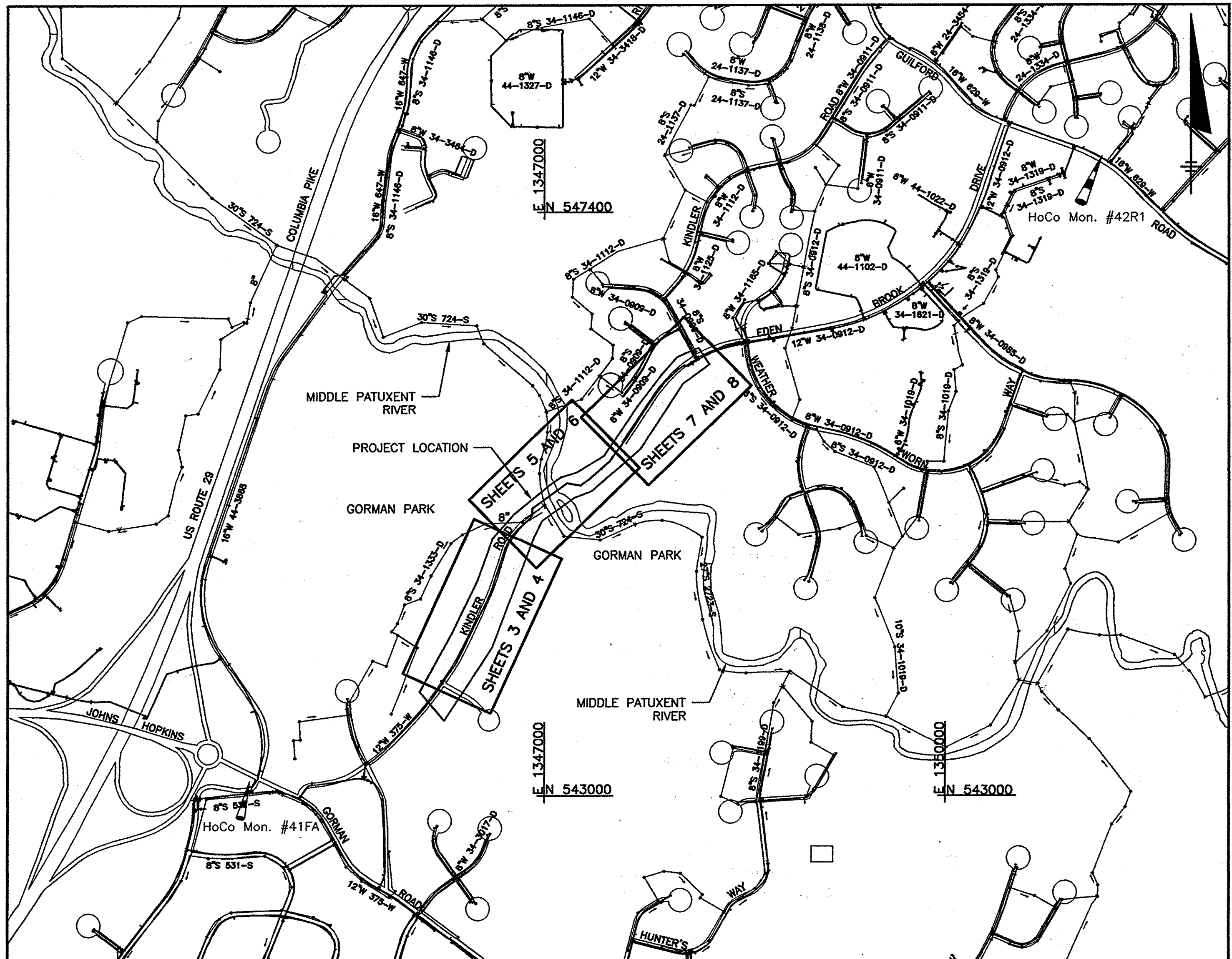


I:\HOWARD-CO.2343\45452-KINDLER-ROAD\DWG\DWG SHEETS\45452-001.DWG

GENERAL NOTES:

- THE LOCATIONS, ELEVATIONS, OR STATIONING SHOWN FOR EXISTING MAINS AND UTILITIES ARE APPROXIMATE. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE EXISTENCE (INCLUDING LOCATION AND ELEVATION) OF ALL BURIED UTILITIES. NOTE ALSO THAT OTHER EXISTING BURIED UTILITIES MAY EXIST WITHIN THE WORK AREA THAT ARE NOT 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 SURVEY PERFORMED ON DECEMBER, 2009 BY NXL CONSTRUCTION SERVICES, INC. THE COORDINATES SHOWN ON THE DRAWINGS ARE BASED ON THE MARYLAND STATE REFERENCE SYSTEM NAD '83/'91 AS PROJECTED BY HOWARD COUNTY GEODETIC CONTROL STATIONS NO. 41FA AND NO. 42R1.
- ALL VERTICAL CONTROLS ARE BASED ON NAVD '88. VERTICAL CONTROLS PROVIDED ON THE DRAWINGS ARE MAGNETIC NAILS IN PAVEMENT OR IRON ROD WITH CAP IN GROUND.
- 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, ANY COST INCURRED BY THE OWNER FOR BRACING OF ADDITIONAL POLES OR DAMAGES SHALL BE DEDUCTED FROM MONIES OWED THE CONTRACTOR. THE CONTRACTOR SHALL COORDINATE WITH THE UTILITY COMPANIES TO SCHEDULE THE BRACING OF THE POLES.
- FOR DETAILS NOT SHOWN ON THE DRAWING, AND FOR MATERIALS AND CONSTRUCTION METHODS, USE HOWARD COUNTY DESIGN MANUAL, VOLUME IV, STANDARD SPECIFICATIONS AND DETAILS FOR CONSTRUCTION (LATEST EDITION). THE CONTRACTOR SHALL HAVE A COPY OF VOLUME IV ON THE JOB.
- WHERE TEST PITS HAVE BEEN MADE ON EXISTING UTILITIES, THEY ARE NOTED BY THE SYMBOL AT THE LOCATIONS OF THE TEST PITS. A NOTE OR NOTES CONTAINING THE RESULTS OF THE TEST PITS IS INCLUDED ON THE DRAWINGS OR WITHIN THE SPECIFICATIONS. AT THE LOCATION OF THE EXISTING MAIN AND FOR 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:
 AT&T (CONSTRUCTION SERVICES).....1-800-252-1133
 BGE (CONSTRUCTION SERVICES).....410-850-4620
 BGE (EMERGENCY).....410-685-1400
 BUREAU OF UTILITIES.....410-313-4900
 COLONIAL PIPELINE COMPANY.....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.
- CONTRACTOR SHALL REMOVE TREES, STUMPS, AND ROOTS ALONG LINE OF EXCAVATION. PAYMENT FOR SUCH REMOVAL SHALL BE INCLUDED IN THE UNIT PRICE BID FOR CONSTRUCTION OF THE MAIN.
- THE CONTRACTOR SHALL NOTIFY THE BUREAU OF HIGHWAYS, HOWARD COUNTY, AT (+10)-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.
- TOPS OF ALL WATER MAINS SHALL HAVE A MINIMUM OF 4'-0" OF COVER UNLESS OTHERWISE NOTED.
- THE CONTRACTOR SHALL NOT OPERATE ANY WATER MAIN VALVES ON THE EXISTING WATER SYSTEM.
- ALL TIE-INS TO EXISTING WATER MAINS SHALL BE COORDINATED WITH THE HOWARD COUNTY BUREAU OF UTILITIES AT LEAST 10 WORKING DAYS PRIOR TO SCHEDULING WORK.
- EXISTING STORM DRAINS DISTURBED BY THE CONSTRUCTION SHALL BE REPLACED IN KIND AT THE SAME LINE, GRADE, AND SHAPE AS THE EXISTING STORM DRAINS OR SWALES, INCLUDING RIP-RAP LINING IF PREVIOUSLY EXISTING.
- SALVAGEABLE VALVES AND APPURTENANCES TO BE REMOVED SHALL BE DELIVERED TO THE HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS - BUREAU OF UTILITIES AS DIRECTED BY THE ENGINEER OR COUNTY.
- IN ACCORDANCE WITH 10 STATE STANDARD REQUIREMENTS - ALL CROSSINGS OF THE NEW WATER MAIN WITH EXISTING SANITARY OR STORM SEWER PIPING (RESULTING IN LESS THAN 18" OF SEPARATION) SHALL BE ACCOMPLISHED BY CENTERING A FULL LENGTH OF THE NEW WATER MAIN PIPING AT THE CROSSING TO MAXIMIZE THE DISTANCE OF ANY WATER MAIN JOINT FROM THE CROSSING.
- NO WATER SHALL BE DISCHARGED FROM THE EXISTING WATER MAIN TO THE ENVIRONMENT, WITHOUT FIRST DECHLORINATING. THE CONTRACTOR SHALL SUBMIT THE DECHLORINATION METHOD TO THE OWNER AND ITS ENGINEER FOR REVIEW.
- ALL PROPOSED PVC C900 WATER MAIN PIPING SHALL BE PRESSURE CLASS 200 (DR 14).
- ALL HYDRANTS, MAINLINE GATE VALVES, WATER SERVICE VALVES AND PIPING, AND SIMILAR (FOR BOTH PERMANENT AND TEMPORARY INSTALLATIONS) SHALL BE RATED FOR A MINIMUM OPERATING PRESSURE OF 250 PSI.
- PVC WATER MAINS SHALL BE ALLOWED TO CHANGE VERTICAL OR HORIZONTAL DIRECTION ONLY AT PVC HIGH DEFLECTION (HD) COUPLINGS, 5-DEGREE SWEEPS OR STANDARD BENDS. DEFLECTIONS MADE AT STANDARD PIPE JOINTS AND/OR PIPE LENGTHS BENT TO ACHIEVE CURVATURE OF THE WATER MAIN SHALL NOT BE ALLOWED UNDER ANY CIRCUMSTANCES.
- THE SOIL AROUND THE HIGH-DEFLECTION COUPLINGS AND 5-DEGREE SWEEPS SHALL BE BEDDED AND THOROUGHLY COMPACTED IN ACCORDANCE WITH SECTION 1000.03.07 OF THE HOWARD COUNTY VOLUME IV DESIGN MANUAL STANDARD SPECIFICATIONS OR SHALL BE RESTRAINED TO THE ADJOINING PIPE.
- HIGH DEFLECTION COUPLINGS ARE LIMITED TO A MAXIMUM DEFLECTION OF 3 DEGREES. WHEN NOT RESTRAINED, BELL STOPS (EBAA IRON, INC. MEGA-STOP SERIES 5000 OR APPROVED EQUAL) SHALL BE PROVIDED ON EACH SIDE OF THE HD COUPLINGS FOR THE PREVENTION OF "OVER-INSERTION".
- FIVE (5) DEGREE BENDS SHALL BE ACCOMPLISHED USING SWEEPS, WHICH ALONG WITH HIGH DEFLECTION COUPLINGS, SHALL BE THE PVC PUSH-ON TYPE WITH RUBBER GASKETED JOINTS APPROPRIATE FOR PVC C900 WATER MAIN PIPE (INJECTION MOLDED PER AWWA C907-04 FOR PRESSURE CLASS 150 PVC PIPE; FABRICATED PER AWWA C900 FOR PRESSURE CLASS 200 PVC PIPE).
- TEES, CROSSES, CAPS, BENDS GREATER THAN 5 DEGREES, AND SIMILAR FITTINGS THAT REQUIRE RESTRAINED JOINTS SHALL BE DUCTILE IRON MECHANICAL JOINT (AWWA C153) FITTINGS APPROPRIATE FOR PVC C900 WATER MAIN PIPE. ALL DUCTILE IRON FITTINGS SHALL BE FUSION BONDED EPOXY INSIDE AND OUTSIDE.



