries.
      - ii. Apply seed in two directions, perpendicular to each other. Apply half the seeding rate in each direction. Roll the seeded area with a weighted roller to provide good seed to soil contact.

B.15

**PERMANENT STABILIZATION**

Hardiness Zone (from Figure B.3): 6b		Seed Mixture: SWITCH GRASS		Fertilizer Rate (10-20-20)			Lime Rate
No.	Species	Application Rate (lb/oc)	Seeding Dates	Seeding Depths	N	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O
1	SWITCHGRASS	10	MAR 1 TO MAY 15	1/4-1/2 in	45 pounds per acre (1.0 lb/1000 sf)	90 lb/oc (2 lb/1000 sf)	90 lb/oc (2 lb/1000 sf)
	CREeping RED FESCUE BUSH	15	AND	1/4-1/2 in			
	CLOVER	2	MAY 16 TO JUNE 15	1/4-1/2 in			
				1/4-1/2 in			

Hardiness Zone (from Figure B.3): 6b		Seed Mixture: CREeping RED FESCUE		Fertilizer Rate (10-20-20)			Lime Rate
No.	Species	Application Rate (lb/oc)	Seeding Dates	Seeding Depths	N	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O
11	CREeping RED FESCUE	30	MAR 1 TO MAY 15	1/4-1/2 in	45 pounds per acre (1.0 lb/1000 sf)	90 lb/oc (2 lb/1000 sf)	90 lb/oc (2 lb/1000 sf)
	BLUE RYEGRASS	15	AND	1/4-1/2 in			
			AUG 1 TO OCT 15	1/4-1/2 in			
				1/4-1/2 in			

**B-4.4 STANDARDS AND SPECIFICATIONS**

**FOR**

**TEMPORARY STABILIZATION**

**Definition**

To stabilize disturbed soils with vegetation for up to 6 months.

**Purpose**

To use fast growing vegetation that provides cover on disturbed soils.

**Conditions Where Practice Applies**

Exposed soils where ground cover is needed for a period of 6 months or less. For longer duration of time, permanent stabilization practices are required.

**Criteria**

1. Select one or more of the species or seed mixtures listed in Table B.1 for the appropriate Plant Hardiness Zone (from Figure B.3), and enter them in the Temporary Seeding Summary below along with application rates, seeding dates and seeding depths. If this Summary is not put on the plan and completed, then Table B.1 plus fertilizer and lime rates must be put on the plan.
2. For sites having soil tests performed, use and show the recommended rates by the testing agency. Soil tests are not required for Temporary Seeding.
3. When stabilization is required outside of a seeding season, apply seed and mulch or straw mulch alone as prescribed in Section B-4.3.A.1.b and maintain until the next seeding season.

**Temporary Seeding Summary**

Hardiness Zone (from Figure B.3): 6b		Seed Mixture (from Table B.1):		Fertilizer Rate (10-20-20)	Lime Rate
No.	Species	Application Rate (lb/oc)	Seeding Dates	Seeding Depths	
1	ANNUAL RYEGRASS (check species on table)	40	MAY 1 - MAY 15 AUG 1 - SEPT 30	0.5	436 lb/oc (10 lb/1000 sf)
	ORIS (check species)	72	MAY 1 - MAY 15 AUG 1 - SEPT 30	1.0	
2	FOXTAIL MILLET (check species)	30	MAY 16 - JUL 31	0.5	2 tons/acre (90 lb/1000 sf)
	PEARL MILLET (check species)	20	MAY 16 - JUL 31	0.5	

B.18

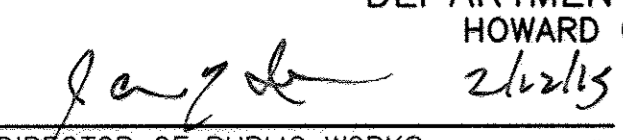
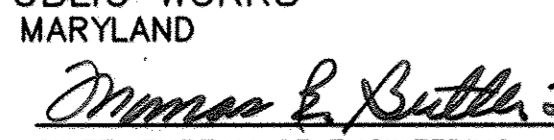


**MAINTENANCE FERTILIZATION FOR PERMANENT SEEDINGS**


**USE SOIL TEST RESULTS OR RATES SHOWN BELOW**

SEEDING MIXTURE	TYPE	LB/AC	LB/1000 SF	TIME	MOWING
TALL FESCUE MAKES UP 70% OR MORE OF COVER	10-10-10 OR 30-10-10	500	11.5	YEARLY OR AS NEEDED. FALL	NOT CLOSER THAN 3" IF OCCASIONAL MOWING IS DESIRED
CROWNVELTCH SERICEA LESPEDEZA BIRDSFOOT TREFOIL	0-20-0	400	9.2	SPRING, THE YEAR FOLLOWING ESTABLISHMENT AND EVERY 4-5 YEARS THEREAFTER	DO NOT MOW CROWNVELTCH
FAIRLY UNIFORM STAND OF TALL FESCUE AND SERICEA LESPEDEZA, OR BIRDSFOOT TREFOIL	5-10-10	500	11.5	FALL THE YEAR FOLLOWING ESTABLISHMENT AND EVERY 4-5 YEARS THEREAFTER	NOT REQUIRED, NO CLOSER THAN 4" IN THE FALL AFTER SEED HAS MATURED.
WEeping LOVEGRASS & SERICEA LESPEDEZA FAIRLY UNIFORM PLANT DISTRIBUTION.	5-10-10	500	11.5	SPRING, THE YEAR FOLLOWING ESTABLISHMENT AND EVERY 4-5 YEARS THEREAFTER.	NOT REQUIRED, NO CLOSER THAN 4" IN THE FALL AFTER SEED HAS MATURED.
RED & CHEWING FESCUE, KENTUCKY BLUEGRASS, HARD FESCUE MIXTURES	20-10-10	250	5.8	SEPTEMBER, 30 DAYS LATER, DECEMBER, MAY 20, JUNE 30, IF NEEDED.	MOW NO CLOSER THAN 2" FOR RED FESCUE AND KENTUCKY BLUEGRASS, 3" FOR FESCUE.

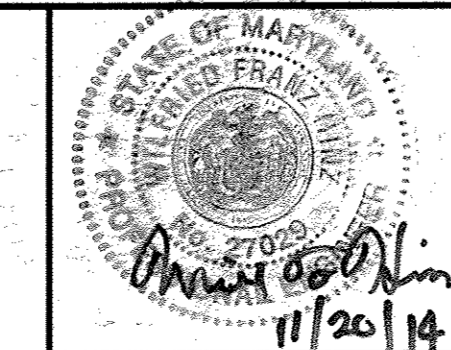
**AS-BUILT SC-2**

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. 27029, EXPIRATION DATE: 01-25-2016.

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND  DATE 2/2/15		 DATE 2/2/15	
DIRECTOR OF PUBLIC WORKS		CHIEF, BUREAU OF ENGINEERING	
 DATE 1/24/14		 DATE 2/6/15	
CHIEF, BUREAU OF UTILITIES		CHIEF, UTILITY DESIGN DIVISION	