WATER AND SEWER CODE FOR COUNTY USE ONLY:

NO. OF WATER CONNECTIONS:	0
NO. OF SEWER CONNECTIONS:	N/A
DRAINAGE AREA:	MIDDLE PATUXENT
TYPE OF BUILDING:	N/A
NO. OF PARCELS:	N/A

VICINITY MAP
SCALE: 1" = 600'

KINDLER ROAD-EDEN BROOK DRIVE WATER MAIN CONNECTION

CAPITAL PROJECT: W-8297 CONTRACT NO.: 44-4675 HOWARD COUNTY, MARYLAND DEPARTMENT OF PUBLIC WORKS

RECORD DRAWINGS TO THE BEST OF THE ENGINEER'S KNOWLEDGE INFORMATION AND BELIEFS AND THAT THESE DRAWINGS SUBSTANTIALLY REPRESENT THE PROJECT AS CONSTRUCTED.

O'BRIEN & GERE ENGINEERS, INC.
BY: [Signature]

OWNERS/DEVELOPER 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 INSPECTIONS BY THE HOWARD SOIL CONSERVATION DISTRICT.

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

ENGINEERS 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.

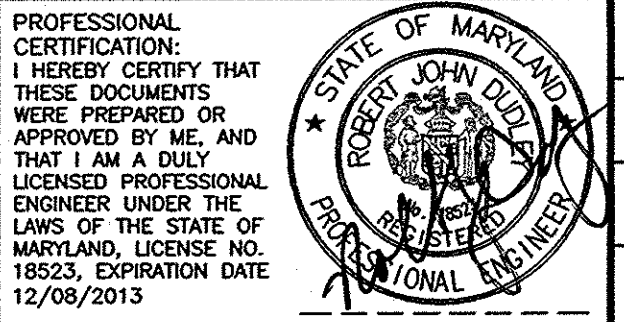
DEPARTMENT OF RECREATION AND PARKS
HOWARD COUNTY, MARYLAND

[Signature] 10/7/13
DIRECTOR OF RECREATION AND PARKS

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

[Signature] 10/13/13
DIRECTOR OF PUBLIC WORKS

O'BRIEN & GERE
4201 MITCHELLVILLE ROAD
SUITE 500
BOWIE, MD 20716
PHONE: 301-731-5622



DSN. BY:	SSD		
DRN. BY:	RPW		
CHK. BY:	RJD	RJD	1 AS-BUILT/RECORD DRAWING 6/14
		RJD	0 AS ISSUED FOR BID 09/13
DATE:	AUG, 2013	BY NO.	REVISION

DATE:	6/14	DATE:	6/14
Signature of Engineer - Registration Number	22749	DATE	9-30-13
COVER SHEET			
600' SCALE MAP NO. 42		BLOCK NO. 7	

QUANTITIES

ITEM	ESTIMATED QUANTITY	AS-BUILT	MATERIAL	SUPPLIER
WATER MAINS				
12" PVC PIPE	3,032 LF.	3,080	C900	FERGLUSON
12" GATE VALVE	3 EA.	3	MULLER	FERGLUSON
FIRE HYDRANT ASSEMBLIES	5 EA.	5	MULLER FIRE HYDRANT	FERGLUSON

GENERAL NOTES: (CONTINUED)

- PIPE RESTRAINT SHALL BE PROVIDED IN THE FOLLOWING MANNER USING SYSTEMS MANUFACTURED BY EBAA IRON, INC. OR APPROVED EQUAL:
 1) ALL DUCTILE IRON MECHANICAL JOINT FITTINGS (INCLUDING MECHANICAL JOINT HYDRANT CONNECTIONS) SHALL BE RESTRAINED USING THE SERIES 2000 PVC MECHANICAL JOINT FITTING RESTRAINT SYSTEM.
 2) ALL FIVE (5) DEGREE SWEEPS SHALL BE RESTRAINED USING THE SERIES 1500 PVC FITTING RESTRAINT SYSTEM.
 3) HIGH DEFLECTION COUPLINGS AND PUSH-ON BELL AND SPIGOT PIPE JOINTS SHALL BE RESTRAINED (WHERE NOTED ON THE PROFILES) USING THE SERIES 1500 PVC FITTING RESTRAINT SYSTEM. BEND HARNESSING RODS TO MATCH THE ANGLE AT THE HD COUPLINGS.
- INSTALL CONCRETE ANCHOR COLLARS WHERE SHOWN, SPECIFIED, OR DIRECTED, AND WHEN SUFFICIENT ROOM EXISTS (AS DETERMINED BY THE ENGINEER), INSTALL CONCRETE BUTTRESSING AT ALL FITTINGS/DEFLECTIONS GREATER THAN 5 DEGREES, TEES, CAPS, HORIZONTAL AND VERTICAL BENDS, AND HYDRANT INSTALLATIONS SHOWN WITH OR WITHOUT HARNESSING RESTRAINT PER HOWARD COUNTY DETAILS W-2.1, W-2.2 AND W-2.3.
- MAINLINE VALVES SHALL BE STRAPPED TO ADJACENT TEES OR CROSSES PER HOWARD CO STD. DET W-2.13. MAINLINE VALVES WHICH ARE NOT SHOWN ADJACENT TO TEES OR CROSSES SHALL BE ANCHORED TO A CONCRETE BLOCK IN ACCORDANCE WITH HOWARD CO STD. DETAIL W-5.01. VALVES ON HYDRANT LEADS SHALL BE RESTRAINED USING THE SERIES 2000 PVC M.J. FITTING RESTRAINT SYSTEM BY EBAA IRON, INC. OR APPROVED EQUAL.
- FIRE HYDRANTS SHALL BE SET TO THE BURY LINE ELEVATION SHOWN ON THE DRAWINGS (TO THE NEAREST 6" INCREMENT THAT PLACES THE HYDRANT BREAKAWAY FLANGE AT OR ABOVE GRADE). ALL FIRE HYDRANTS SHALL BE INSTALLED IN ACCORDANCE WITH STANDARD DETAILS. THE SOIL AROUND THE FIRE HYDRANT SHALL BE COMPACTED IN ACCORDANCE WITH SECTION 1000 AND SECTION 1005 OF THE STANDARD SPECIFICATIONS. FIRE HYDRANTS SHALL BE INSTALLED PER HOWARD COUNTY STANDARD DETAIL NOS. W-1.11 TO W-1.12.
- CONTINUITY TEST STATIONS SHALL BE PLACED ADJACENT TO EACH FIRE HYDRANT. REFER TO THE HOWARD COUNTY STANDARD FIRE HYDRANT CONTINUITY TEST STATION DETAIL W-1.15.
- PIPE TRENCHING AND PAVEMENT REPLACEMENT SHALL BE PERFORMED IN ACCORDANCE WITH HOWARD COUNTY STANDARDS, INCLUDING STANDARD DETAIL G-2.12, "PIPE TRENCH PLASTIC AND COPPER" AND STANDARD DETAIL G-4.01, "UTILITY TRENCH ROADWAY REPAIRING", RESPECTIVELY.
- TEMPORARY PAVING PATCH FOR UTILITY TRENCH REPAIR OF HMA PAVED ROADS AND DRIVEWAYS SHALL CONSIST OF 18-INCHES OF DAMPENED AND COMPACTED NO. 57 AGGREGATE SUB-BASE OVERLAYED WITH TWO INCHES OF HMA BASE COURSE PLACED FLUSH WITH THE ADJOINING PAVEMENT SURFACE. REFILL ALL DEPRESSIONS AND SETTLEMENT (AS THEY DEVELOP) WITH THE SPECIFIED MATERIALS. PRIOR TO PLACEMENT OF THE PERMANENT PAVING SECTION, REMOVE THE TOP SIX INCHES OF MATERIAL, SCARIFY, RECOMPACT, AND TACK COAT THE REMAINING 12-INCH MINIMUM NO. 57 AGGREGATE SUB-BASE, AND REPAVE THE UTILITY TRENCH (AND WHERE REQUIRED, THE REMAINING PORTION OF THE TRAVEL LANE) ALL IN ACCORDANCE WITH HOWARD COUNTY STANDARD DETAIL G-4.01. THE HMA MATERIALS SHALL MEET THE TYPICAL SUPERPAVE MIX SPECIFIED IN HOWARD COUNTY STANDARD DETAIL R-2.01, PG 64-22, LEVEL 1 (EASL).
- PIPE TEST PRESSURE SHALL BE IN ACCORDANCE WITH HOWARD COUNTY STANDARD SPECIFICATION SECTION 1006.02. THE PIPELINE DESIGN IS IN ACCORDANCE WITH HOWARD COUNTY STANDARD SPECIFICATION SECTION 1002. THRUST RESTRAINT SHOULD BE IN ACCORDANCE WITH HOWARD COUNTY STANDARD DETAILS W-2.21, W-2.22 AND W-2.23.
- SEE DEPARTMENT OF RECREATION AND PARKS GENERAL CONDITIONS OF RIGHT-OF-ENTRY ON SHEET 2.
- FOR PVC WATER MAINS, ALL RECORDS FOR THE QUALITY CONTROL AND QUALIFICATION TEST REQUIREMENTS NOTED IN SECTION 51 OF THE AWWA STANDARD C900 FOR PVC PRESSURE PIPE SHALL BE SUBMITTED WITH THE PIPE/MATERIAL CERTIFICATIONS OR SHOP DRAWINGS PRIOR TO APPROVAL OF THE MATERIAL FOR USE. THE TEST RECORDS SHALL BE FOR THE PIPE (INSTALLED UNDER THIS CONTRACT). ALL PVC PIPE SHALL CONTAIN MARKINGS TO ALLOW CROSS REFERENCING OF THE PLOG SUPPLIED TO THE TEST RECORDS RECEIVED.

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AS-BUILT 6/2014

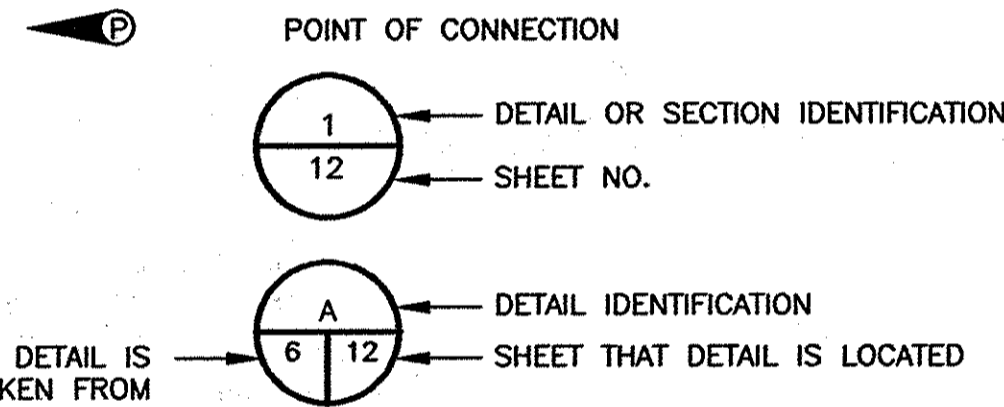
**KINDLER ROAD - EDEN BROOK DRIVE
WATER MAIN CONNECTION**

CAPITAL PROJECT: W-8297
CONTRACT NO.: 44-4675
ELECTION DISTRICT: 6
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 1 OF 20

LEGEND (PLAN AND PROFILE SHEETS)

EP	SIDEWALK	MB	MAIL BOX
EP	PAVEMENT (EDGE)	OV	VENT
EP	GRAVEL (EDGE)	SDMH	STORM DRAIN MH
EP	CONCRETE (EDGE)	HW	HEADWALL/ENDWALL
EP	BUILDING	DIG	DROP INLET GRATE
EP	CENTERLINE	DI	DROP INLET
EP	SHA THRU HIGHWAY RIGHT-OF-WAY	RS	ROAD SIGN
EP	PROPERTY LINE/RIGHT-OF-WAY	TEJB	TELE. JUNC. BOX
EP	EASEMENT	UP	UTILITY POLE
EP	GUARDRAIL	LP	LIGHT POLE
EP	FENCE (WOOD)	LP	LAMP POST
EP	FENCE IRON, RAIL	GW	GUY WIRE
EP	FENCE(CHAINLINK)	GL	GROUND LIGHT
EP	UNDERGROUND ELECTRIC LINE	ET	ELEC. TRANSFORMER
EP	UNDERGROUND TELEPHONE LINE	EMH	ELEC. MH
EP	UNDERGROUND CABLE LINE	EJCB	ELEC. JUNC. BOX
EP	UNDERGROUND FIBER OPTIC LINE	SE	SPOT ELEVATION
EP	OVERHEAD UTILITIES	CB	CABLE BOX
EP	EX. SANITARY SEWER	SSM	SAN. SEW. MH
EP	STORM DRAIN	CO	CLEAN OUT
EP	EX. WATER MAIN	EWV	EX. WATER VALVE
EP	PROPOSED WATER MAIN	PWV	PROP. WATER VALVE
EP	WETLANDS BOUNDARY	WM	WATER METER
EP	WETLANDS BUFFER BOUNDARY	WMAV	WATER MAIN VALVE VAULT
EP	GAS	IV	IRRIGATION VALVE
EP	DITCH	EFH	EX. FIRE HYDRANT
EP	STREAM	PFH	PROP. FIRE HYDRANT
EP	WOODLINE	PFHWS	PROP. FIRE HYDRANT W/ TEST STATION
EP	BUSH	GP	GAS VENT PIPE
EP	RIP-RAP DITCH	GV	GAS VALVE
EP	MILL AND OVERLAY	GP	GAS PUMP
EP	BORING LOCATION	GLM	GAS LINE MARKER
EP	TEST PIT LOCATION	IPF	IRON PIPE FOUND
EP	BM #	REC	REBAR AND CAP
EP	REBAR	TR	TRAVERSE STATION
EP	FLY STATION		
EP	ABANDON IN PLACE EX. WM		
EP	ASPHALT PAVEMENT		



ABBREVIATIONS:

APPROX.	APPROXIMATE	ARV MH	AIR RELEASE MANHOLE
BE	BURY ELEVATION	BV	BUTTERFLY VALVE
BOE	BALTIMORE GAS & ELECTRIC	BL	BURY LENGTH
BLDG.	BUILDING	BOT	BOTTOM
C&G	CURB AND GUTTER	CMP	CORRUGATED METAL PIPE
CONC.	CONCRETE	CONSTR.	CONSTRUCTION
CONTR.	CONTRACT	COPLS.	COUPLING
DEG.	DEGREE	DET OR DTL	DETAIL
DIP	DUCTILE IRON PIPE	DR	DRIVE
EA	ELECTRIC	E OR ELEC	ELECTRIC
ELEV	ELEVATION	ESMT	EASEMENT
EX	EXISTING	EX	EXISTING
FLG	FLANGE	FH	FIRE HYDRANT
FMV	FLOW METER VAULT	G	GAS
GCS	GEODETIC CONTROL SYSTEM	GV	GATE VALVE
HD	HORIZONTAL BEND	H	HIGH DEFLECTION
HC	HOWARD COUNTY	HCR	HORIZONTAL CURVE RADIUS
HDP	HORIZONTAL DEFLECTION POINT	HDP	HORIZONTAL DEFLECTION POINT
HOPE	HIGH DENSITY POLYETHYLENE	HORIZ	HORIZONTAL
INT	INVERT	JT	JOINT
LF	LINEAR FOOT	LD	LIMIT OF DISTURBANCE
MAC	MACADAM	MBR	MINIMUM BENDING RADIUS
MD	MARYLAND	MH	MANHOLE
MIN	MINIMUM	MJ	MECHANICAL JOINT
NO	NOT IN CONTRACT	NO	NUMBER
PC	POINT OF CURVE	PCCP	PRESTRESSED CONCRETE CYLINDER PIPE
PE	PLANE END	PE	PEDESTAL
PO	POST OFFICE OR PUSH ON	PROP	PROPOSED
PVC	POINT OR POINT OF TANGENCY	PVC	PVC PIPE OR POINT OF VERTICAL CURVATURE
PVD	POINT OF VERTICAL DEFLECTION	PVI	POINT OF VERTICAL INTERSECTION
PVT	POINT OF VERTICAL TANGENCY	R/W	RIGHT OF WAY
RAD	RADIUS	REINFC	REINFC. CONC. PIPE
RQ	REQUIRED	RJ	RESTRAINED JOINT
R/W	RIGHT-OF-WAY	RSGV	RESILIENT SEAT GATE VALVE
RWSW	RESILIENT WEDGE GATE VALVE	S	SEWER
S	SANITARY	SB	SOIL BORING
SD	STORM DRAIN	SHA	STATE HIGHWAY ADMINISTRATION
SHC	SEWER HOUSE CONNECTION	SHT	SHEET
S.S.	STAINLESS STEEL	STA	STATION
STD	STANDARD	STDR	TO BE RENOVATED (FUTURE)
TBR	TO BE REMOVED (FUTURE)	TELE	TELEPHONE
TEMP	TEMPORARY	TP	TEST PIT
TRANS	TRANSFORMER	UNF	UTILITY NOT FOUND
VB	VERTICAL BEND	VCR	VERTICAL CURVE RADIUS
VERT	VERTICAL	W	WATER
WHC	WATER HOUSE CONNECTION	WM	WATER MAIN
WV	WATER VALVE		