**WHITMAN, REQUARDT AND ASSOCIATES, LLP**  
 801 SOUTH CAROLINE STREET  
 BALTIMORE, MARYLAND  
 410 - 235 - 3450



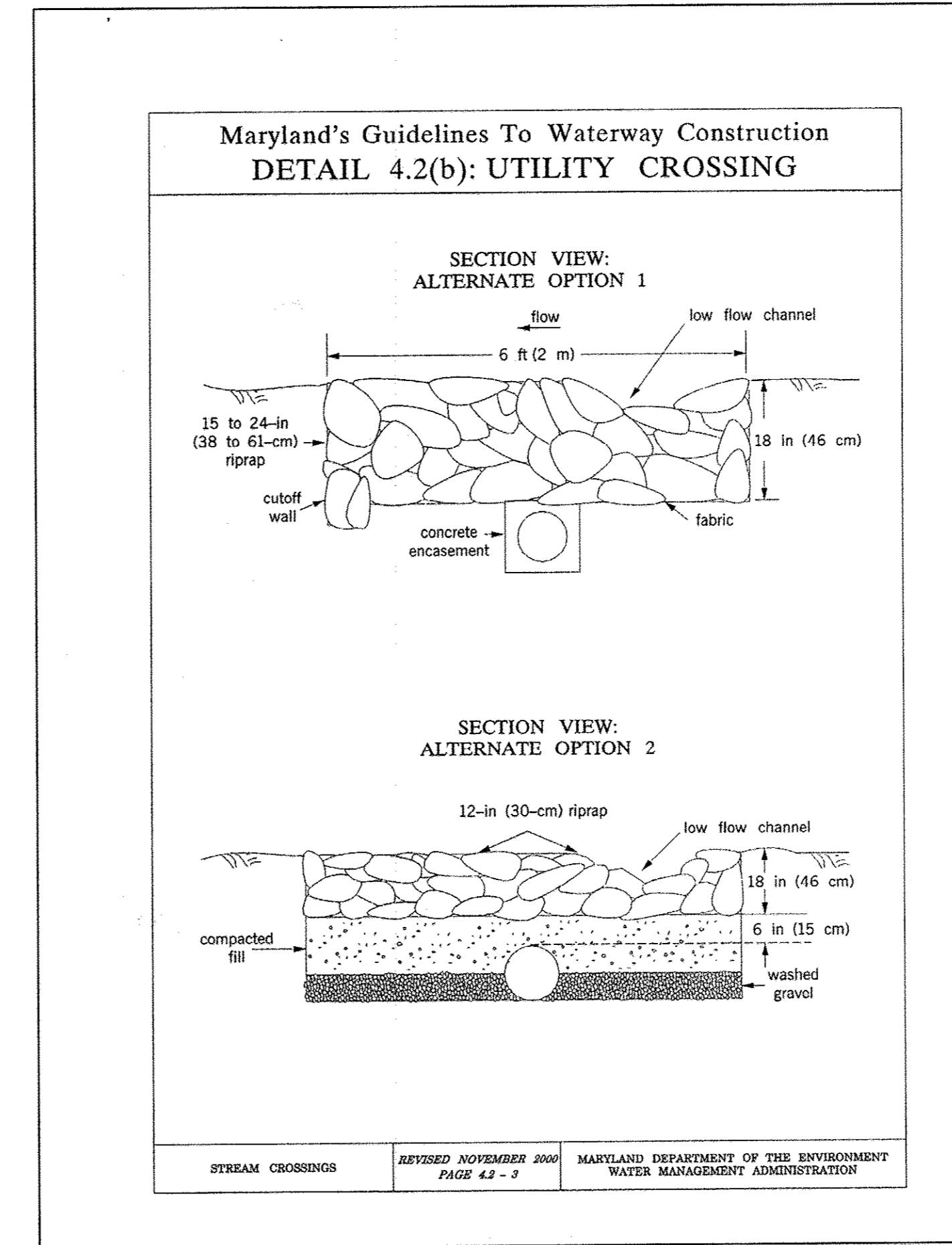
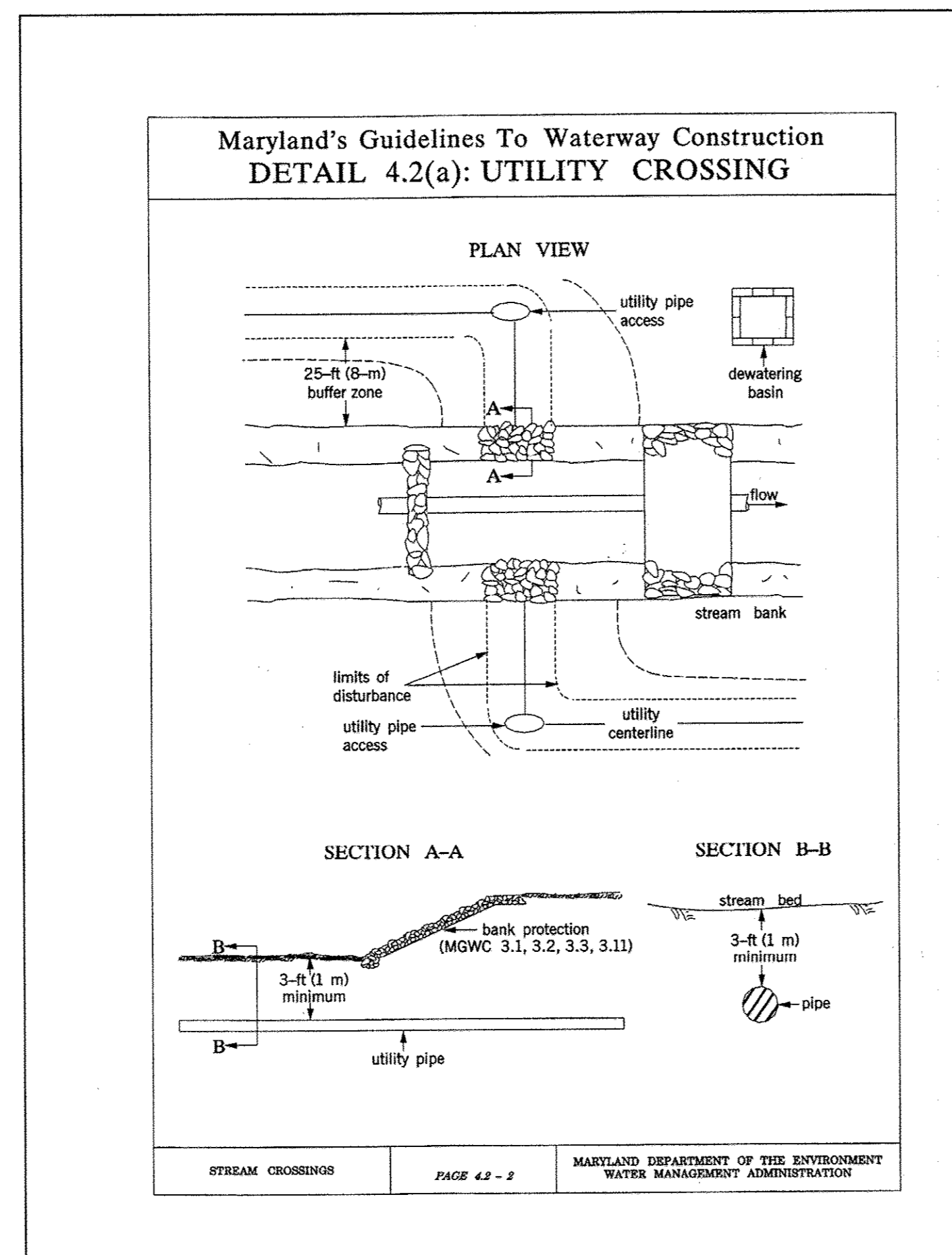
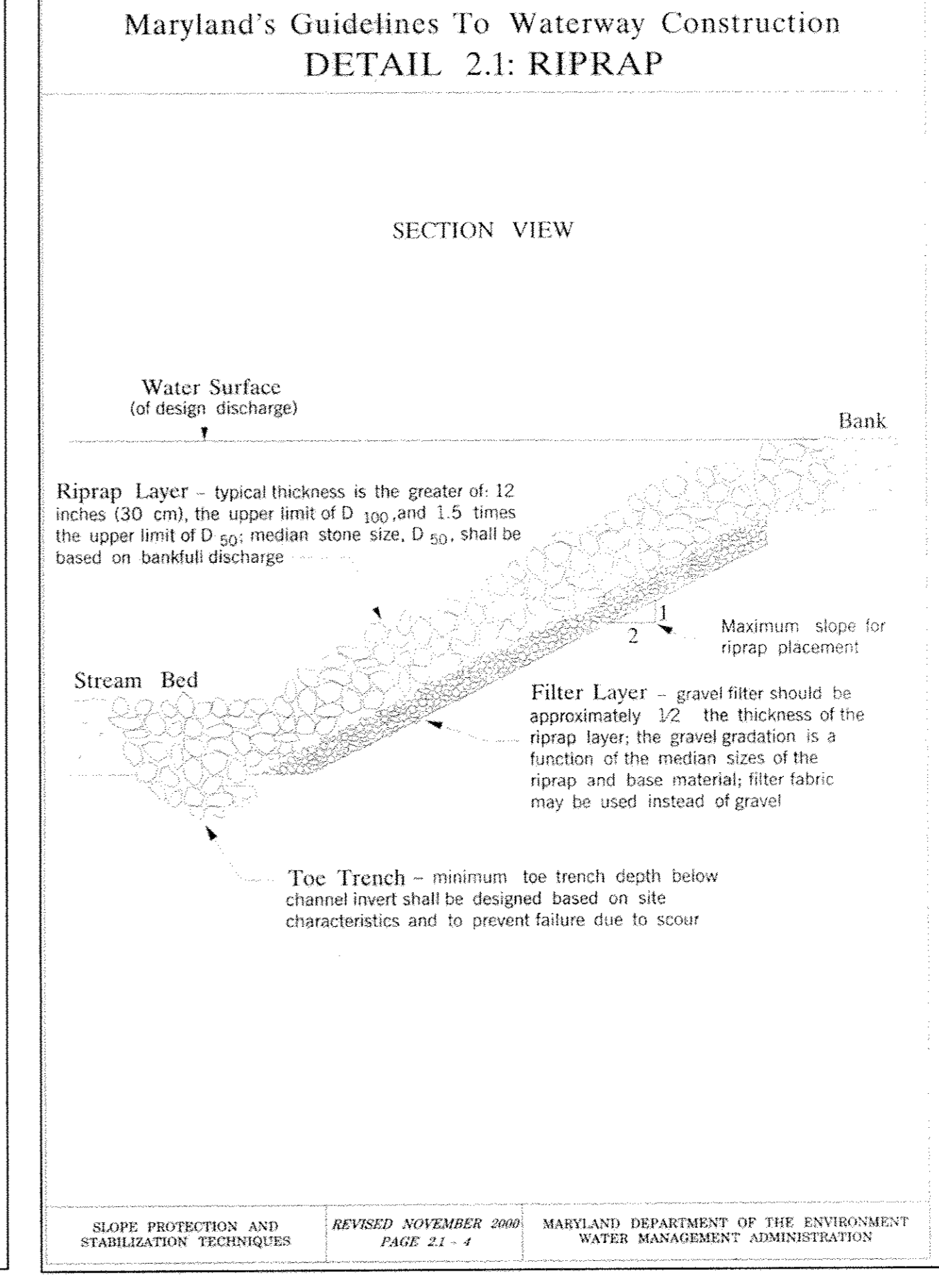
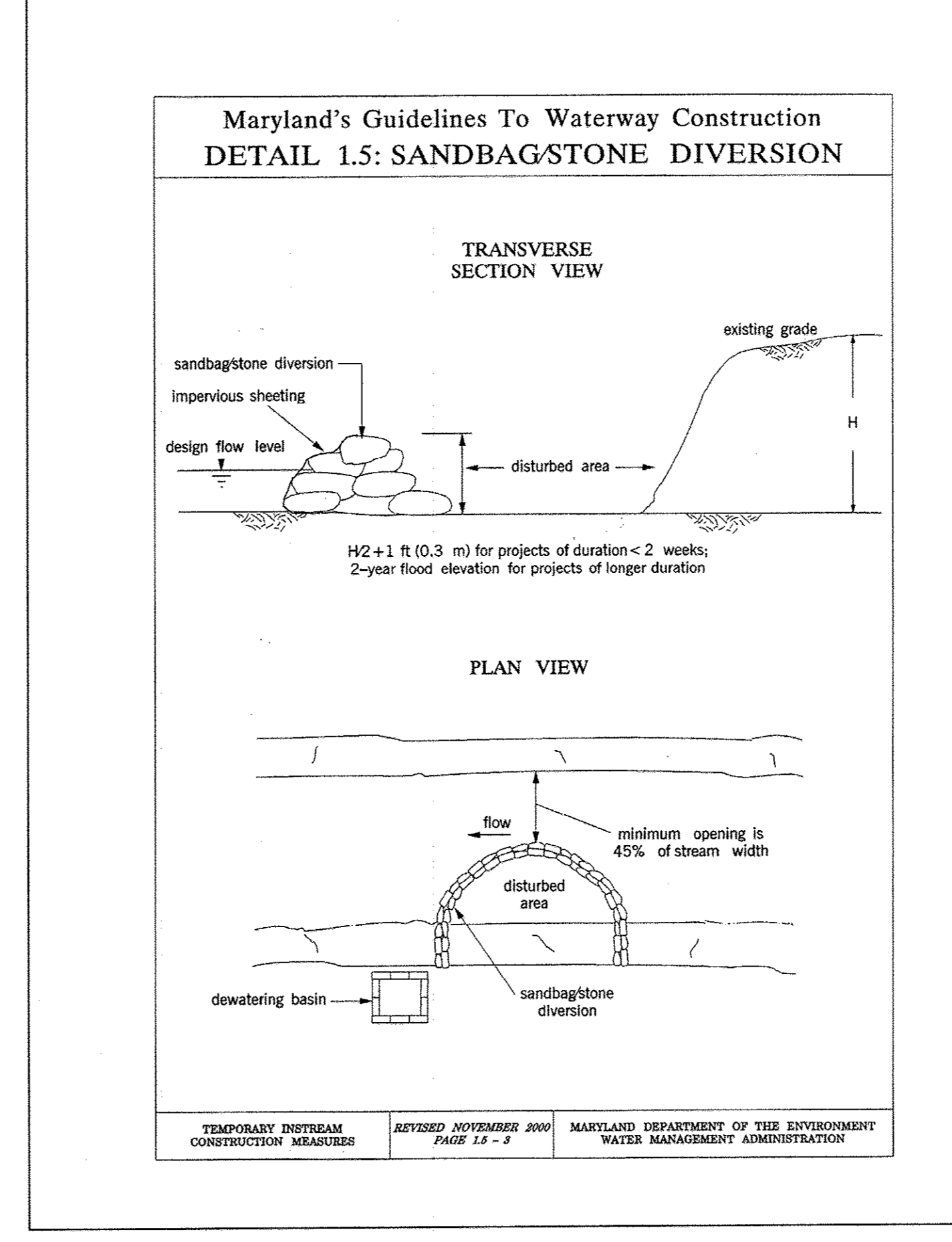
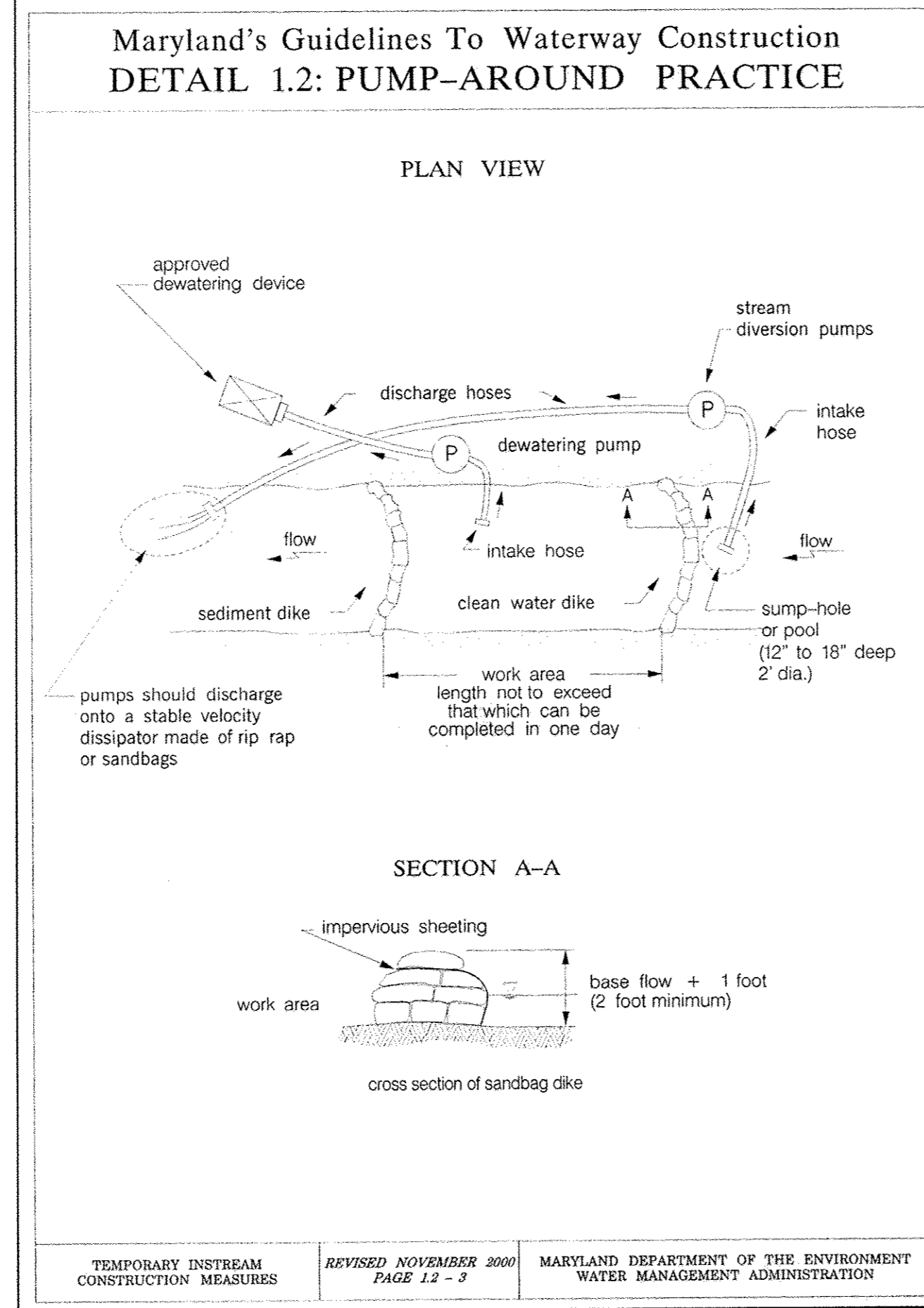
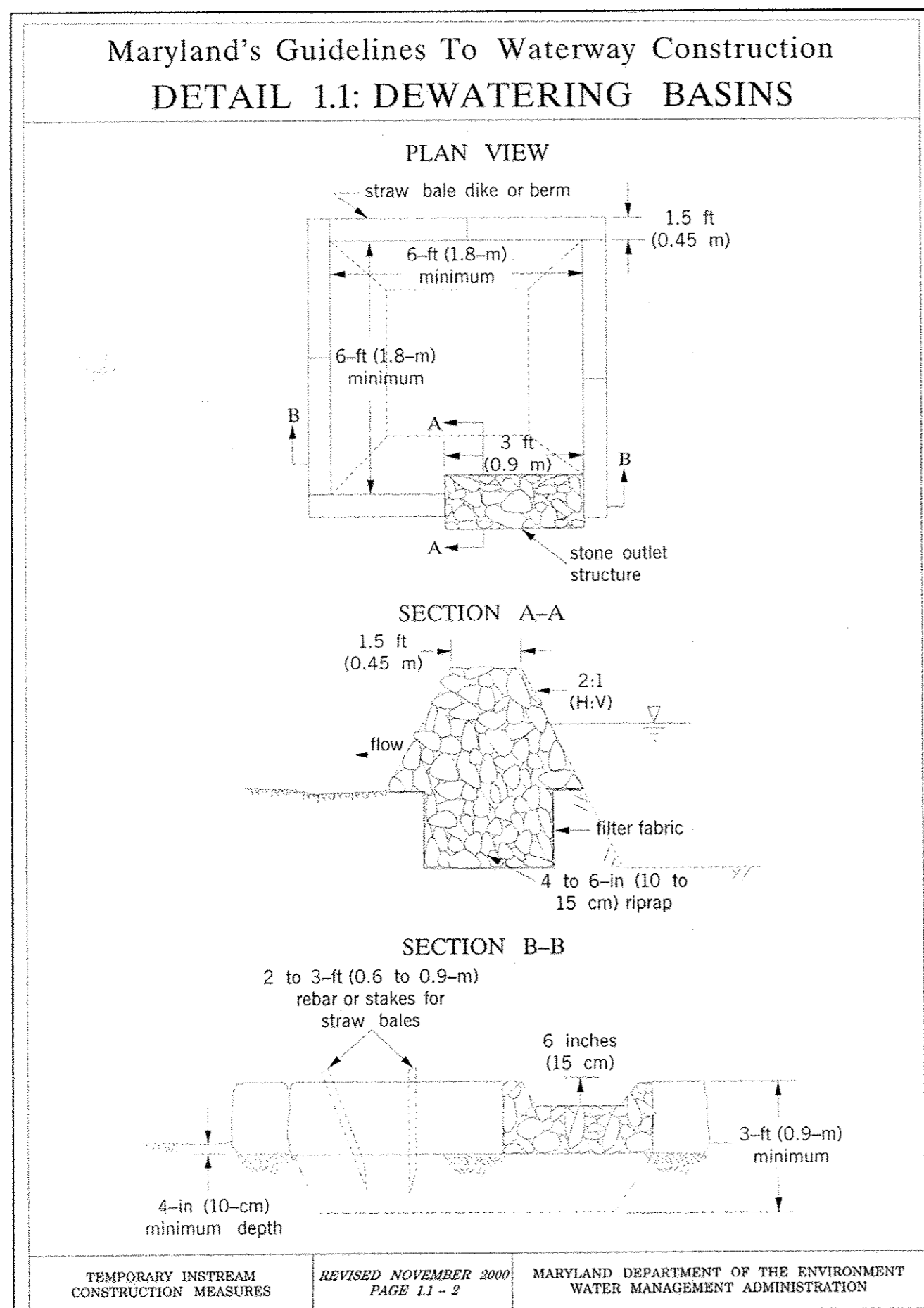
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DRN: PJA			
CHK: PAC			
NOV. 2014	BY NO.	REVISION	DATE

EROSION AND SEDIMENT CONTROL:  
 STABILIZATION NOTES

GERWIG LANE 24" WATER MAIN RELOCATION  
 CAPITAL PROJECT NO. W-8248  
 CONTRACT NO. 44-4841  
 2ND ELECTION DISTRICT  
 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN  
 SHEET 6 OF 13  
 FINAL

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 Nov 17, 2014 - 1:50pm



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. 27029, EXPIRATION DATE: 01-25-2016.

DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

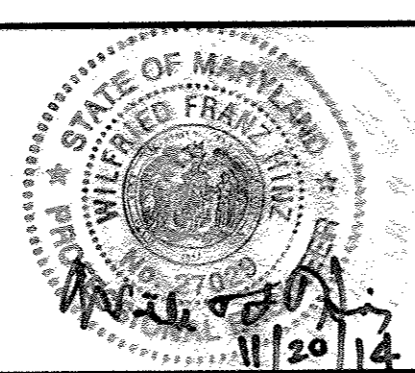
*[Signature]* 2/2/15  
DIRECTOR OF PUBLIC WORKS DATE

*[Signature]* 2/2/15  
CHIEF, BUREAU OF ENGINEERING DATE

*[Signature]* 1/24/14  
CHIEF, BUREAU OF UTILITIES DATE

*[Signature]* 2/16/15  
CHIEF, UTILITY DESIGN DIVISION DATE

**WR&A**  
WHITMAN, REQUARDT AND ASSOCIATES, LLP  
801 SOUTH CAROLINE STREET  
BALTIMORE, MARYLAND  
410 - 235 - 3450



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DRN: PJA			
CHK: PAC			
NOV. 2014	BY NO.	REVISION	DATE