LANDSCAPING

APP	APPLE
BPE	BRADFORD PEAR
CHE	CHERRY
DEC	DECIDUOUS
DOG	DOGWOOD
HEM	HEMLOCK
HIC	HICKORY
HOL	HOLLY
LOC	LOCUST
MAG	MAGNOLIA
MAP	MAPLE
MUL	MULBERRY
PIN	PINE
POP	POPLAR
SPR	SPRUCE
SYC	SYCAMORE
WAL	WALNUT
WIL	WILLOW

12" DIA. WATER MAIN COORDINATE TABLE

STATION	ITEM	NORTHING	EASTING
0+00.00	12" DUCTILE IRON SLEEVE	543984.82	1346319.01
0+24.75	12"-45" DIP HB	544005.73	1346332.23
0+31.89	12"-45" DIP HB	544007.31	1346339.20
0+59.04	12"-5" SWEEP	544030.27	1346353.68
0+79.04	12"-HIGH DEFLECTION COUPLING	544048.06	1346362.84
2+46.49	12"-HIGH DEFLECTION COUPLING	544199.14	1346435.03
3+50.00	12"x6" TEE	544291.75	1346481.29
5+76.80	12"-5" SWEEP	544494.64	1346582.62
6+16.79	12"-HIGH DEFLECTION COUPLING	544531.84	1346597.31
8+43.06	12"x6" TEE	544746.37	1346669.26
8+50.00	12" GATE VALVE	544752.95	1346671.46
9+61.32	12"-5" SWEEP	544858.50	1346706.86
10+01.32	12"-5" SWEEP	544895.17	1346722.84
10+65.85	12"-11.25" DIP HB	544951.85	1346753.67
11+05.85	12"-HIGH DEFLECTION COUPLING	544982.59	1346779.27
11+55.26	12"-5" SWEEP	545019.57	1346812.03
11+90.00	12"x6" TEE	545043.46	1346837.25
12+87.83	12"-45" DIP HB	545110.76	1346908.28
13+16.66	12"-5" SWEEP	545139.57	1346909.06
13+45.48	12"-45" DIP HB	545168.20	1346912.34
13+83.64	12"-5" SWEEP	545191.93	1346942.23
16+63.60	12"-45" DIP HB	545354.32	1347170.27
17+16.00	12"-HIGH DEFLECTION COUPLING	545345.63	1347221.93
17+63.03	12"-45" DIP HB	545337.43	1347268.25
18+36.91	12"-HIGH DEFLECTION COUPLING	545379.82	1347328.78
19+01.71	12"-HIGH DEFLECTION COUPLING	545421.44	1347378.46
19+21.00	12" GATE VALVE	545434.46	1347392.69
19+27.94	12"x6" TEE	545439.15	1347397.80
20+15.37	12"-5" SWEEP	545498.14	1347462.32
20+55.62	12"-5" SWEEP	545527.81	1347489.55
21+35.64	12"-HIGH DEFLECTION COUPLING	545591.24	1347538.30
23+75.63	12"-HIGH DEFLECTION COUPLING	545788.92	1347674.40
26+21.00	12"x6" TEE	545993.43	1347809.99
26+27.39	12" GATE VALVE	545998.75	1347813.52
26+61.90	12"-HIGH DEFLECTION COUPLING	546027.52	1347832.59
27+64.38	12"-5" SWEEP	546109.87	1347893.59
28+28.92	12"-5" SWEEP	546158.18	1347936.40
29+04.73	12"-22.5" DIP HB	546210.32	1347991.42
30+08.30	12"-11.25" DIP HB	546247.35	1348088.13
30+31.83	12" DUCTILE IRON SLEEVE	546260.47	1348108.95

SOIL BORING SCHEDULE

BORING NO.	NORTHING	EASTING
B-1	543990.88	1346338.97
B-2	544862.78	1346708.96
B-3	545013.77	1346810.28
B-4	545094.84	1347049.53
B-5	545286.50	1347239.00
B-6	545704.19	1347624.41
B-7	546238.99	1348074.59

RESTORATION SCHEDULE

STA. RANGE	RESTORATION METHOD
0+00 - 5+00	1-1/2" OVERLAY - FULL PAVEMENT WIDTH
5+00 - 11+32±	REMOVE EX. PAVING AND GRAVEL AND STABILIZE PER PATHWAY RESTORATION DETAIL ON SHEET 9
11+32± - 14+65	STABILIZE PER NOTE ON 10D THIS SHEET
14+65 - 17+50±	OUTSIDE OF RIVER BANKS, STABILIZE PER NOTE 10D THIS SHEET. RIVER BANKS SHALL BE STABILIZED AS NOTED IN SHEET 19
17+50± - 30+32	1-1/2" OVERLAY - FULL PAVEMENT WIDTH

RECORD DRAWINGS
TO THE BEST OF OUR KNOWLEDGE,
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THE PROJECT AS CONSTRUCTED.

O'BRIEN & GERE
ENGINEERS, INC.
BY: [Signature]

AS-BUILT 6/2014

DEPARTMENT OF PUBLIC WORKS

HOWARD COUNTY, MARYLAND

[Signature] 10/21/13
DIRECTOR OF PUBLIC WORKS DATE
[Signature] 9/24/13
CHIEF, BUREAU OF UTILITIES DATE

O'BRIEN & GERE

4201 MITCHELLVILLE ROAD
SUITE 500
BOWIE, MD 20716
PHONE: 301-731-5622

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THAT I AM A DULY
LICENSED PROFESSIONAL
ENGINEER UNDER THE
LAWS OF THE STATE OF
MARYLAND, LICENSE NO.
18523, EXPIRATION DATE
12/08/2013



DSN. BY:	SSD			
DRN. BY:	RPW			
CHK. BY:	RJD	RJD	1	AS-BUILT / RECORD DRAWING
DATE:	AUG, 2013	RJD	0	AS ISSUED FOR BID
		BY	NO.	REVISION
				DATE