EROSION AND SEDIMENT CONTROL:  
STREAM CROSSING DETAILS

600' SCALE MAP NO. 30  
BLOCK NO. 10

**AS-BUILT**

GERWIG LANE 24" WATER MAIN RELOCATION  
CAPITAL PROJECT NO. W-8248  
CONTRACT NO. 44-4841

2ND ELECTION DISTRICT  
HOWARD COUNTY, MARYLAND

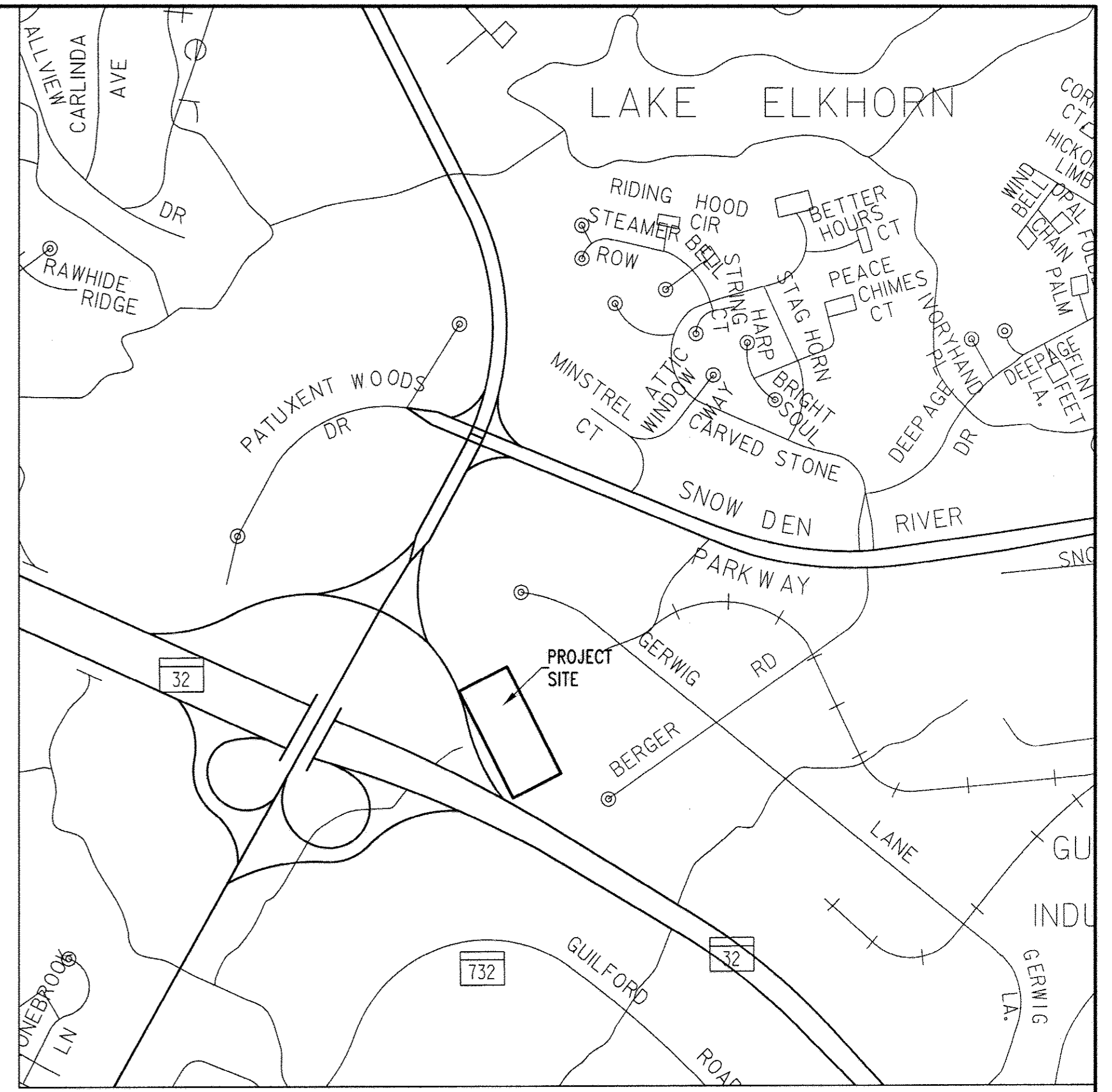
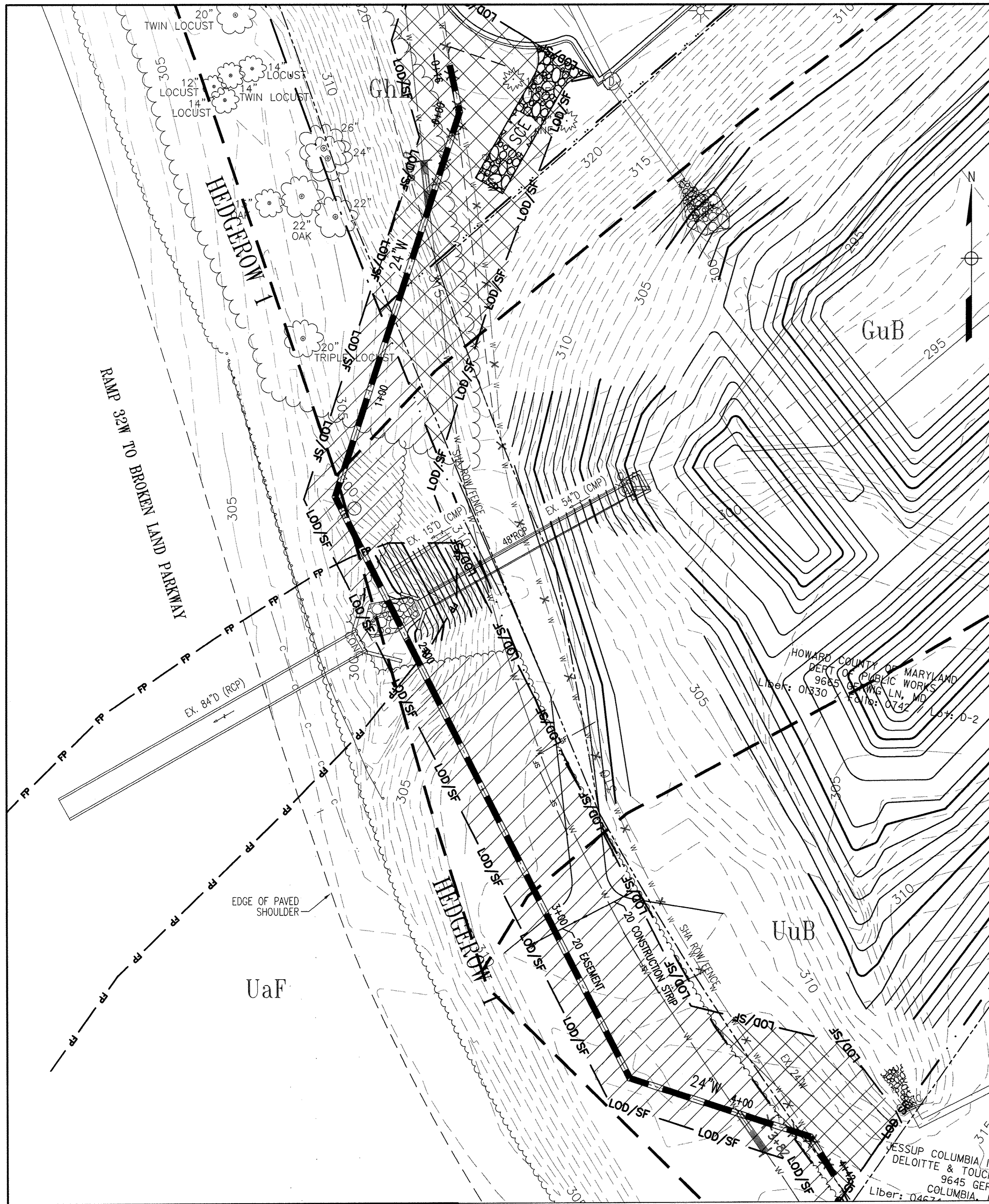
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SCALE AS SHOWN

SHEET 7 OF 13

FINAL

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**VICINITY MAP**

SCALE: 1"=600'

SOIL	DESCRIPTION	HYDRIC	ERODIBLE*
GhB	Glencol-Urban land complex, 0-8% slopes	No	No
GuB	Glennville-Urban land-Udorthents complex, 0-8% slopes	No	Yes
UaF	Udorthents, Highway, 0-65% slopes	No	Yes
UuB	Urban land-Udorthents complex, 0-8% slopes	No	No

\*Highly Erodible defined by Maryland Comar Appendix A for Howard County

OWNER:  
 HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
 9250 BENDIX ROAD, COLUMBIA MD 21045  
 ATTN: JOSHUA GLIPTS, P.E. BUREAU OF ENGINEERING

**GENERAL NOTES**

- FOR THIS PROJECT THE LIMIT OF DISTURBANCE (LOD) HAS BEEN USED TO DEFINE THE PROJECT AREA. A LARGER STUDY AREA WAS USED TO GATHER ADDITIONAL INFORMATION ABOUT THE AREAS SURROUNDING THE PROJECT LIMITS.
- TOPOGRAPHIC FIELD SURVEYS WERE PERFORMED IN SEPTEMBER 2013 BY WHITMAN, REQUARDT & ASSOCIATES LLP.
- THERE ARE NO NON-TIDAL WETLAND SYSTEMS IN THE PROJECT AREA.
- ACCORDING TO FEMA MAP 2400440039B, THERE ARE FLOODPLAINS IN THE PROJECT AREA.
- THROUGH U.S. FISH AND WILDLIFE'S ONLINE CERTIFICATION PROCESS IT WAS DETERMINED THAT EXCEPT FOR THE OCCASIONAL TRANSIENT INDIVIDUALS, THERE ARE NO STATE OR FEDERAL RECORDS FOR RARE, THREATENED OR ENDANGERED SPECIES WITHIN THE PROJECT AREA.
- THERE ARE NO SPECIMEN TREES LOCATED IN OR NEAR THE STUDY AREA. HOWEVER A MAJORITY OF TREES OVER 12" DBH WERE FIELD SURVEYED.
- THIS SITE DOES NOT LIE WITHIN A COUNTY GREEN INFRASTRUCTURE EVALUATION AREA.
- ACCORDING TO MERLIN ONLINE DATABASE THE CLOSEST HISTORIC PROPERTIES IS LOCATED APPROXIMATELY A HALF MILE AWAY.
- THE PROJECT AREA AND THE SURROUNDING PARCELS ARE ZONED NT (NEWTOWN).
- THIS PROJECT LIES WITHIN THE LITTLE PATUXENT RIVER BRANCH MARYLAND WATERSHED AND IS ASSOCIATED WITH HUC CODE 02131105(0951).

**HEDGEROW 1**

THE PROJECT AREA WAS DEEMED TOO THICK WITH VEGETATION TO INDIVIDUALLY SURVEY EVERY WOODY STEMMED PLANT. A MAJORITY OF THE TREES OF A SIGNIFICANT SIZE (OVER 12"dbh) IN THE AREA WERE SURVEYED. THIS AREA IS ONE LARGE HEDGEROW ONLY BRIEFLY SEPARATED BY THE STREAM. THE STAND IS DOMINATED BY BRADFORD PEAR (*Pyrus calleryana*), BOXELDER (*Acer negundo*), AND ALLEGHENY BLACKBERRY (*Rubus allegheniensis*). THE AVERAGE SIZE CLASS OF A DOMINANT TREE IS IN THE 12-19.9" dbh RANGE. OTHER COMMON CANOPY SPECIES INCLUDE WHITE OAK (*Quercus alba*), BLACK WILLOW (*Salix nigra*), BLACK LOCUST (*Robinia pseudacacia*), BLACK CHERRY (*Prunus serotina*), AND PRINCESS TREE (*Paulownia tomentosa*). COMMON UNDERSTORY SPECIES INCLUDE JAPANESE HONEYSUCKLE (*Lonicera japonica*), MULTIFLORA ROSE (*Rosa multiflora*), AND FOXGRAPE (*Vitis labrusca*). INVASIVES PRIMARILY INCLUDE JAPANESE HONEYSUCKLE AND BRADFORD PEAR. THERE ARE NO SPECIMEN TREES LOCATED IN THE STUDY AREA.

**LEGEND**

- CLEARING SUBJECT TO ROAD SIDE TREE REGULATIONS (9926 SQ. FT.)
- AREA SUBJECT TO HOWARD COUNTY FOREST CONSERVATION REGULATIONS (7800 SQ. FT.)
- LOD - LIMIT OF DISTURBANCE
- WATERS OF THE U.S.
- PROPERTY BOUNDARY/SHA RIGHT OF WAY
- FEMA 100YR FLOODPLAIN
- SOILS

TIMOTHY R. HESS  
 MD DNR QUALIFIED PROFESSIONAL

3/4/14  
 DATE

**AS-BUILT**

0 10' 20' 40'  
 SCALE: 1" = 20'-0"

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. 27029, EXPIRATION DATE: 01-25-2016.

DEPARTMENT OF PUBLIC WORKS  
 HOWARD COUNTY, MARYLAND

*Joseph A. Butler*  
 DIRECTOR OF PUBLIC WORKS DATE

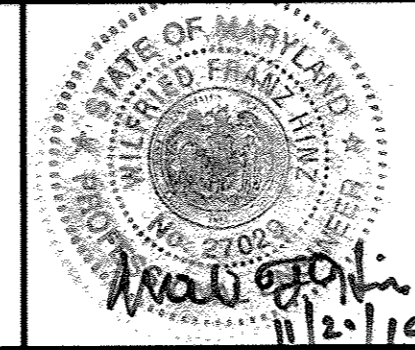
*Thomas R. Butler*  
 CHIEF, BUREAU OF ENGINEERING DATE

*Scott Conroy*  
 CHIEF, BUREAU OF UTILITIES DATE

*Danielle*  
 CHIEF, UTILITY DESIGN DIVISION DATE

**PLAN**  
 SCALE: 1"=20'

**WR&A**  
 WHITMAN, REQUARDT AND ASSOCIATES, LLP  
 801 SOUTH CAROLINE STREET  
 BALTIMORE, MARYLAND  
 410 - 235 - 3450



DES:	WRA	AS-BUILTS	2/17
DRN:			
CHK:			
NOV. 2014	BY NO.	REVISION	DATE

ROADSIDE TREE PLAN

600' SCALE MAP NO. 30 BLOCK NO. 10

**GERWIG LANE 24" WATER MAIN RELOCATION**

CAPITAL PROJECT NO. W-8248  
 CONTRACT NO. 44-4841

2ND ELECTION DISTRICT  
 HOWARD COUNTY, MARYLAND

**RT-1**

SCALE AS SHOWN

SHEET 8 OF 13

FINAL



**CONSTRUCTION PERIOD PROTECTION PROGRAM**

- PRIOR TO THE START OF ANY CONSTRUCTION ACTIVITIES, THE CONTRACTOR SHALL LOCATE THE LIMITS OF DISTURBANCE (LOD) IN THE FIELD.
- PRIOR TO THE START OF ANY CONSTRUCTION ACTIVITIES, BLAZE ORANGE FENCING SHALL BE INSTALLED AS PER DETAIL THIS SHEET ALONG ALL LOD ADJACENT TO WOODLANDS AND AS INDICATED ON PLAN SHEET 1.
- PROTECTIVE SIGNAGE SHALL BE INSTALLED ALONG THE BLAZE ORANGE FENCE DESCRIBED ABOVE AS NECESSARY TO PROTECT REMAINING TREES OUTSIDE OF LOD.
- TREES TO BE REMOVED SHALL BE TAKEN OUT WITHOUT DAMAGING PROTECTED TREES.
- ALL EQUIPMENT AND MACHINERY SHALL BE KEPT INSIDE THE BLAZE ORANGE FENCING AND WITHIN THE LOD.
- ANY TYPE OF DISTURBANCE BEYOND THE LOD IS STRICTLY PROHIBITED.
- PLACEMENT OF EXCAVATED/BACKFILL MATERIAL AND STORAGE OF EQUIPMENT/MACHINERY SHALL BE AVOIDED WITHIN THE CRITICAL ROOT ZONE AREAS OF SPECIMEN TREES IN ORDER TO MINIMIZE SOIL COMPACTION IN THESE SENSITIVE AREAS.
- ROOT PRUNING AS PER DETAIL THIS SHEET SHALL BE UTILIZED FOR PROTECTION OF SPECIMEN TREES IN AREAS WHERE SPECIMEN TREE CRITICAL ROOT ZONES ARE LOCATED INSIDE THE LOD.
- QUALIFIED PROFESSIONAL(S) RESPONSIBLE FOR MONITORING FOREST CONSERVATION REQUIREMENTS AND PERFORMING ANY NECESSARY CONSTRUCTION PERIOD MANAGEMENT SHALL VISIT THE PROJECT SITE ON TWO OCCASIONS:
  - THE FIRST VISIT SHALL VERIFY PROPER INSTALLATION OF PROTECTIVE DEVICES AND COMPLETION OF OTHER PROTECTIVE MEASURES AND SHALL OCCUR BEFORE ANY CONSTRUCTION BEGINS.
  - THE SECOND VISIT SHALL VERIFY CONTINUED COMPLIANCE WITH THE FOREST CONSERVATION PLAN AND ACCESS THE NEED FOR ADDITIONAL PROTECTIVE MEASURES TO MAINTAIN THE HEALTH OF THE RETENTION AREAS. THIS VISIT WILL OCCUR DURING THE CONSTRUCTION PERIOD.

**POST-CONSTRUCTION PERIOD PROTECTION PROGRAM**

A POST CONSTRUCTION PROTECTION PROGRAM IS REQUIRED TO GIVE THE FOREST RESOURCES SAVED OR PLANTED AS PART OF THE DEVELOPMENT PROPOSAL A HIGH PROBABILITY OF ACHIEVING THE SURVIVAL RATES REQUIRED FOR RELEASE OF SURETY, AS WELL AS LONG-TERM SURVIVAL. THE POST-CONSTRUCTION PROTECTION PROGRAM PERIOD SHALL BE FOR A MINIMUM OF TWO GROWING SEASONS, AS SPECIFIED IN THE HOWARD COUNTY FOREST CONSERVATION MANUAL.

**PRESERVATION REQUIREMENTS**

THE AREAS FOR FOREST RETENTION, REFORESTATION OR AFFORESTATION BY AN APPROVED FOREST CONSERVATION PLAN MUST BE PERMANENTLY PROTECTED AND RECORDED AS EITHER NON-DEVELOPABLE OPEN SPACE OR AS CONSERVATION EASEMENTS.

**MITIGATION REQUIREMENT**

TYPICALLY A ROAD SIDE TREE PERMIT IS MITIGATED ON A TREE-BY-TREE BASIS, HOWEVER ON THE OCCASION, SUCH AS THIS, WHERE THE GROWTH OF AN AREA IS TOO DENSE TO ACCOUNT FOR ALL VEGETATION ACCURATELY MITIGATION ON A SQUARE FOOT RATIO IS OFTEN MORE ACCURATE AND EFFICIENT. DUE TO THE DISTURBANCE OF 9926 SQ. FT. (APPROXIMATELY 0.23 ACRES) OF THE HEDGEROW LOCATED WITHIN THE STATE HIGHWAY ADMINISTRATION (SHA) RIGHT OF WAY, ALONG THE OFF RAMP BETWEEN PATUXENT FREEWAY AND BROKEN LAND PARKWAY, HOWARD COUNTY IS REQUIRED TO PROVIDE MITIGATION FOR THESE IMPACTS AT A 1:1 MITIGATION RATIO.

MITIGATION RATIOS FOR "PER ACRE" PLANTING CAN BE FOUND ON PAGE A-19 OF THE STATE FOREST CONSERVATION TECHNICAL MANUAL (3RD EDITION, 1997). FIGURE A-18 DISPLAYS A TABLE OF ACCEPTABLE TREE PLANTINGS SIZES, AMOUNTS, SPACING AND SURVIVABILITY. THE TABLE BELOW REFLECTS THE SELECTED ROW FROM THAT TABLE FOR THE REFORESTATION THE GERWIG LANE PROJECT. SHOULD MARYLAND DNR, HOWARD COUNTY OR SHA DECIDE THAT A DIFFERENT SIZE STOCK BE MORE APPROPRIATE FIGURE A-18 SHOULD BE USED TO DETERMINE THE CORRECT AMOUNTS, SPACING AND SURVIVABILITY ARE MET.

**MITIGATION LOCATION**

TO DATE A SPECIFIC SITE LOCATION FOR THE MITIGATION HAS NOT YET BEEN DETERMINED. INSTRUCTION FROM SHA IS TO PLANT THE MITIGATION IN THE NEARBY RIGHT OF WAY OF MD 32 (PATUXENT FREEWAY) AS CLOSE TO THE SITE AS SPACE ALLOWS. SPECIFIC LOCATION WILL BE DETERMINED IN THE FIELD WORKING FROM THE CLOSEST LOCATION TO THE SITE OUTWARD.

SIZE	NUMBER REQUIRED PER ACRE	APPROXIMATE SPACING (FEET ON CENTER)	SURVIVABILITY REQUIREMENT (AT END OF SECOND GROWING SEASON)
CONTAINER GROWN 1, 2, 3 GALLON	350	12 X 12	75% = 260 PER ACRE

**PLANTING SELECTION**

SELECTED SPECIES FOR PLANTING LISTED BELOW WERE CHOSEN FROM THE SHA PREFERRED PLANT LIST FROM 2014. A MAJORITY OF THE SPECIES CURRENTLY DOMINATING THE HEDGEROW ON-SITE ARE INVASIVES AND LESS DESIRABLE SPECIES. SPECIES WERE SELECTED TO MATCH NON-DOMINANT SPECIES FOUND IN THE SURROUNDING AREA AS WELL AS COMMON SPECIES WITH HIGH LEVELS OF SURVIVABILITY.

COMMON NAME	SCIENTIFIC NAME	NUMBER	SIZE	SPACING (FT)
RED MAPLE	Acer rubrum	16	1, 2, 3 GALLON VARIETY	12 X 12
TULIP POPLAR	Liriodendron tulipifera	16	1, 2, 3 GALLON VARIETY	12 X 12
SWEETGUM	Liquidambar styraciflua	16	1, 2, 3 GALLON VARIETY	12 X 12
WHITE OAK	Quercus alba	16	1, 2, 3 GALLON VARIETY	12 X 12
S. RED OAK	Quercus falcata	16	1, 2, 3 GALLON VARIETY	12 X 12
TOTAL		80		

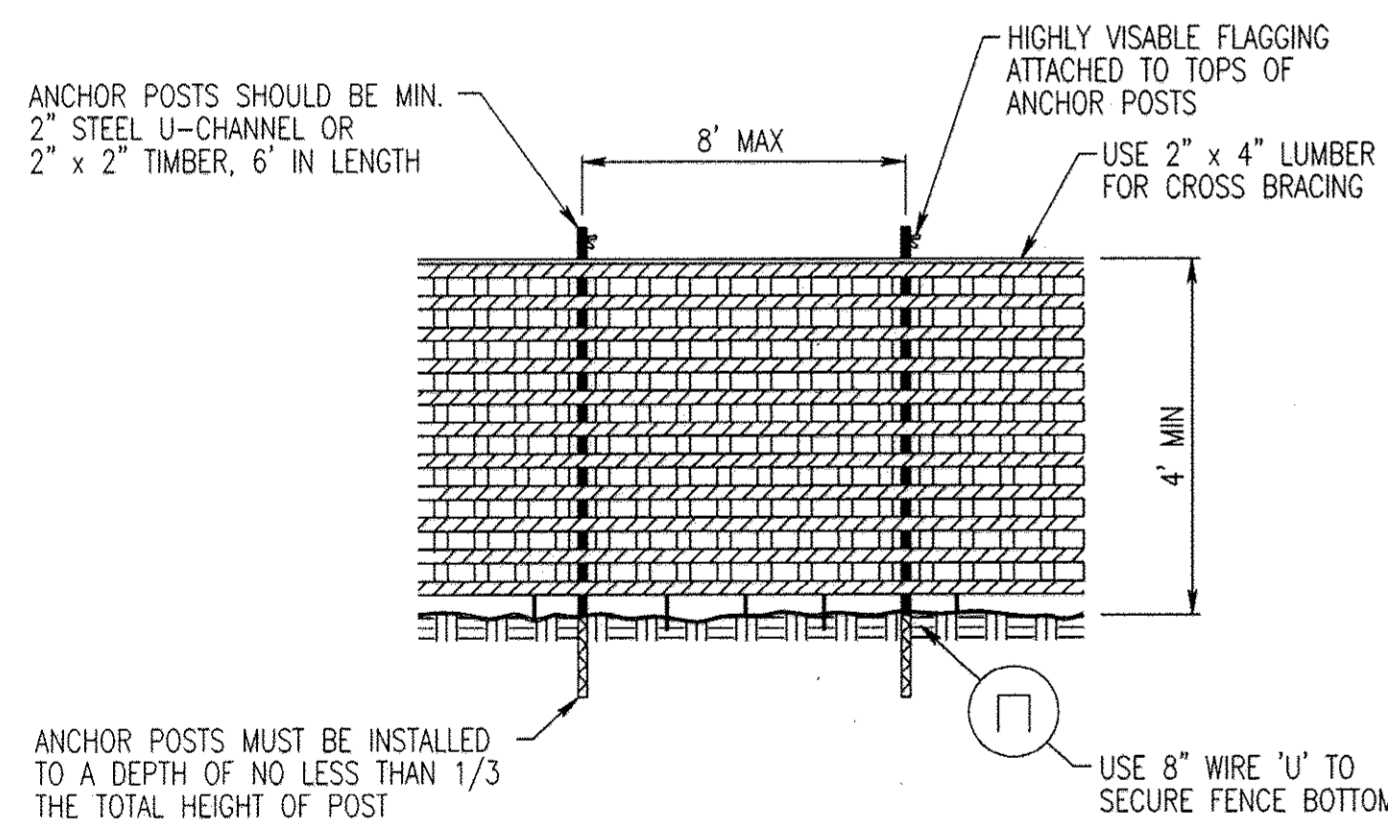
\*SURVIVABILITY - 75% SURVIVABILITY IS EXPECTED FOR STOCK OF THIS SIZE (60 OUT OF 80).

**SEQUENCE OF CONSTRUCTION:**

- TEST PIT EXISTING MAINS AT PROPOSED CONNECTION POINTS TO LOCATE NEAREST JOINTS.
- INSTALL PROPOSED DUCTILE REPLACEMENT MAIN FROM 0+00 TO 4+28, EXCLUDING FINAL TIE-INS.
- PRESSURE TEST INSTALLED WATER MAIN.
- COORDINATE WITH HOWARD COUNTY TO ISOLATE EXISTING LINE BY CLOSURE OF VALVES WITHIN THE EXISTING SYSTEM. CLOSURE TIME FOR WATER MAIN SHALL BE LIMITED TO 8 HOURS.
- PROVIDE TWO PIPE CREWS AS NECESSARY TO MAKE SIMULTANEOUS CONNECTION TO EX. PCCP MAIN AT BOTH STA. 0+00 AND 4+28, WHILE MINIMIZING WATER MAIN DOWN TIME.
- REMOVE EXISTING PCCP TO NEAREST JOINT WEST OF STATION 0+00 AND EAST OF STATION 4+28.
- INSTALL PCCP TO DIP RESTRAINED ADAPTOR.
- PUT WATERMAIN BACK IN SERVICE AND PERFORM VISUAL TEST OF NEW PIPELINE AND APARTORS IN PREVIOUSLY UNTESTED SECTIONS.
- ABANDON EXISTING PCCP MAIN BETWEEN CONNECTION POINTS PER CONSTRUCTION NOTES.

**OVERALL PROJECT SEQUENCE OF CONSTRUCTION**

- OBTAIN A GRADING PERMIT FROM HOWARD COUNTY.
- CALL 'MISS UTILITY' AT 1-800-257-7777 48 HOURS BEFORE ANY CONSTRUCTION IS TO BEGIN.
- NOTIFY THE HOWARD COUNTY CONSTRUCTION INSPECTION DIVISION AT LEAST 2 DAYS PRIOR TO THE START OF CONSTRUCTION TO ARRANGE A PRE CONSTRUCTION MEETING. NO WORK SHALL BE PERMITTED IN ANY STREAMS BETWEEN MARCH 1 AND MAY 1.
- INSTALL AND STABILIZE SEDIMENT CONTROL MEASURES AS REQUIRED BY PLAND SEDIMENT AND EROSION CONTROL INSPECTOR.
- BEFORE PROCEEDING WITH ANY EARTH DISTURBANCE OR GRADING, NOTIFY THE HOWARD COUNTY CONSTRUCTION INSPECTION DIVISION UPON INSTALLATION OF SEDIMENT CONTROL MEASURES.
- EXCAVATE FOR AND INSTALL SEWER MAINS. EXCAVATION FROM TRENCHING OPERATIONS SHALL BE PLACED ON THE UPHILL SIDE OF THE TRENCH.
- VEGETATIVELY STABILIZE BACKFILLED TRENCH OR TEMPORARY STABILIZE ANY PAVED AREAS DISTURBED AS WORK PROGRESSES.
- NOTIFY HOWARD COUNTY CONSTRUCTION INSPECTION DIVISION (CID, 410-313-1880) AND OBTAIN APPROVAL TO REMOVE EROSION AND SEDIMENT CONTROL MEASURES
- REMOVE CONTROLS AND PERMANENTLY STABILIZE ANY AREAS DISTURBED DURING REMOVAL OF CONTROLS.

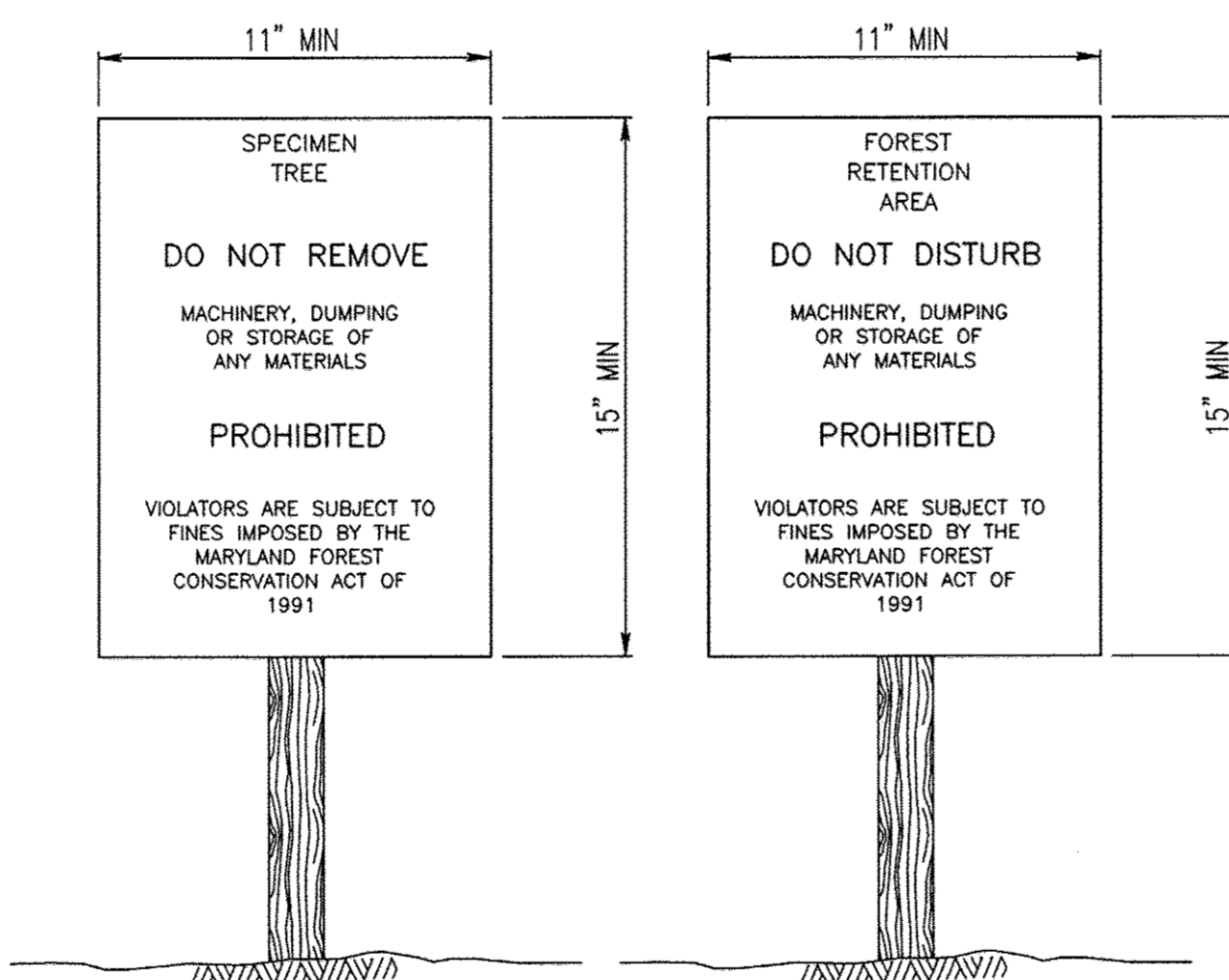


**NOTES:**

- BLAZE ORANGE OR BLUE PLASTIC MESH FENCE FOR FOREST PROTECTION DEVICE, ONLY.
- BOUNDARIES OF RETENTION AREA WILL BE ESTABLISHED AS PART OF THE FOREST CONSERVATION PLAN REVIEW PROCESS.
- BOUNDARIES OF RETENTION AREA SHOULD BE STAKED AND FLAGGED PRIOR TO INSTALLING DEVICE.
- AVOID DAMAGE TO CRITICAL ROOT ZONE. DO NOT DAMAGE OR SEVER LARGE ROOTS WHEN INSTALLING POSTS.
- PROTECTION SIGNAGE IS REQUIRED.
- DEVICE SHOULD BE MAINTAINED THROUGHOUT CONSTRUCTION.