LEGEND, ABBREVIATIONS, TABLES AND SCHEDULES

600' SCALE MAP NO. 42 BLOCK NO. 7

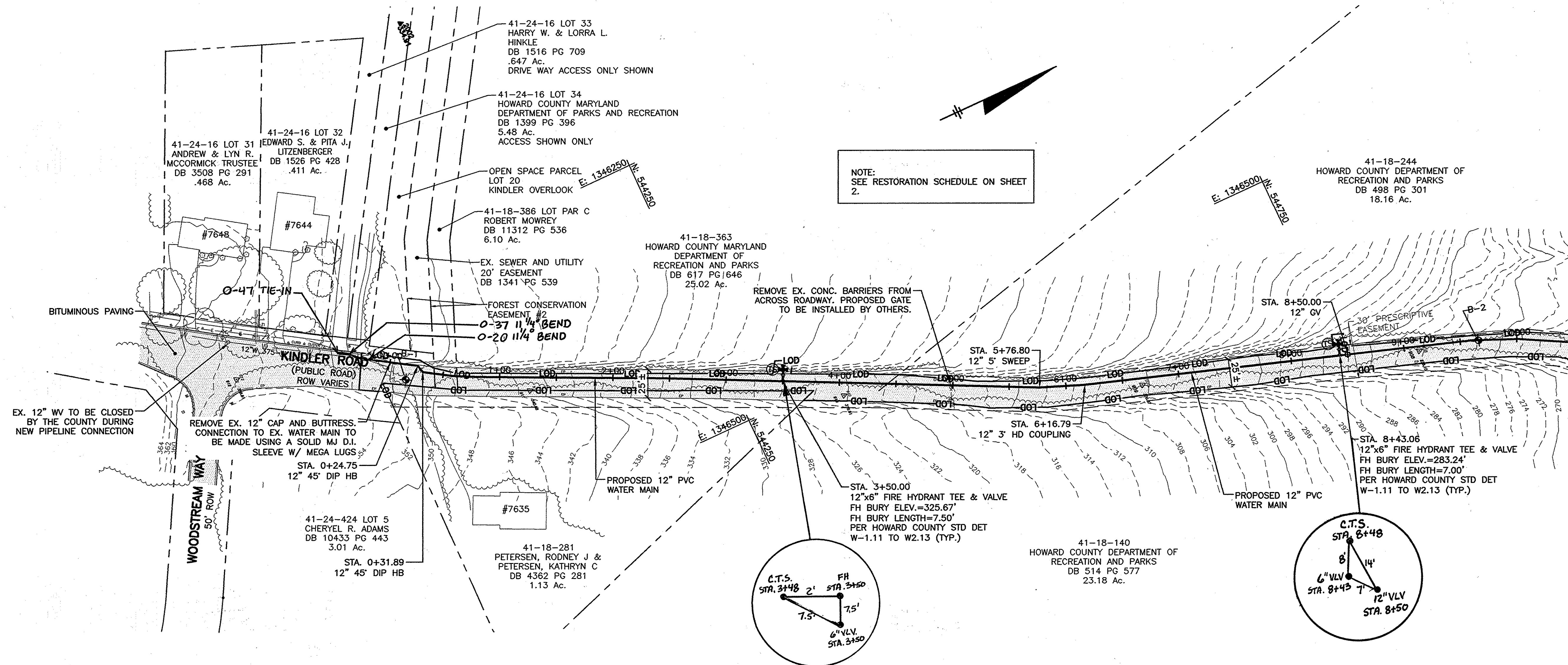
KINDLER ROAD - EDEN BROOK DRIVE WATER MAIN CONNECTION

CAPITAL PROJECT: W-8297
CONTRACT NO.: 44-4675
ELECTION DISTRICT: 6
HOWARD COUNTY, MARYLAND

SCALE
AS
SHOWN

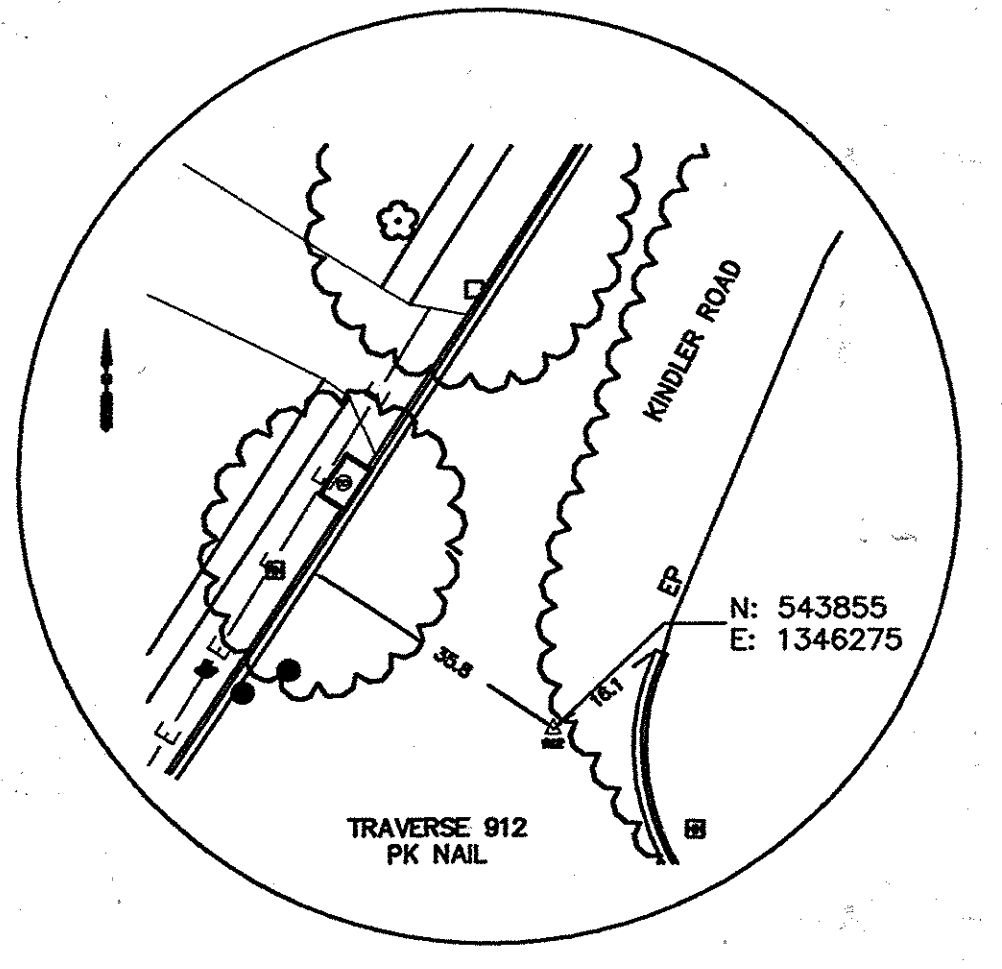