**PLASTIC MESH TREE PROTECTION FENCE**

NO SCALE

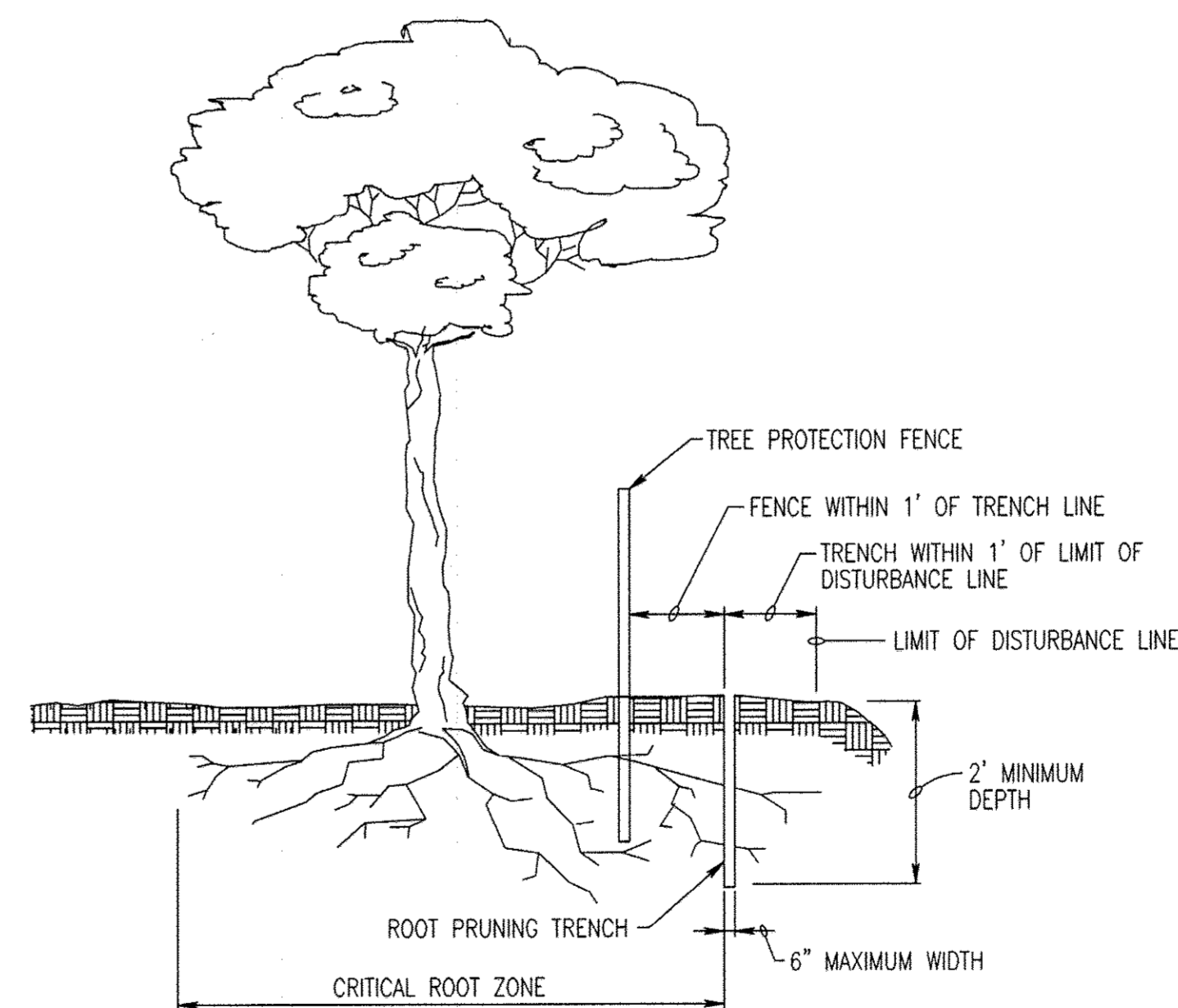


**NOTES:**

- BOTTOM OF SIGN TO BE HIGHER THAN TOP OF TREE PROTECTION FENCE.
- SIGNS TO BE PLACED APPROXIMATELY 50' APART. CONDITIONS ON SITE AFFECTING VISIBILITY MAY WARRANT PLACING SIGNS CLOSER OR FARTHER APART.
- ATTACHMENT OF SIGNS TO TREES IS PROHIBITED.

**CONSTRUCTION SIGNS**

NO SCALE



**NOTES:**

- RETENTION AREAS TO BE ESTABLISHED AS PART OF THE FOREST CONSERVATION PLAN REVIEW PROCESS.
- BOUNDARIES OF RETENTION AREAS TO BE STAKED AND FLAGGED PRIOR TO TRENCHING.
- EXACT LOCATION OF TRENCH SHALL BE IDENTIFIED.
- TRENCH SHOULD BE IMMEDIATELY BACKFILLED WITH SOIL REMOVED OR OTHER HIGH ORGANIC SOIL.
- ROOTS SHOULD BE CLEANLY CUT USING VIBRATORY KNIFE OR OTHER ACCEPTABLE EQUIPMENT.

**ROOT PRUNING**

NO SCALE

*[Signature]*  
TIMOTHY R. HESS  
MD DNR QUALIFIED PROFESSIONAL

3/4/14  
DATE

AS-BUILT

RT-2

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. 27029, EXPIRATION DATE: 01-25-2016.

DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

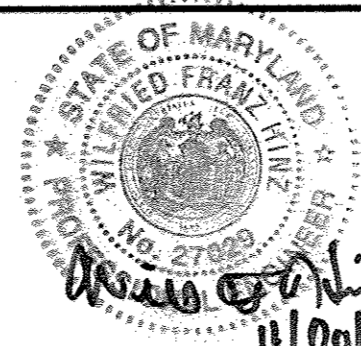
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DIRECTOR OF PUBLIC WORKS DATE

*[Signature]* 2/12/15  
CHIEF, BUREAU OF ENGINEERING DATE

*[Signature]* 2/12/15  
CHIEF, BUREAU OF UTILITIES DATE

*[Signature]* 2/12/15  
CHIEF, UTILITY DESIGN DIVISION DATE

**WRA**  
WHITMAN, REQUARDT AND ASSOCIATES, LLP  
801 SOUTH CAROLINE STREET  
BALTIMORE, MARYLAND  
410 - 235 - 3450



DES:	WRA	AS-BUILTS	2/17
DRN:			
CHK:			
NOV. 2014	BY	NO.	REVISION

ROADSIDE TREE PLAN:  
NOTES AND DETAILS

GERWIG LANE 24" WATER MAIN RELOCATION

CAPITAL PROJECT NO. W-8248  
CONTRACT NO. 44-4841

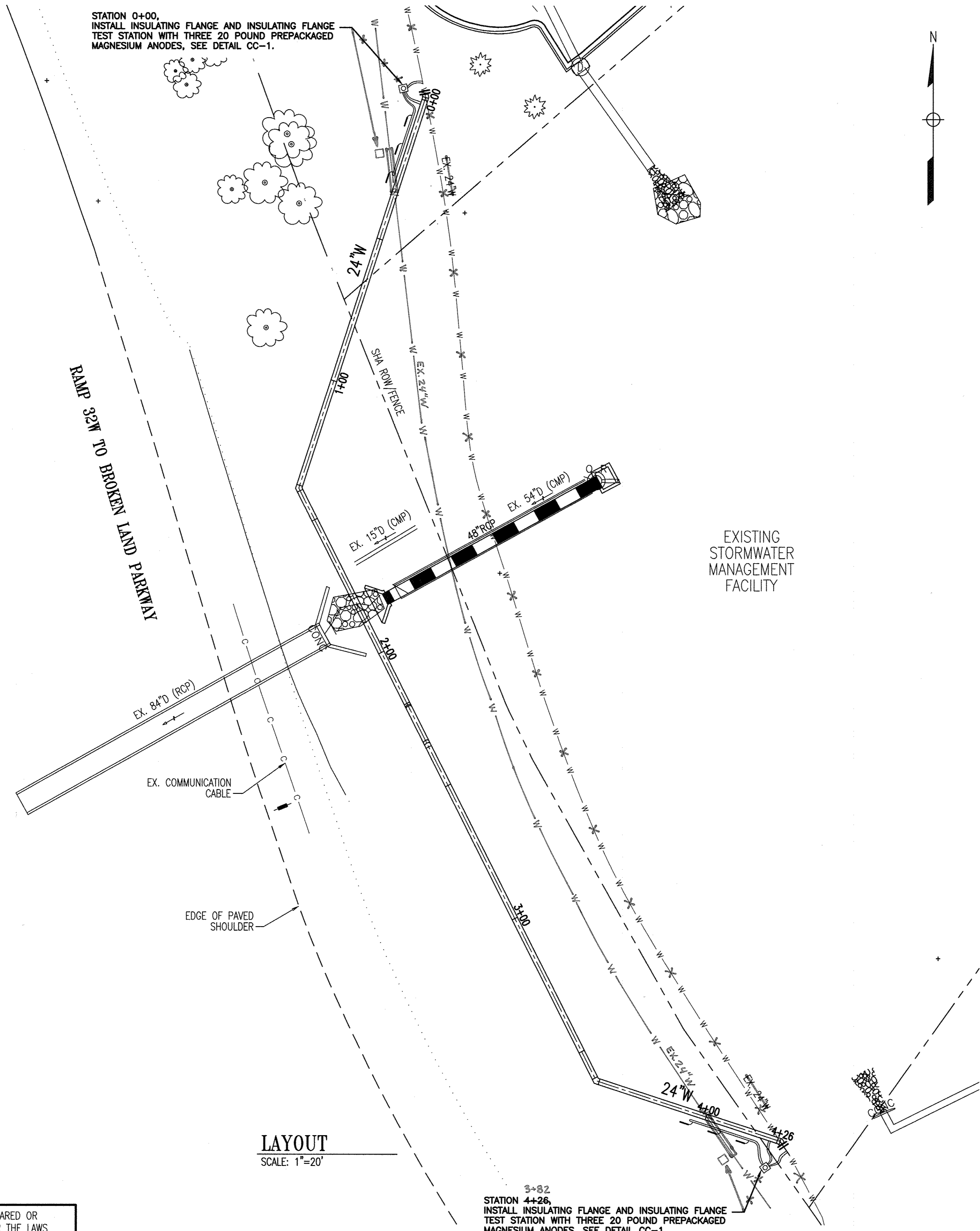
2ND ELECTION DISTRICT  
HOWARD COUNTY, MARYLAND

SCALE  
AS SHOWN

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9 OF 13

FINAL

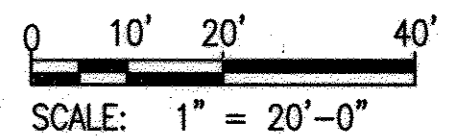
STATION 0+00,  
INSTALL INSULATING FLANGE AND INSULATING FLANGE  
TEST STATION WITH THREE 20 POUND PREPACKAGED  
MAGNESIUM ANODES, SEE DETAIL CC-1.



LAYOUT  
SCALE: 1"=20'

- NOTES:
1. ELECTRICAL ISOLATION IS REQUIRED FOR ALL CONNECTIONS TO NEW DUCTILE IRON WATER MAIN, SEE DETAIL CC-4.
  2. INSTALL SEPARATOR MESH ON WATER MAIN AT EXISTING UTILITY CROSSINGS IF THERE IS LESS THAN 12 INCHES OF SPACING BETWEEN THEM, SEE DETAIL CC-5.
  3. ALL DUCTILE IRON PIPING TO BE EXTERNALLY COATED IN ACCORDANCE WITH THE SPECIFICATIONS.
  4. COAT ALL DUCTILE IRON PIPE JOINTS AND FITTINGS IN ACCORDANCE WITH THE SPECIFICATIONS, SEE DETAIL CC-12.
  5. BOND ALL NEW NON-WELDED PIPE JOINTS EXCEPT THOSE THAT ARE SPECIFIED TO BE ELECTRICALLY ISOLATED, SEE DETAIL CC-3.
  6. FOR TEST STATION SCHEDULE, SEE DETAIL CC-13.

AS-BUILT



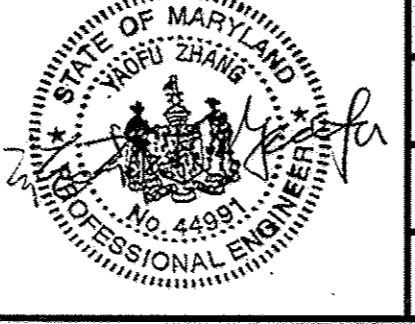
CP-1

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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. 44991, EXPIRATION DATE: 01/09/2016.

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND	
<i>John A. ...</i> DIRECTOR OF PUBLIC WORKS DATE: 2/2/15	<i>Thomas R. Butler</i> CHIEF, BUREAU OF ENGINEERING DATE: 2/2/15
<i>Steve ...</i> CHIEF, BUREAU OF UTILITIES DATE: 2/2/15	<i>...</i> CHIEF, UTILITY DESIGN DIVISION DATE: 2/2/15

**RUSSELL CORROSION CONSULTANTS, INC.**  
7130 Minstrel Way, Suite 230  
Columbia, MD 20145  
Phone - (410) 997-4481  
Fax - (410) 740-2541



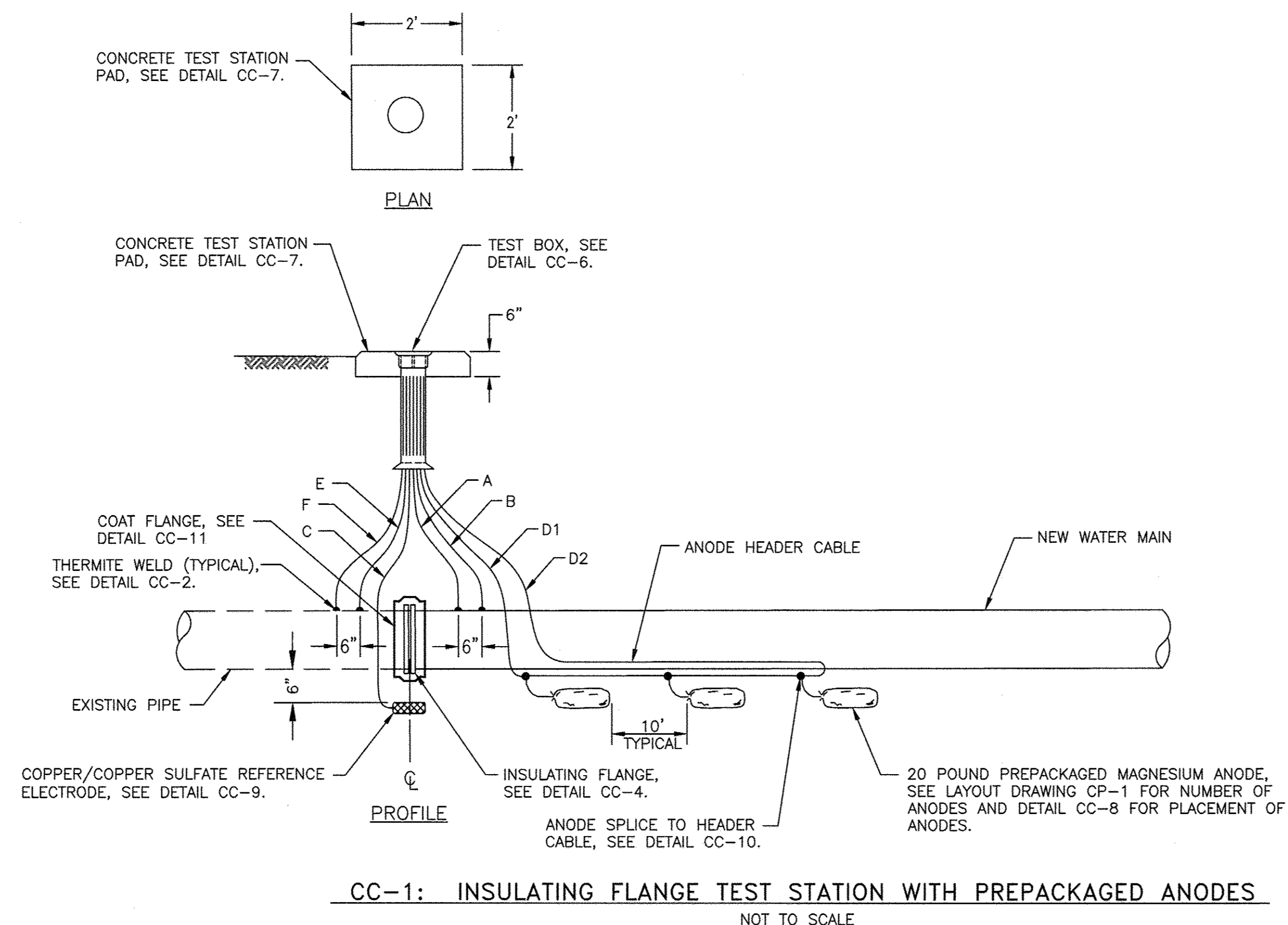
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DRN: FAE			
CHK: TRF			
BY NO.	REVISION	DATE	

CORROSION CONTROL LAYOUT  
FOR DUCTILE IRON PIPE

600' SCALE MAP NO. 30 BLOCK NO. 10

GERWIG LANE 24" WATER MAIN RELOCATION  
CORROSION CONTROL  
CAPITAL PROJECT NO. W-8248  
CONTRACT NO. 44-4841  
2ND ELECTION DISTRICT  
HOWARD COUNTY, MARYLAND