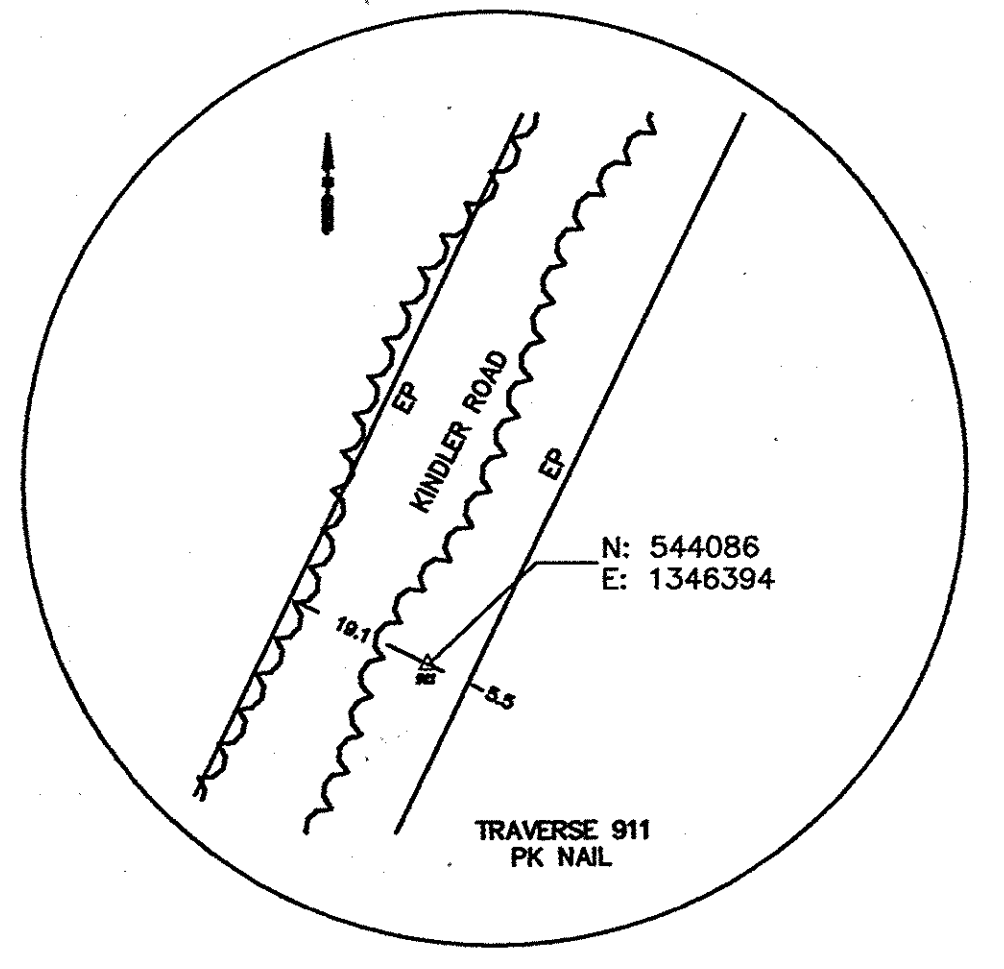
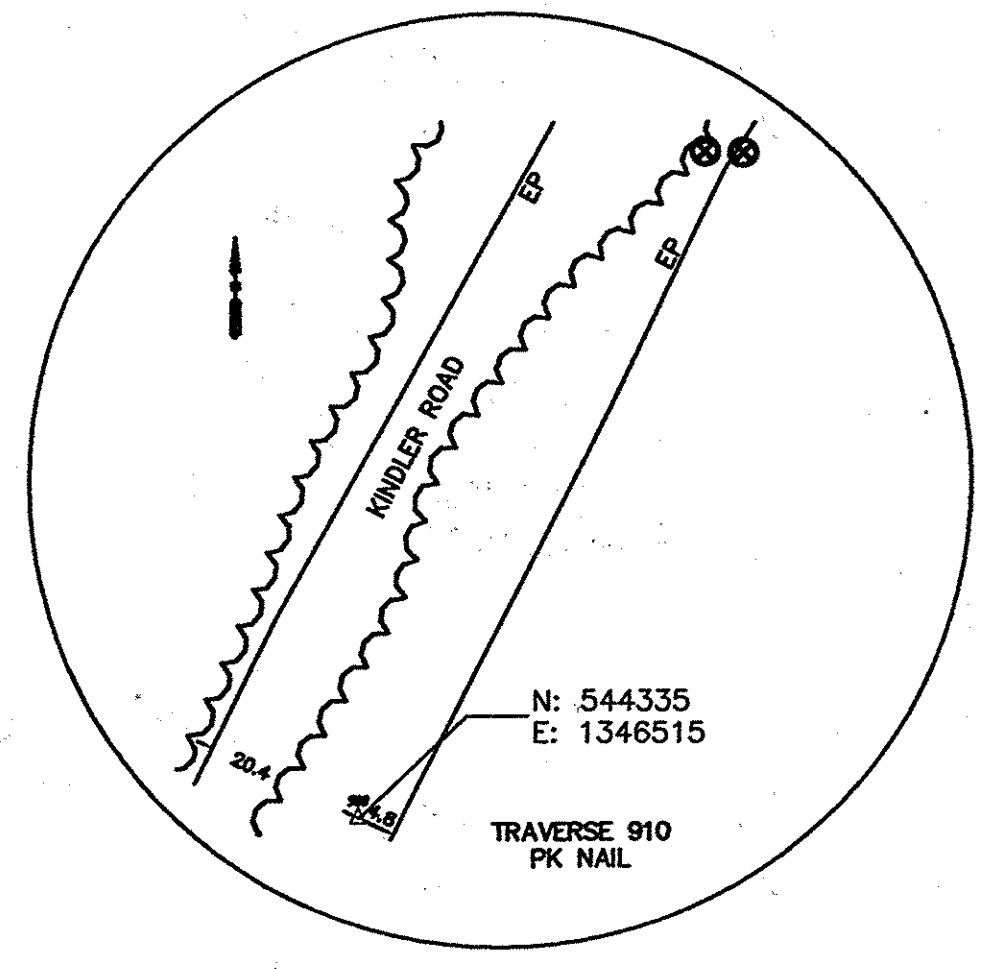
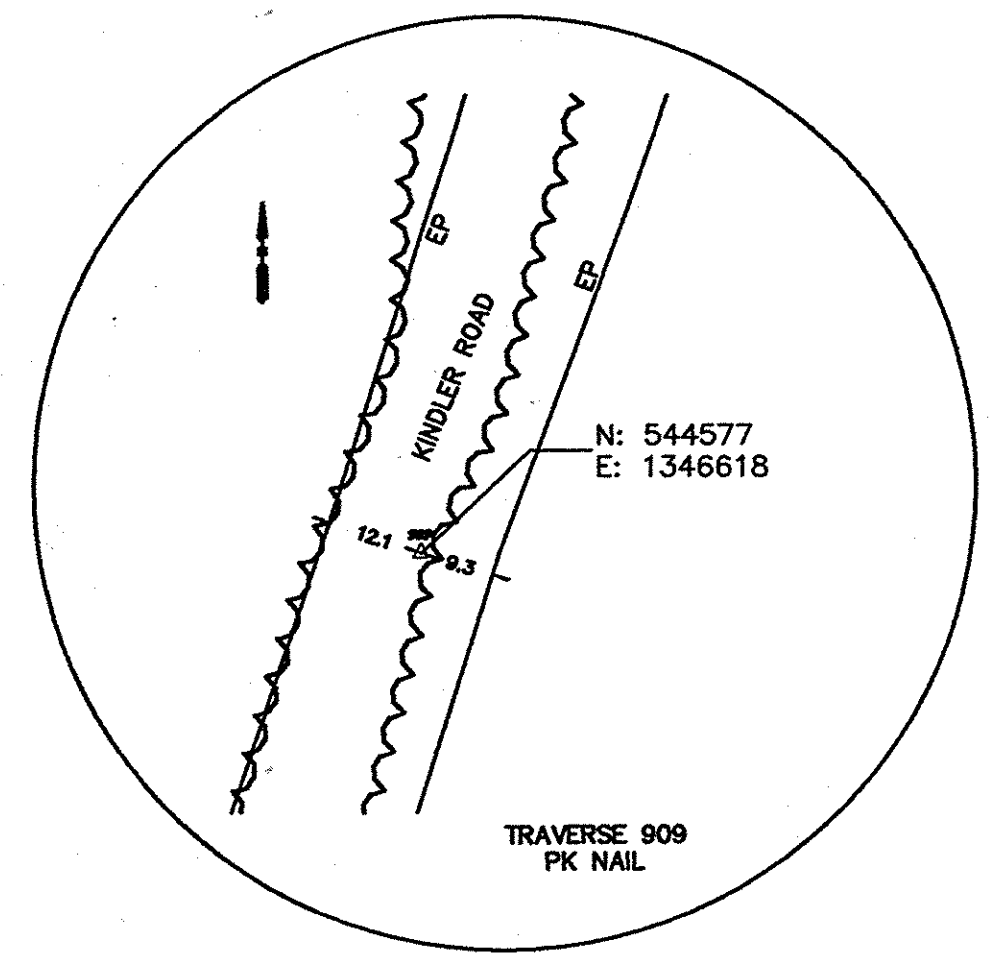
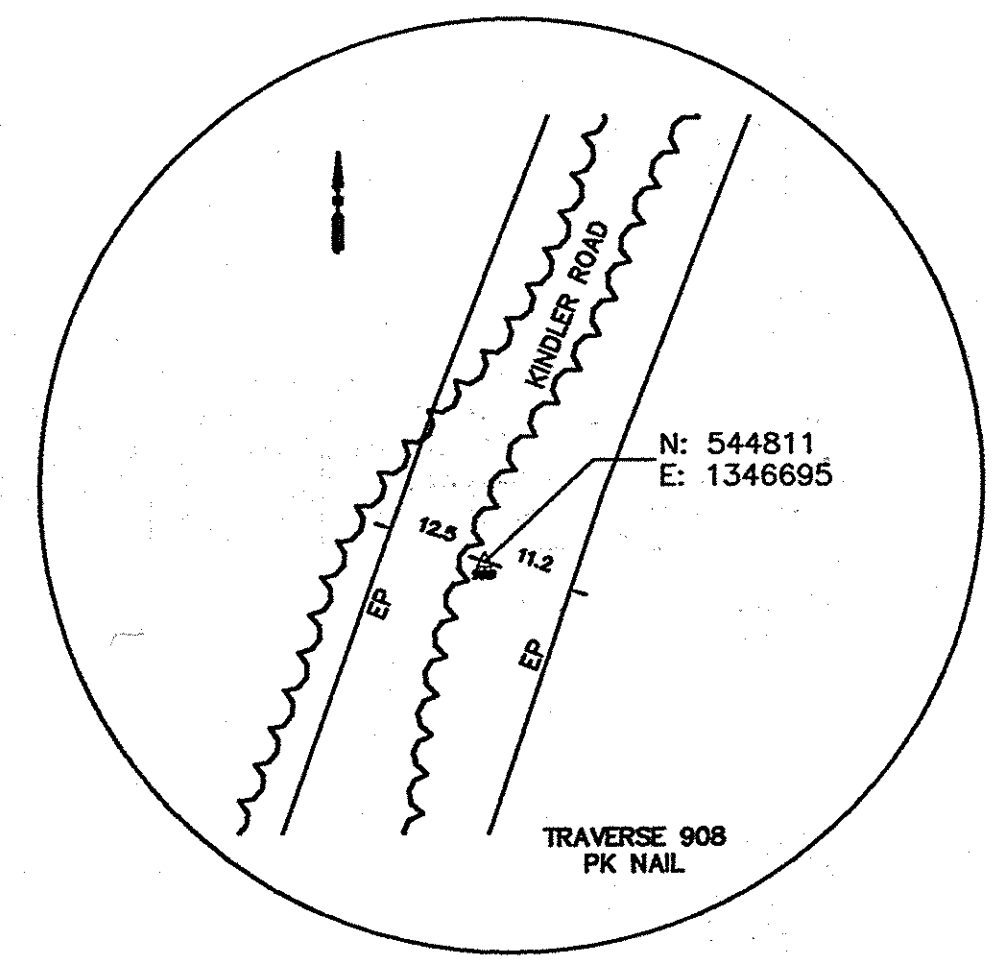
SHEET
2 OF 20

I:\HOWARD-CO.2343\45452.KINDLER-ROAD\DWG\SHEETS\45452-C106.DWG



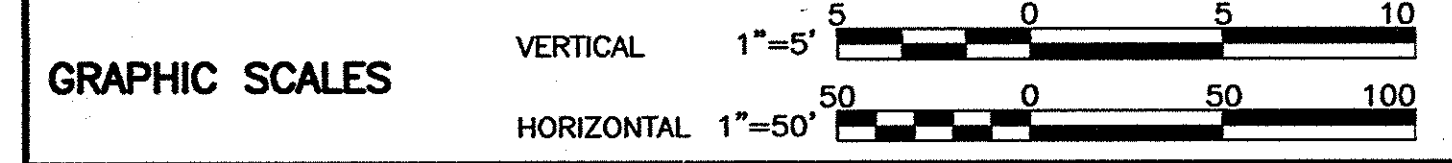
NOTE:
SEE RESTORATION SCHEDULE ON SHEET 2.