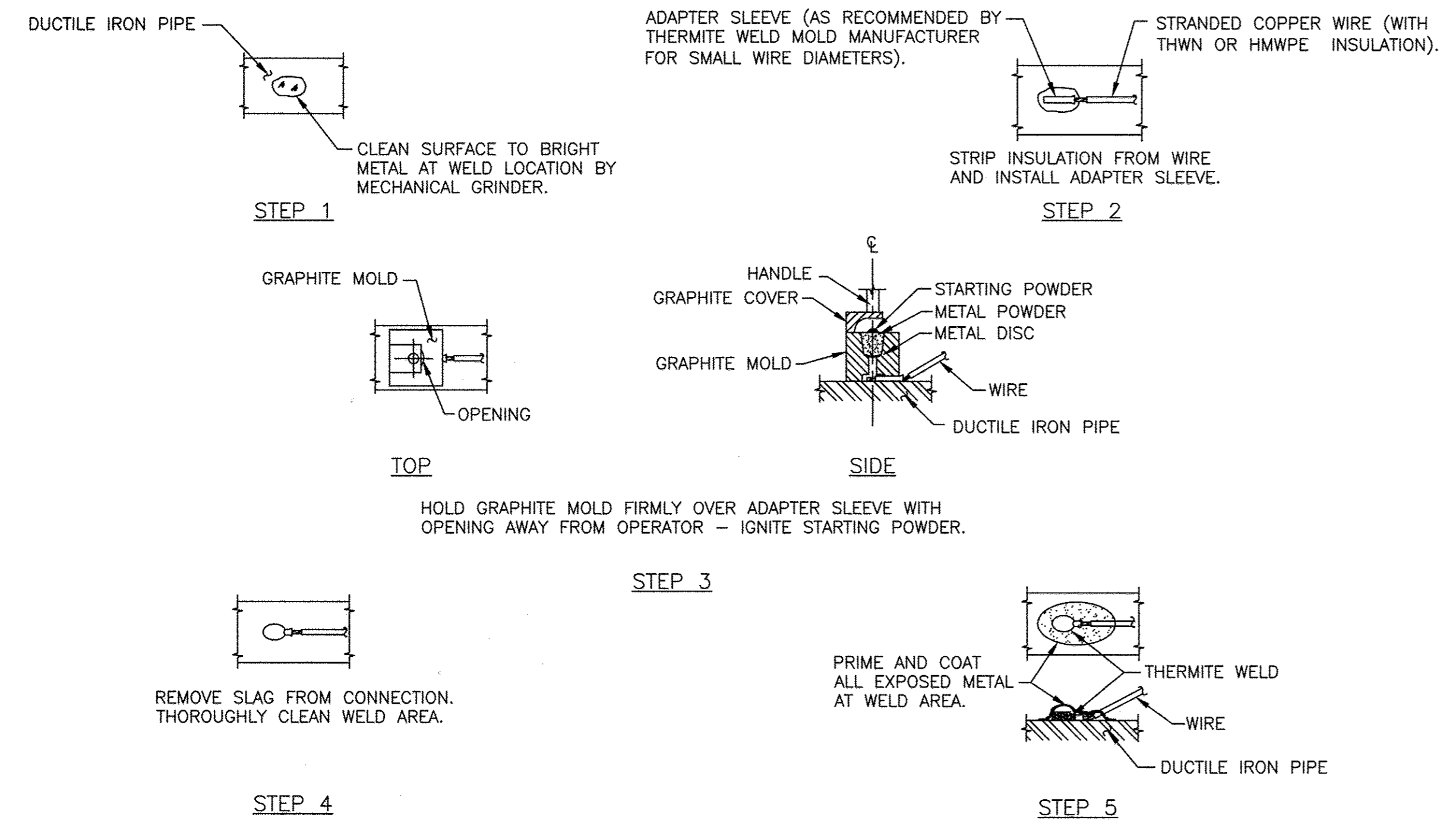
SCALE AS SHOWN  
SHEET 10 OF 13



WIRING SCHEDULE					
DESCRIPTION	WIRE	TEST STATION TERMINAL	AWG WIRE SIZE	TYPE OF INSULATION	COLOR OF INSULATION
NEW WATER MAIN	A	1	#8	THWN	BLUE
	B	3	#10	THWN	BLUE
PERMANENT REFERENCE ELECTRODE	C	6	#14	HMWPE	BLACK
ANODE HEADER CABLE	D1	4	#8	HMWPE	BLACK
	D2	7	#8	HMWPE	BLACK
EXISTING PIPE OR NEW PIPE TEE	E	2	#8	THWN	WHITE
	F	5	#10	THWN	WHITE

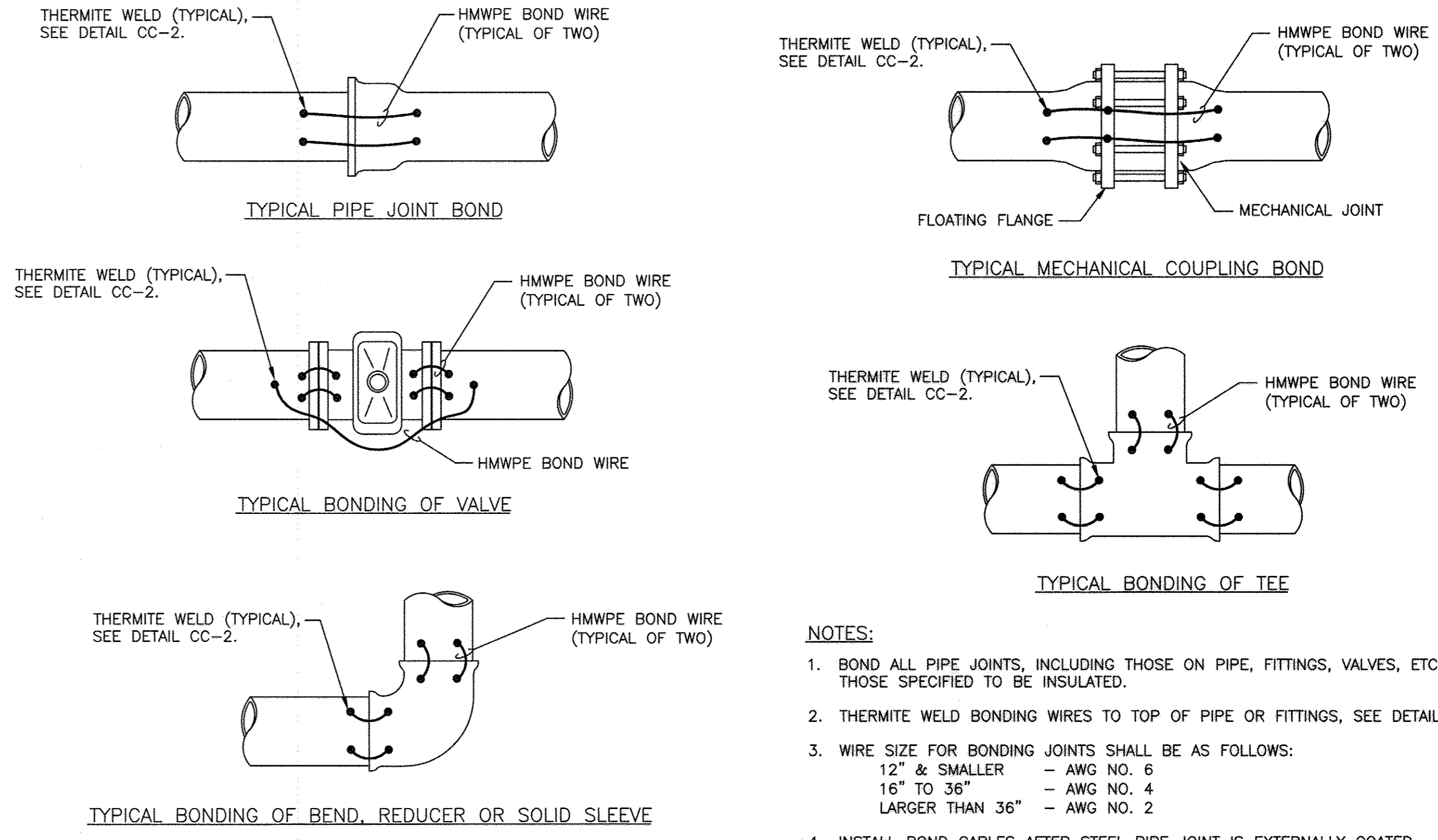
- NOTES:**
1. ANODES PLACED 18 INCHES BELOW BOTTOM OF PIPE AND AT A MINIMUM OF 12" FROM EDGE OF PIPE, SEE DETAIL CC-8.
  2. DO NOT SET TEST STATION IN ROADWAY. PLACE TEST BOX IN NON-PAVED AREA NEXT TO ROADWAY. ROUTE ALL WIRES THROUGH PVC CONDUIT TO FINAL TEST BOX LOCATION.
  3. INSTALL 0.01 OHM SHUNT BETWEEN TERMINALS #1 AND #4.
  4. MAINTAIN SUFFICIENT SLACK IN THE TEST WIRES SO THAT THE WIRES CAN EXTEND A MINIMUM OF 18 INCHES FROM THE TEST BOX.

**CC-1: INSULATING FLANGE TEST STATION WITH PREPACKAGED ANODES**  
NOT TO SCALE



**NOTE:**  
THERMITE WELDS TO DUCTILE IRON PIPE SHALL BE COATED WITH A PREFABRICATED ONE PIECE PLASTIC CAP FILLED WITH ELASTOMERIC MATERIAL, ROYSTON HANDY-CAP OR APPROVED EQUAL. REPAIR PIPE COATING AS RECOMMENDED BY COATING MANUFACTURER.

**CC-2: THERMITE WELD DETAIL**  
NOT TO SCALE



- NOTES:**
1. BOND ALL PIPE JOINTS, INCLUDING THOSE ON PIPE, FITTINGS, VALVES, ETC., EXCEPT THOSE SPECIFIED TO BE INSULATED.
  2. THERMITE WELD BONDING WIRES TO TOP OF PIPE OR FITTINGS, SEE DETAIL CC-2.
  3. WIRE SIZE FOR BONDING JOINTS SHALL BE AS FOLLOWS:  
12" & SMALLER - AWG NO. 6  
16" TO 36" - AWG NO. 4  
LARGER THAN 36" - AWG NO. 2
  4. INSTALL BOND CABLES AFTER STEEL PIPE JOINT IS EXTERNALLY COATED.

**CC-3: TYPICAL JOINT BONDING**  
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. 44991, EXPIRATION DATE: 01/09/2016.

DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

Director of Public Works: *[Signature]* 2/12/15  
Date: 2/12/15

Chief, Bureau of Engineering: *[Signature]* 2/12/15  
Date: 2/12/15

Chief, Bureau of Utilities: *[Signature]* 11/20/14  
Date: 11/20/14

Chief, Utility Design Division: *[Signature]* 2/10/15  
Date: 2/10/15

**RUSSELL CORROSION CONSULTANTS, INC.**  
7130 Minstrel Way, Suite 230  
Columbia, MD 21045  
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Fax - (410) 740-2541



DES: TRF	WRA	AS-BUILTS	2/17
DRN: FAE			
CHK: TRF			
BY NO.	REVISION	DATE	600' SCALE MAP NO. 30   BLOCK NO. 10

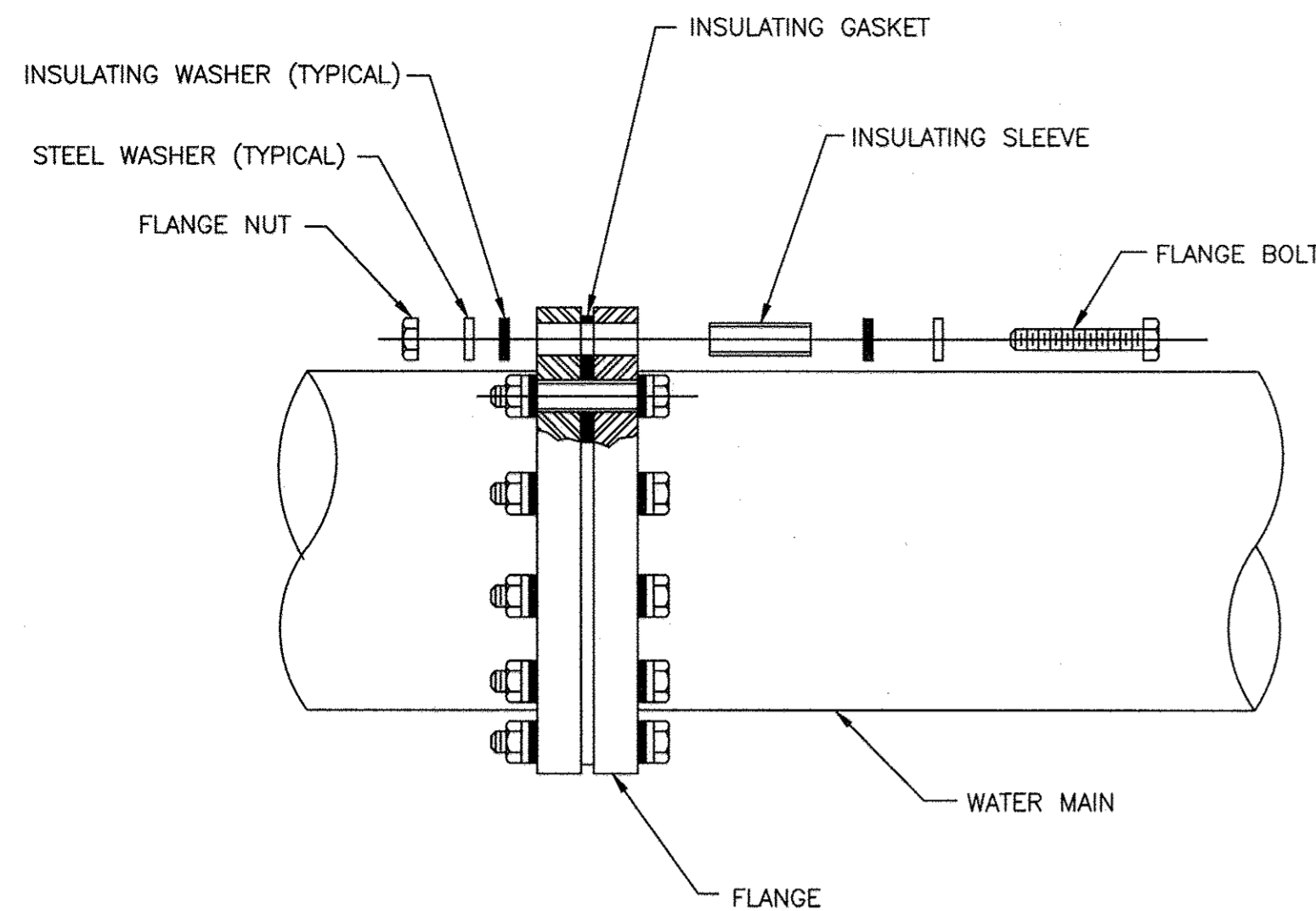
**CORROSION CONTROL DETAILS--1**

**GERWIG LANE 24" WATER MAIN RELOCATION**  
CORROSION CONTROL  
CAPITAL PROJECT NO. W-8248  
CONTRACT NO. 44-4841  
2ND ELECTION DISTRICT  
HOWARD COUNTY, MARYLAND

**AS-BUILT CP-2**

SCALE  
AS SHOWN

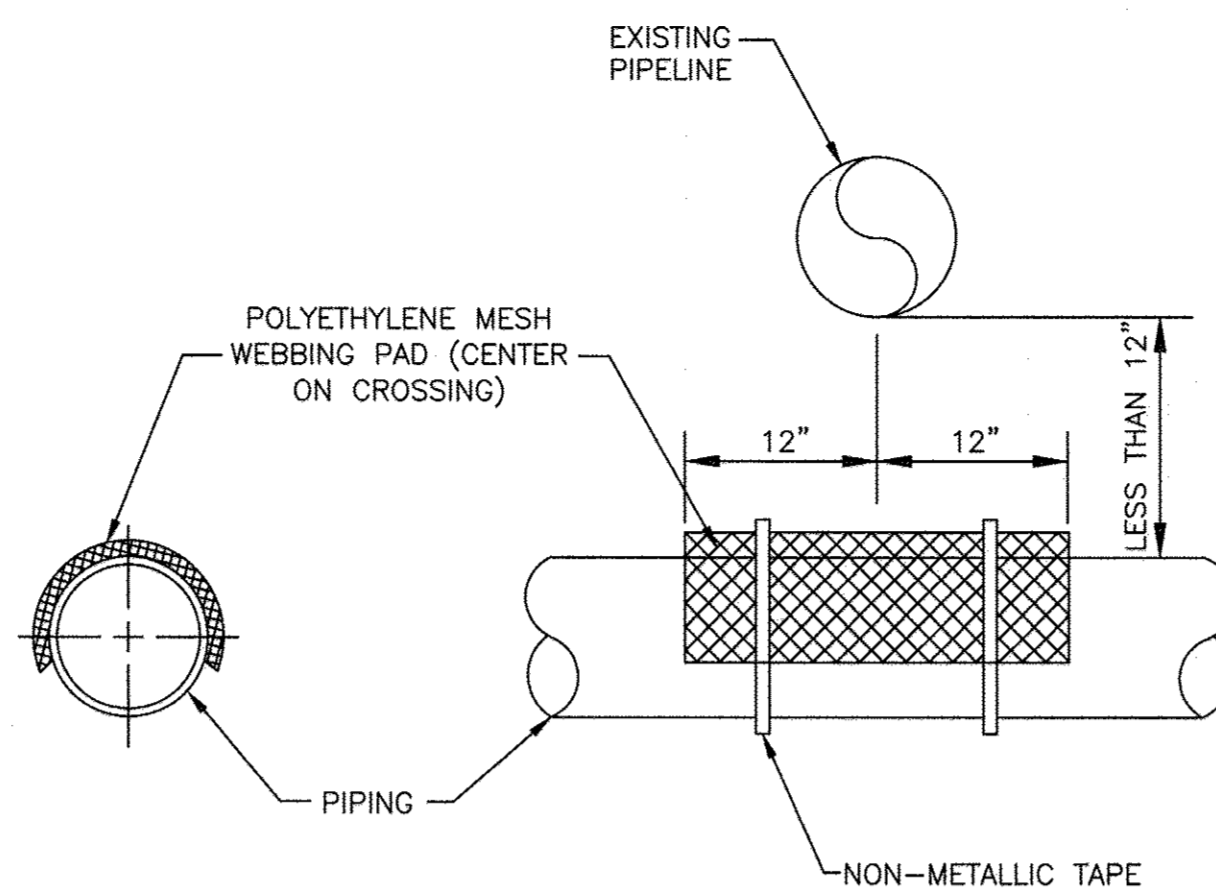
SHEET  
11 OF 13



**NOTES:**

1. AFTER ASSEMBLY, TEST TO VERIFY THAT ISOLATION IS EFFECTIVE. IF ISOLATION IS NOT EFFECTIVE, REPAIR AS NECESSARY AND RETEST. THIS PROCESS SHALL CONTINUE UNTIL ISOLATION IS VERIFIED AS EFFECTIVE.
2. AFTER VERIFYING EFFECTIVE ISOLATION, COAT THE ENTIRE FLANGE AND ALL EXPOSED METAL INCLUDING BOLTS, NUTS, AND WASHERS WITH FOUR COMPONENTS OF DENSO OR TRENTON WAX TAPE COATING SYSTEM. COATING SYSTEM SHALL EXTEND A MINIMUM OF 12 INCHES ON EITHER SIDE OF FLANGE.
3. ALL INSULATING FLANGES TO BE PROVIDED WITH TEST STATION, SEE DETAIL CC-1.