MATCH LINE STA. 10+50
FOR CONTINUATION SEE SHEET 5



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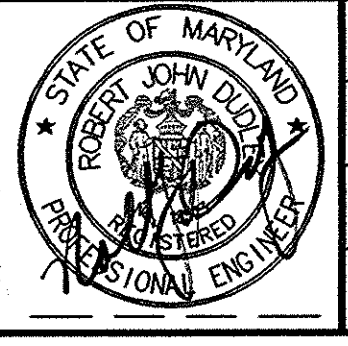
O'BRIEN & GERE
ENGINEERS, INC.
BY: *[Signature]*



DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND
[Signature] 10/6/13 DIRECTOR OF PUBLIC WORKS
[Signature] 9/24/13 CHIEF - BUREAU OF ENGINEERING
[Signature] 10/1/13 CHIEF, BUREAU OF UTILITIES
[Signature] 9/24/13 CHIEF, UTILITY DESIGN DIVISION

O'BRIEN & GERE
4201 MITCHELLVILLE ROAD
SUITE 500
BOWIE, MD 20716
PHONE: 301-731-5622

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MARYLAND, LICENSE NO.
18523, EXPIRATION DATE
12/08/2013



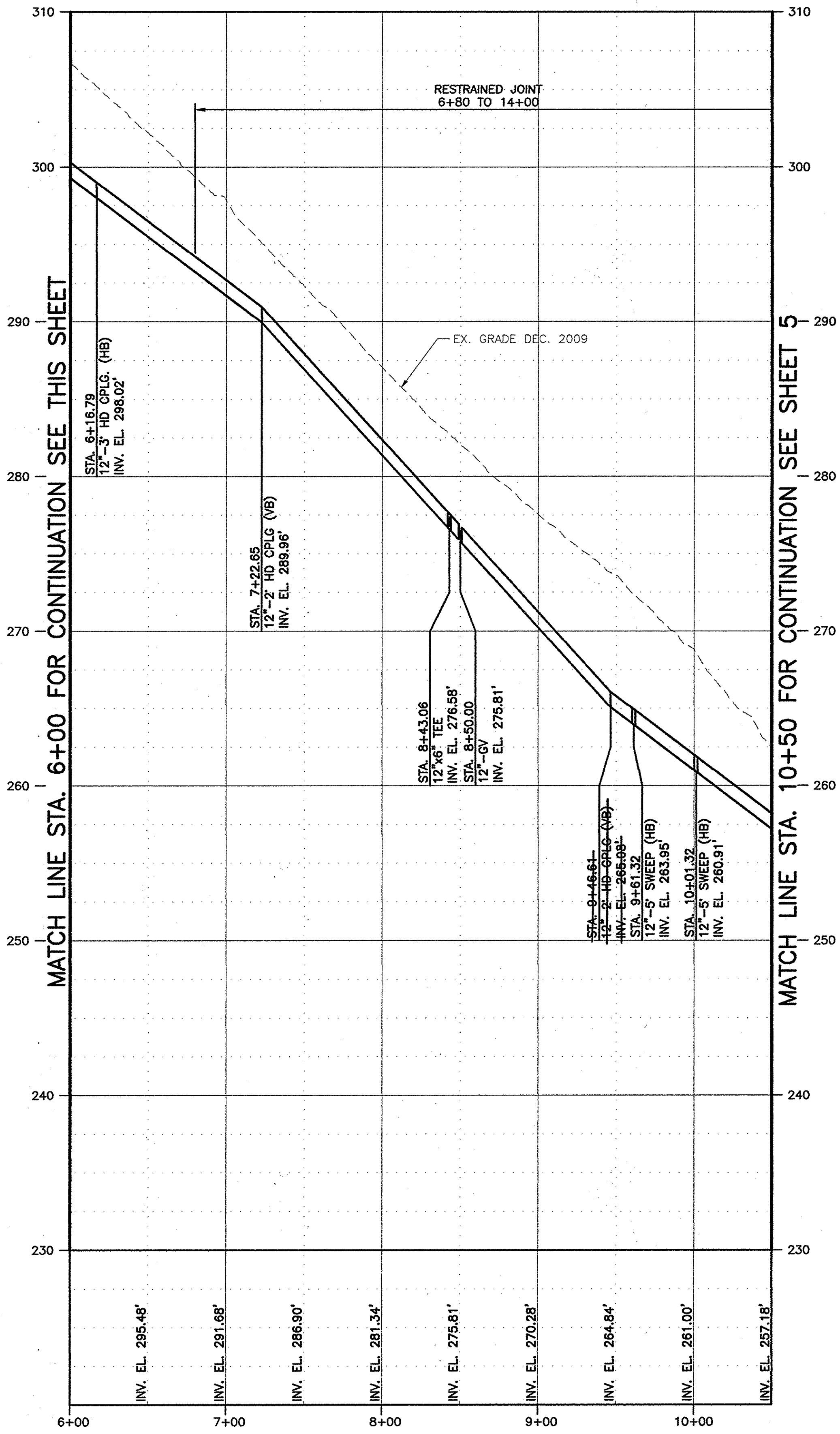
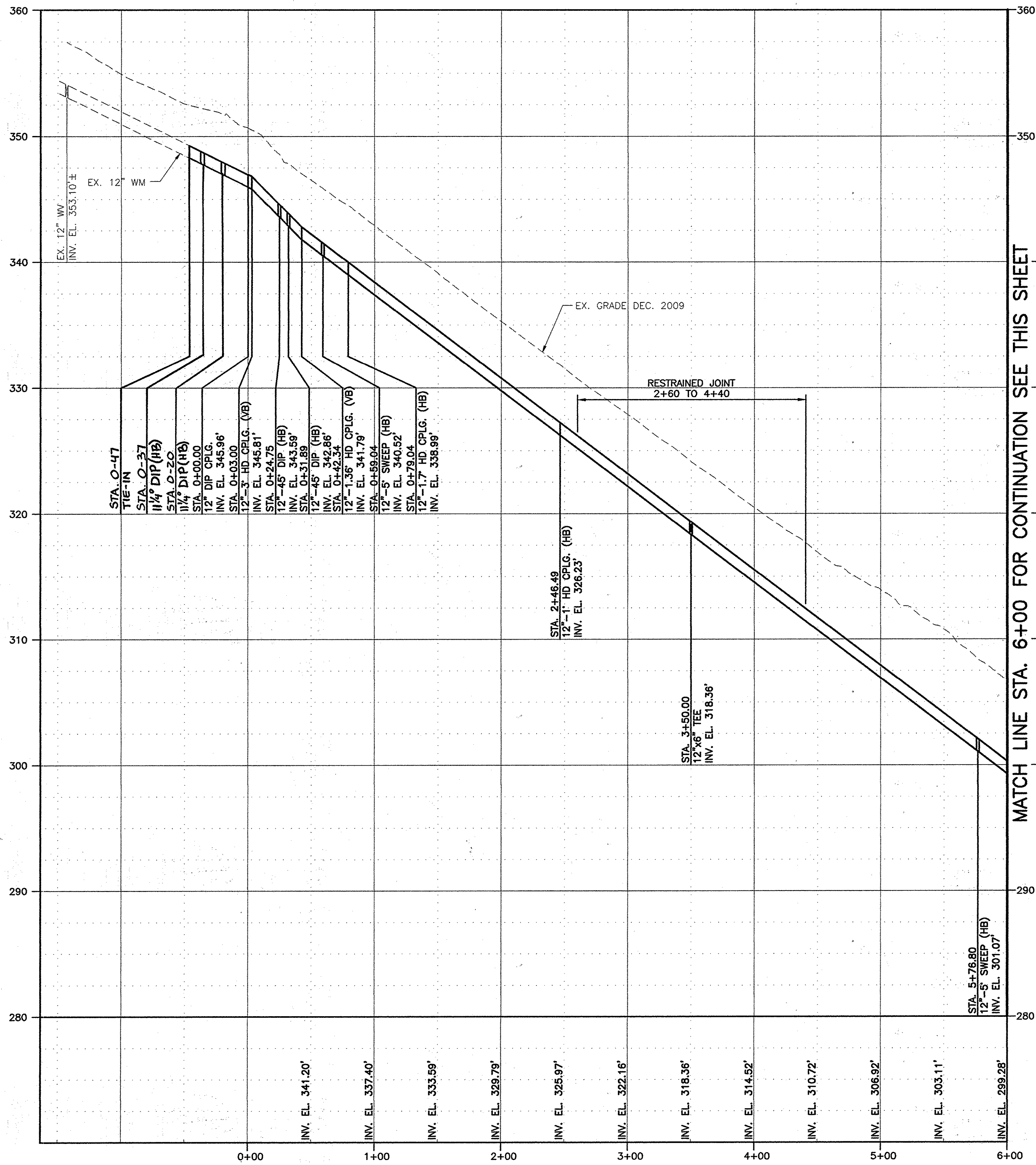
DSN. BY:	RPW				
DRN. BY:	RPW				
CHK. BY:	RJD	RJD	1	AS-BUILT RECORD DRAWING	6/14
DATE:	AUG, 2013	RJD	0	AS ISSUED FOR BID	09/13
BY:	NO.			REVISION	DATE

PLAN
STA. 0+00 TO STA. 10+50

KINDLER ROAD - EDEN BROOK DRIVE
WATER MAIN CONNECTION
CAPITAL PROJECT: W-8297
CONTRACT NO.: 44-4875
ELECTION DISTRICT: 6
HOWARD COUNTY, MARYLAND