**CC-4: INSULATING FLANGE**  
NOT TO SCALE



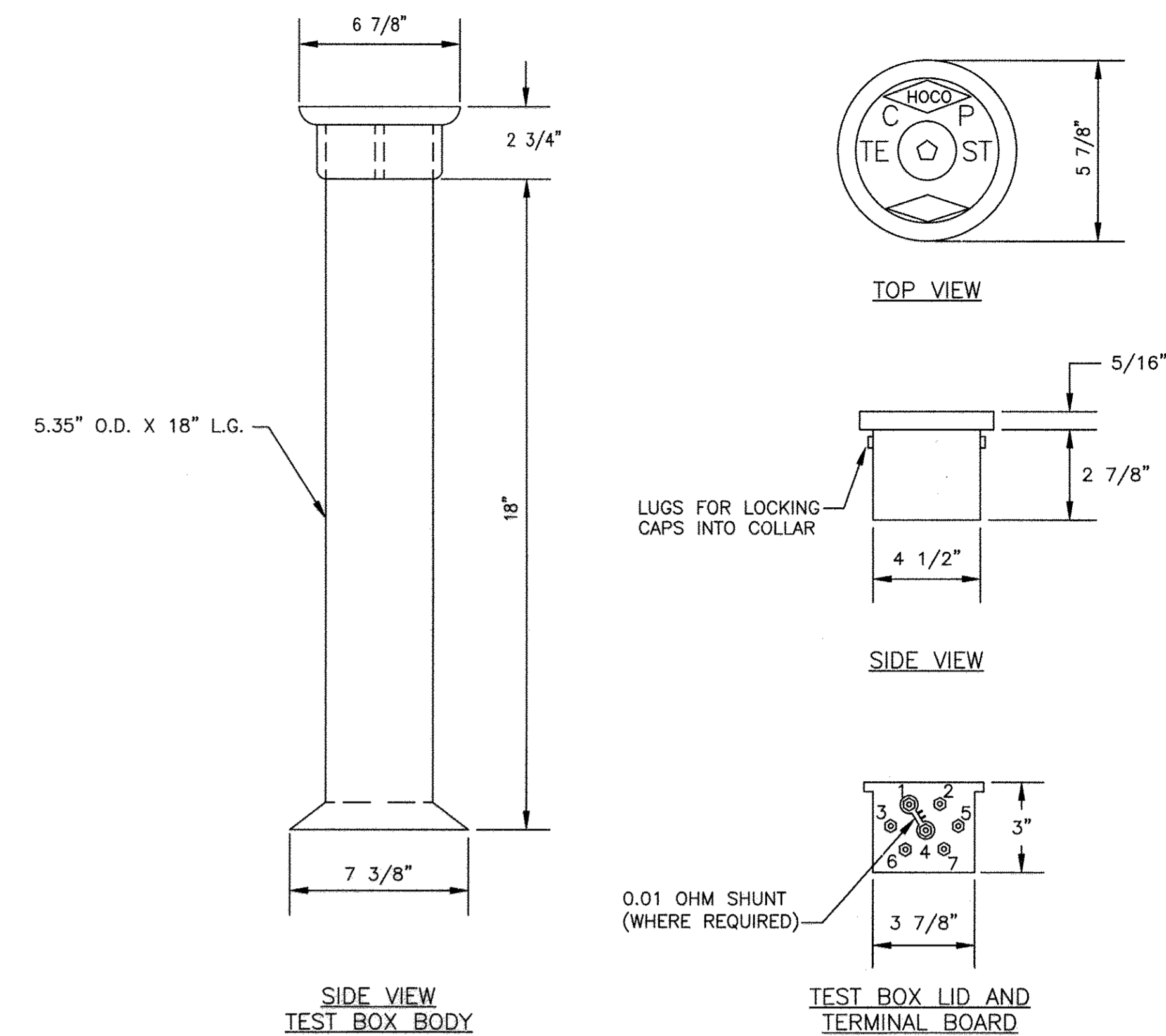
**NOTE:**

USE ONLY WHEN PIPES ARE LESS THAN 12" APART.

**NOTES:**

1. USE ONLY WHEN PIPES ARE LESS THAN 12" APART.
2. SEPARATOR MESH NOT REQUIRED IF EXISTING PIPELINE IS PVC OR HDPE.

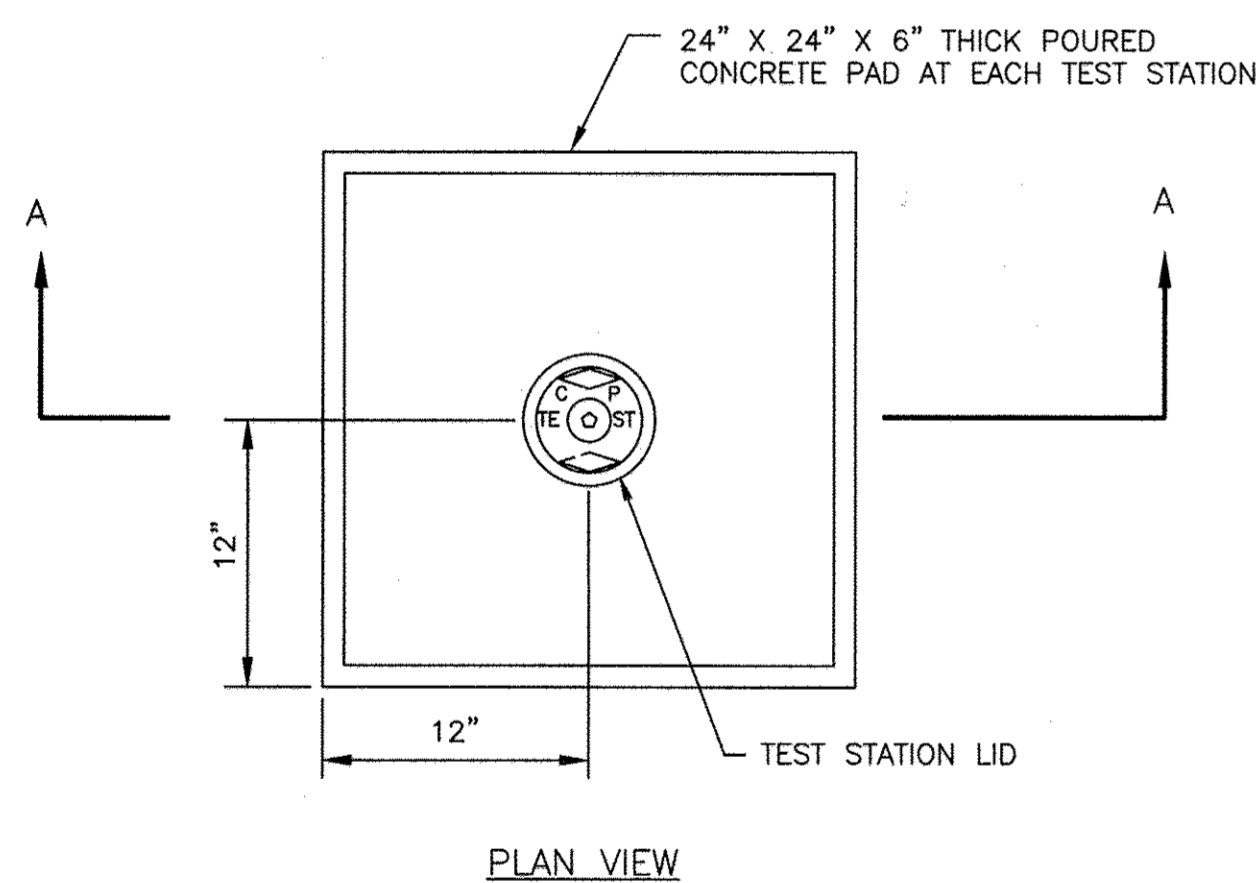
**CC-5: SEPARATOR TO AVOID ELECTRICAL CONTACT**  
NOT TO SCALE



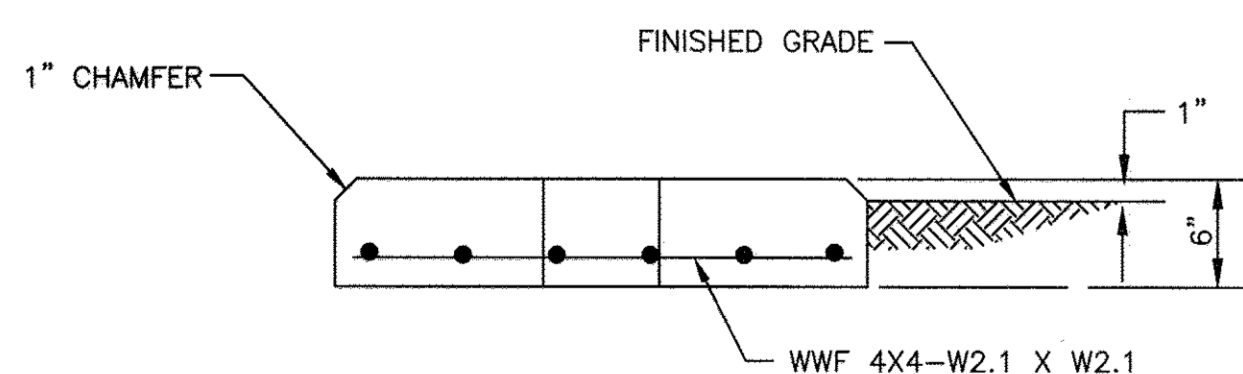
**SIDE VIEW TEST BOX BODY**

**TEST BOX LID AND TERMINAL BOARD**

**CC-6: TEST BOX**  
NOT TO SCALE



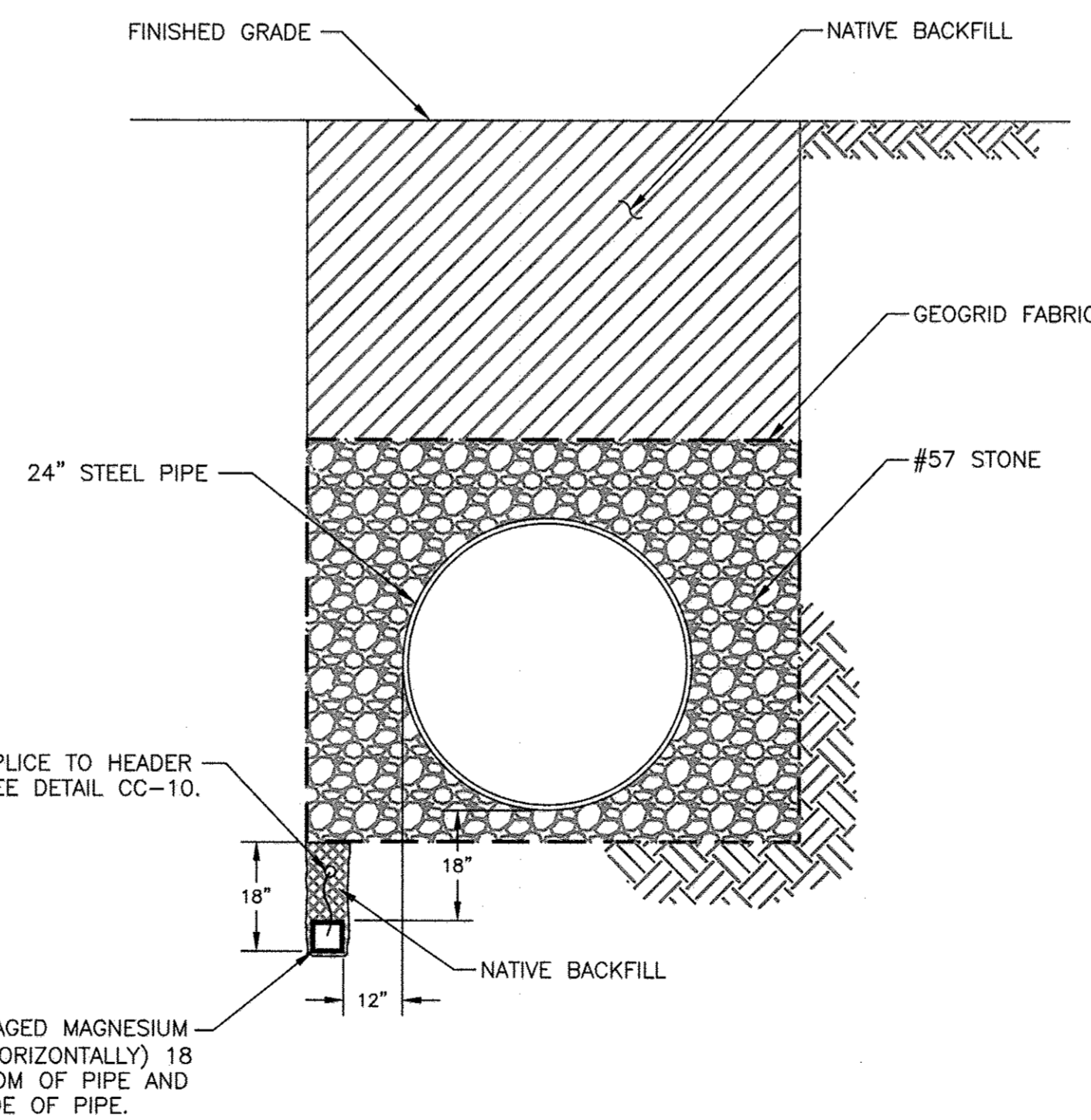
**PLAN VIEW**



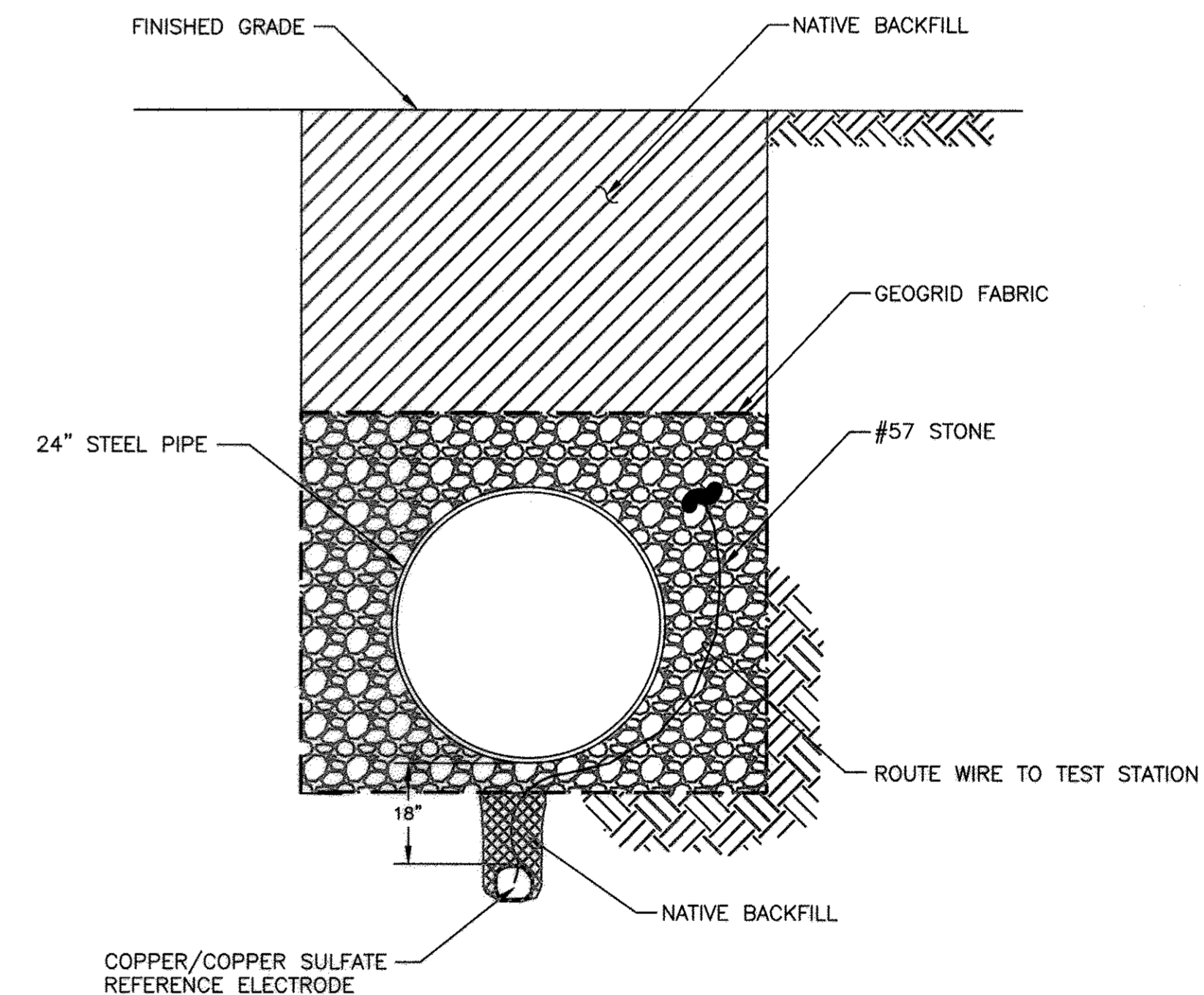
**SECTION A-A**

**CC-7: TEST STATION PAD**  
NOT TO SCALE

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**CC-8: HORIZONTAL INSTALLATION OF PREPACKAGED MAGNESIUM ANODE**  
NOT TO SCALE



**CC-9: INSTALLATION OF REFERENCE ELECTRODE**  
NOT TO SCALE

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DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

Director of Public Works: *John G. De...* 2/12/15  
 Chief, Bureau of Engineering: *Thomas E. Butler* 2/12/15  
 Chief, Bureau of Utilities: *Steve Chen* 1/22/14  
 Chief, Utility Design Division: *David...* 2/16/15

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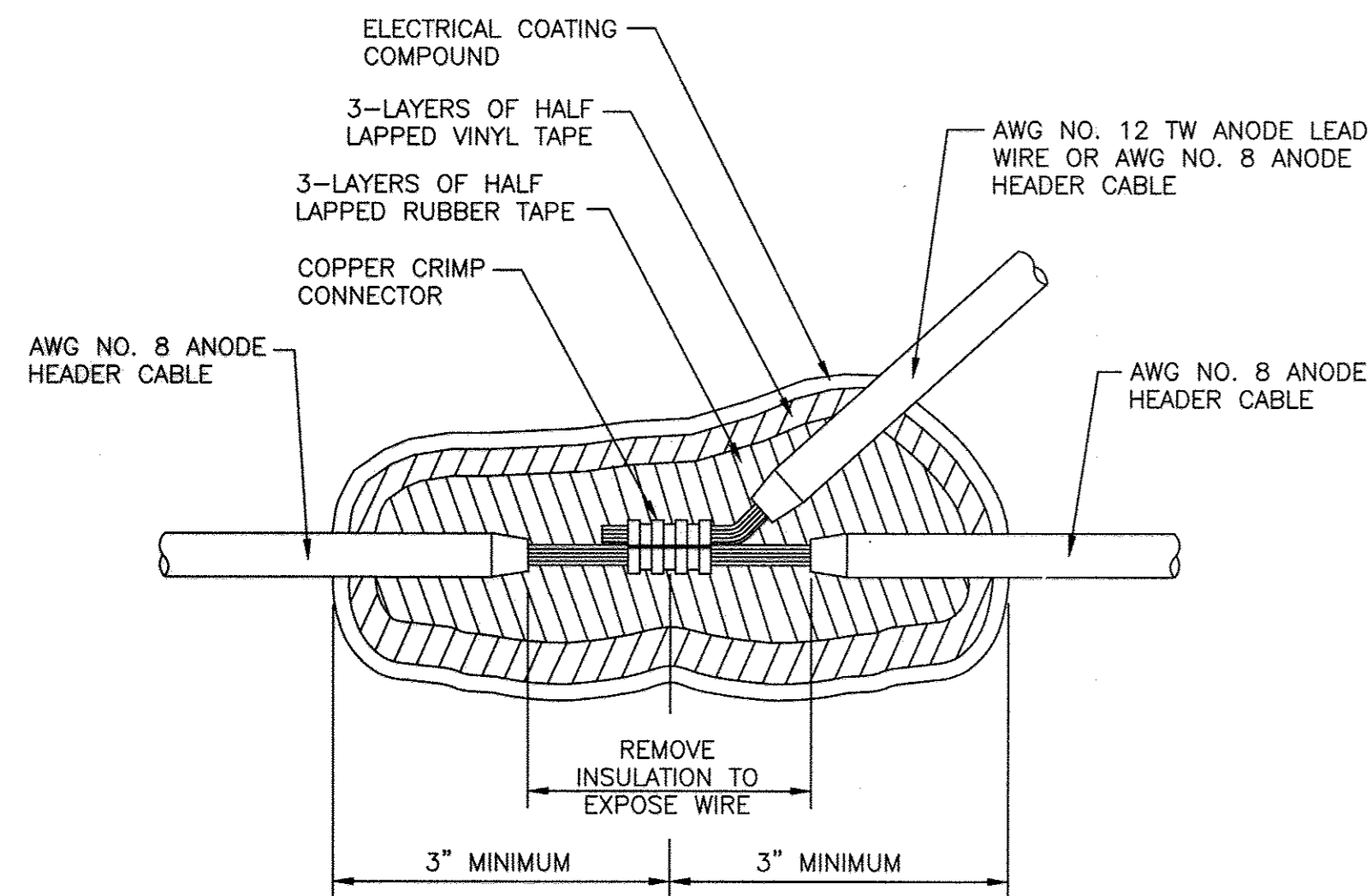
CORROSION CONTROL DETAILS-2

600' SCALE MAP NO. 30 BLOCK NO. 10

GERWIG LANE 24" WATER MAIN RELOCATION  
CORROSION CONTROL  
CAPITAL PROJECT NO. W-8248  
CONTRACT NO. 44-4841  
2ND ELECTION DISTRICT  
HOWARD COUNTY, MARYLAND

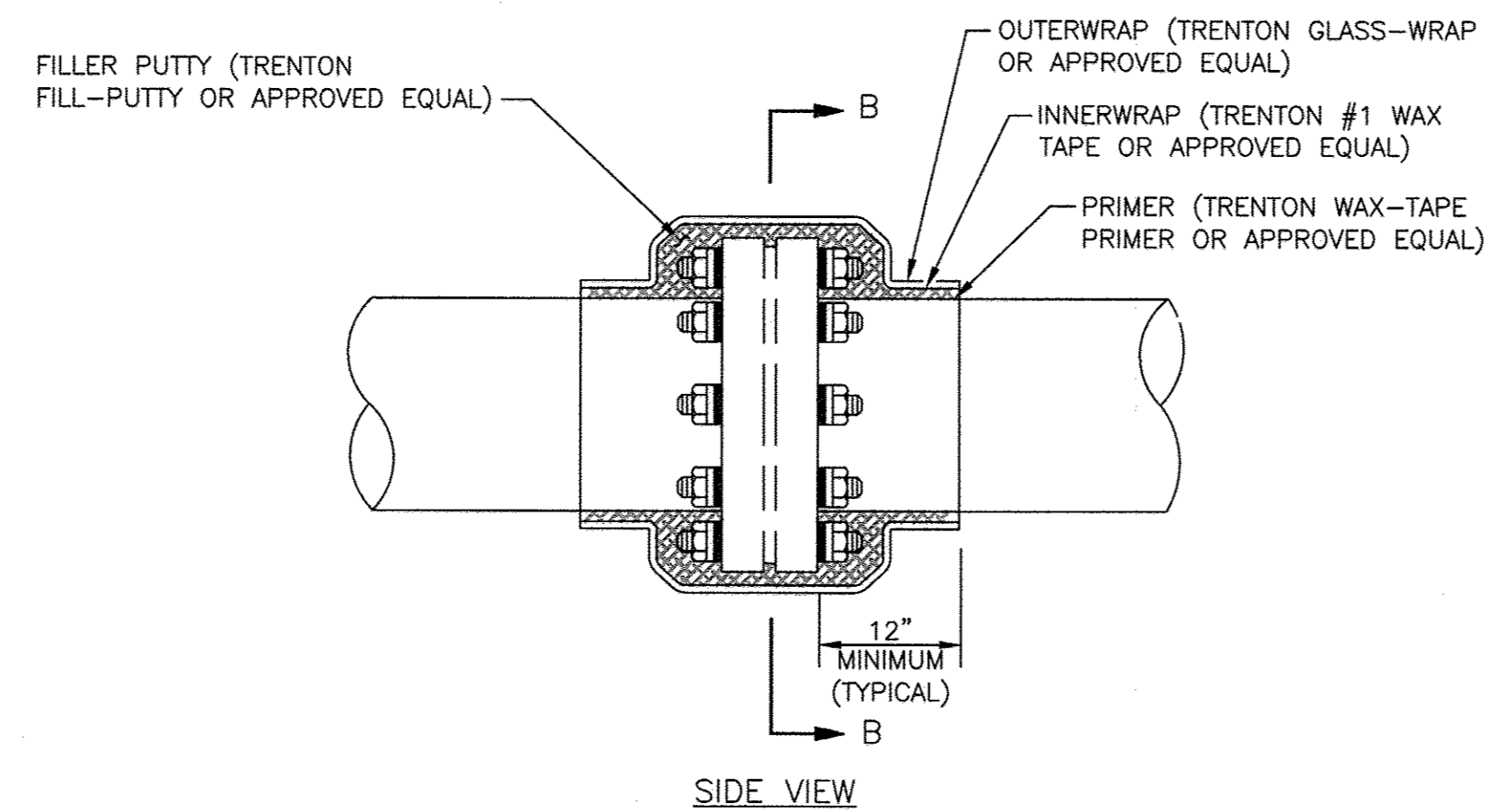
**AS-BUILT CP-3**

SCALE AS SHOWN  
SHEET 12 OF 13

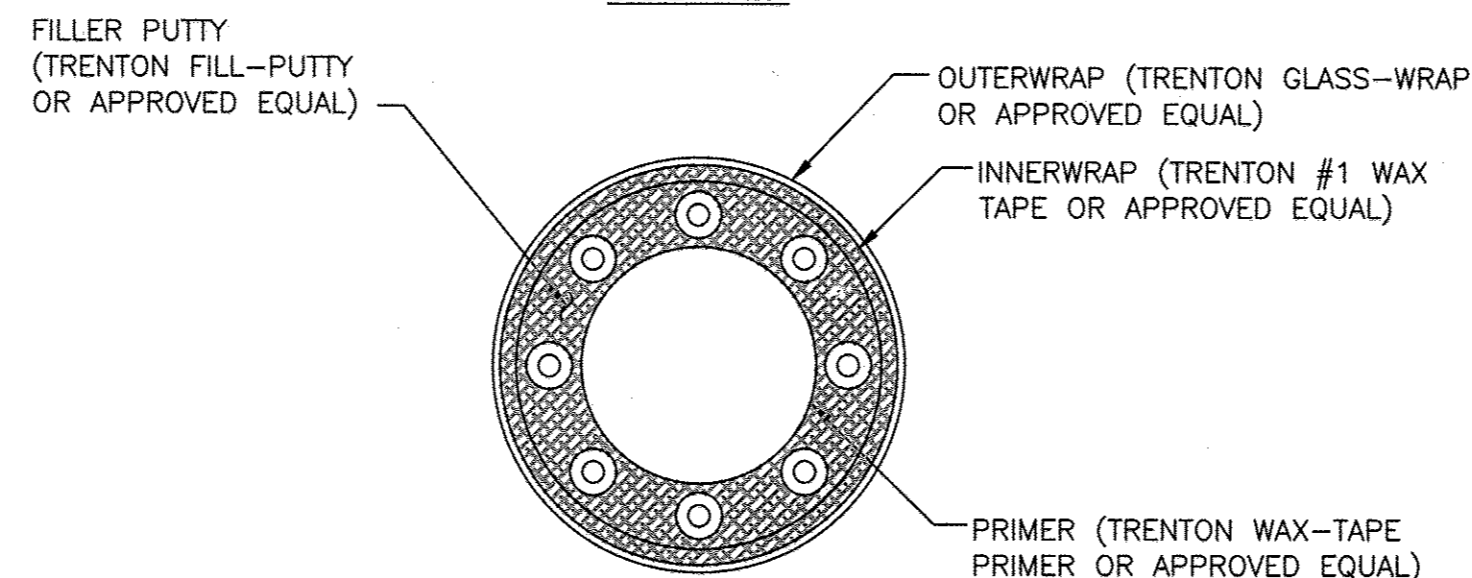


**CC-10: ANODE HEADER CABLE SPLICE**

NOT TO SCALE



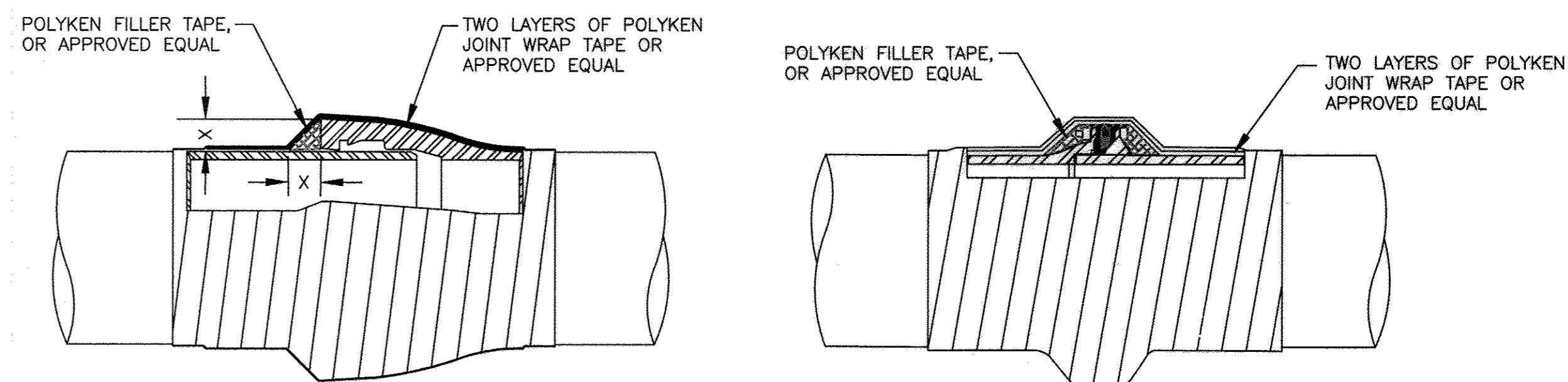
SIDE VIEW



SECTION VIEW B-B

**CC-11: COATING OF INSULATING FLANGE**

NOT TO SCALE



**BELL AND SPIGOT JOINT**

**MEGALUG JOINT**

**NOTES:**

1. CLEAN JOINT OF ALL FOREIGN MATERIAL BY WIRE BRUSHING.
2. APPLY COATING PRIMER TO JOINT.
3. INSTALL FILLER TAPE AS SHOWN AND FILL ALL VOIDS BETWEEN FLANGES AND BOLTS.
4. APPLY TWO LAYERS OF JOINT WRAP TAPE.
5. COAT MAIN FITTINGS IN A SIMILAR MANNER.
6. HEAT SHRINK SLEEVES WITH FILLER MATERIAL AS RECOMMENDED BY HEAT SHRINK SLEEVE MANUFACTURER MAY ALSO BE USED.

**CC-12: JOINT COATING FOR DIP**

NOT TO SCALE

HOWARD COUNTY 24" DIP WATER MAIN					
STATION NUMBER	TEST STATION TYPE	DETAIL NUMBER	NUMBER OF ANODES	INSULATING FLANGE	REFERENCE ELECTRODE
0+00	INSULATING FLANGE	CC-1	3	YES	YES
4+26	INSULATING FLANGE	CC-1	3	YES	YES

**CC-13: TEST STATION SCHEDULE**

NOT TO SCALE

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DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

*J. G. De...* 2/12/15  
DIRECTOR OF PUBLIC WORKS DATE

*Maria S. Butler* 2/12/15  
CHIEF, BUREAU OF ENGINEERING DATE

*D. Davis* 2/10/15  
CHIEF, UTILITY DESIGN DIVISION DATE

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**CORROSION CONTROL DETAILS-3**

600' SCALE MAP NO. 30 BLOCK NO. 10

GERWIG LANE 24" WATER MAIN RELOCATION  
CORROSION CONTROL  
CAPITAL PROJECT NO. W-8248  
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HOWARD COUNTY, MARYLAND

**AS-BUILT CP-4**

SCALE AS SHOWN

SHEET 13 OF 13