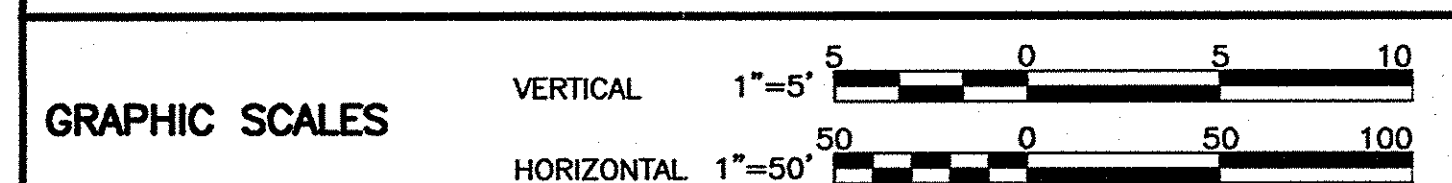
SCALE
AS
SHOWN
SHEET
3 OF 20

AS-BUILT 6/2014



RECORD DRAWINGS
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O'BRIEN & GERE
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BY: *[Signature]*



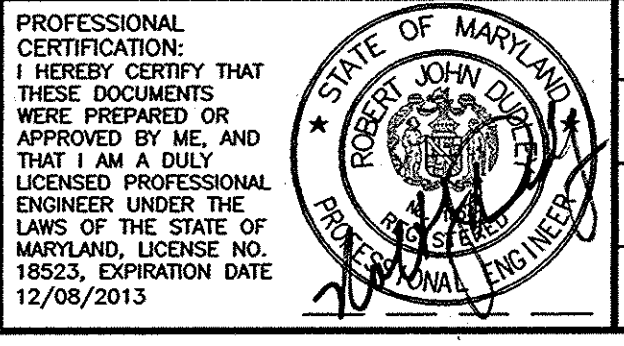
DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

[Signature] 10/13
DIRECTOR OF PUBLIC WORKS DATE

[Signature] 9/24/13
CHIEF - BUREAU OF ENGINEERING DATE

[Signature] 9/24/13
CHIEF, UTILITY DESIGN DIVISION DATE

O'BRIEN & GERE
4201 MITCHELLVILLE ROAD
SUITE 500
BOWIE, MD 20716
PHONE: 301-731-5622



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DRN. BY:	RPW		
CHK. BY:	RJD	RJD 1 AS-BUILT/RECORD DRAWING	6/14
	RJD 0	AS ISSUED FOR BID	05/13
DATE:	AUG, 2013		
BY NO.		REVISION	DATE

PROFILE
STA. 0+00 TO STA. 10+50

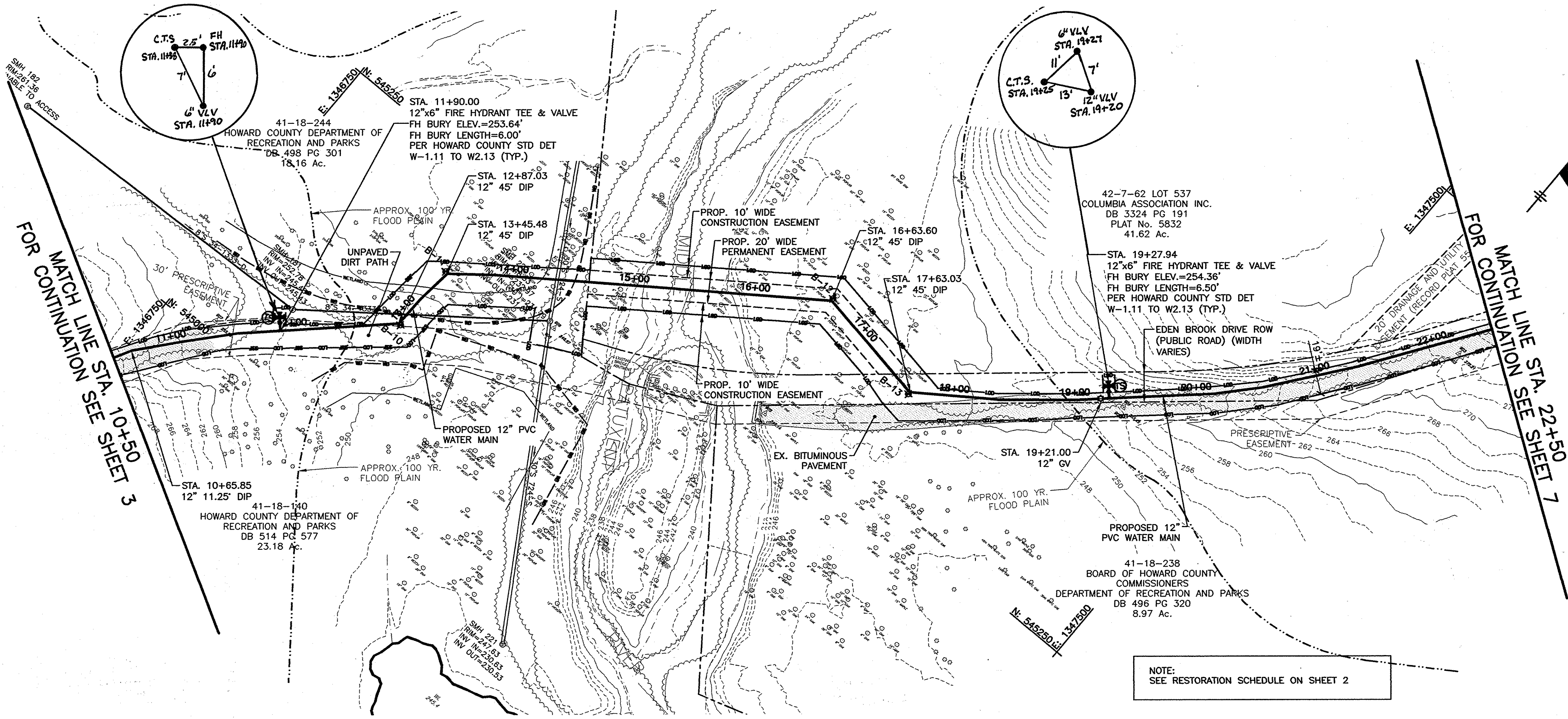
600' SCALE MAP NO. 42 BLOCK NO. 7

AS-BUILT 6/2014

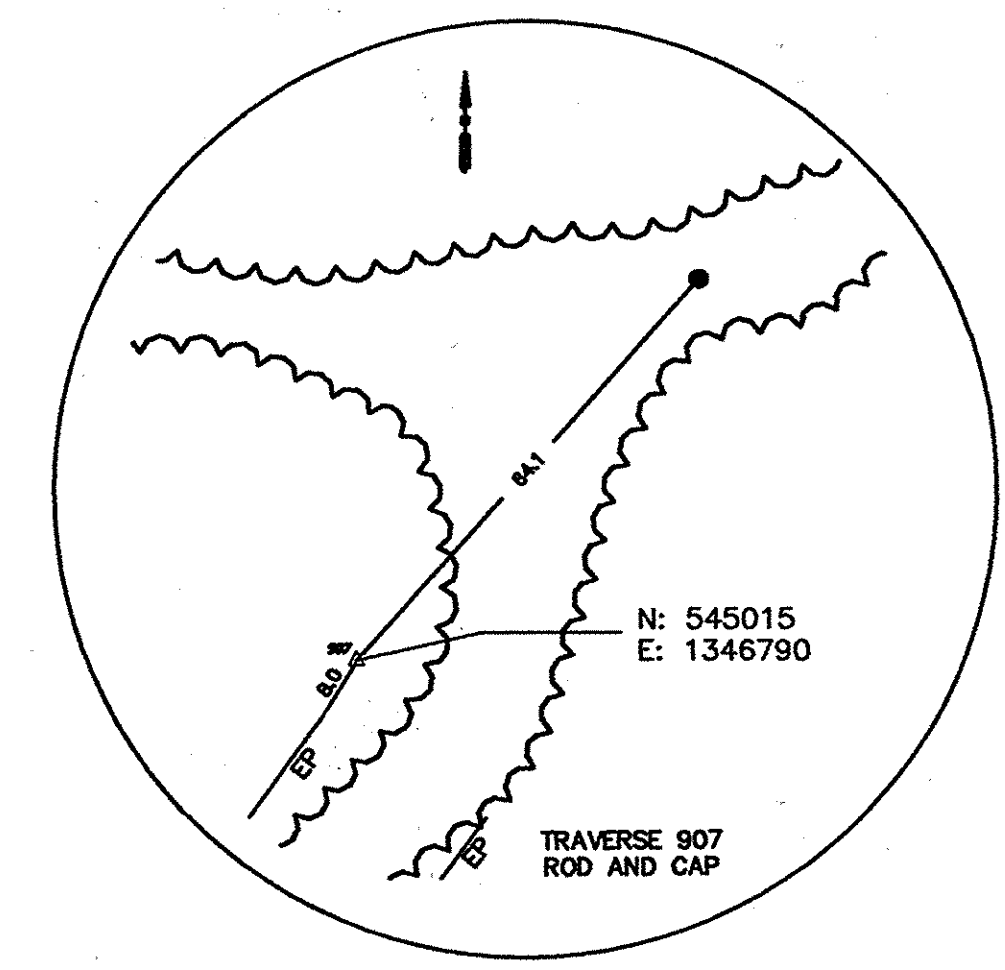
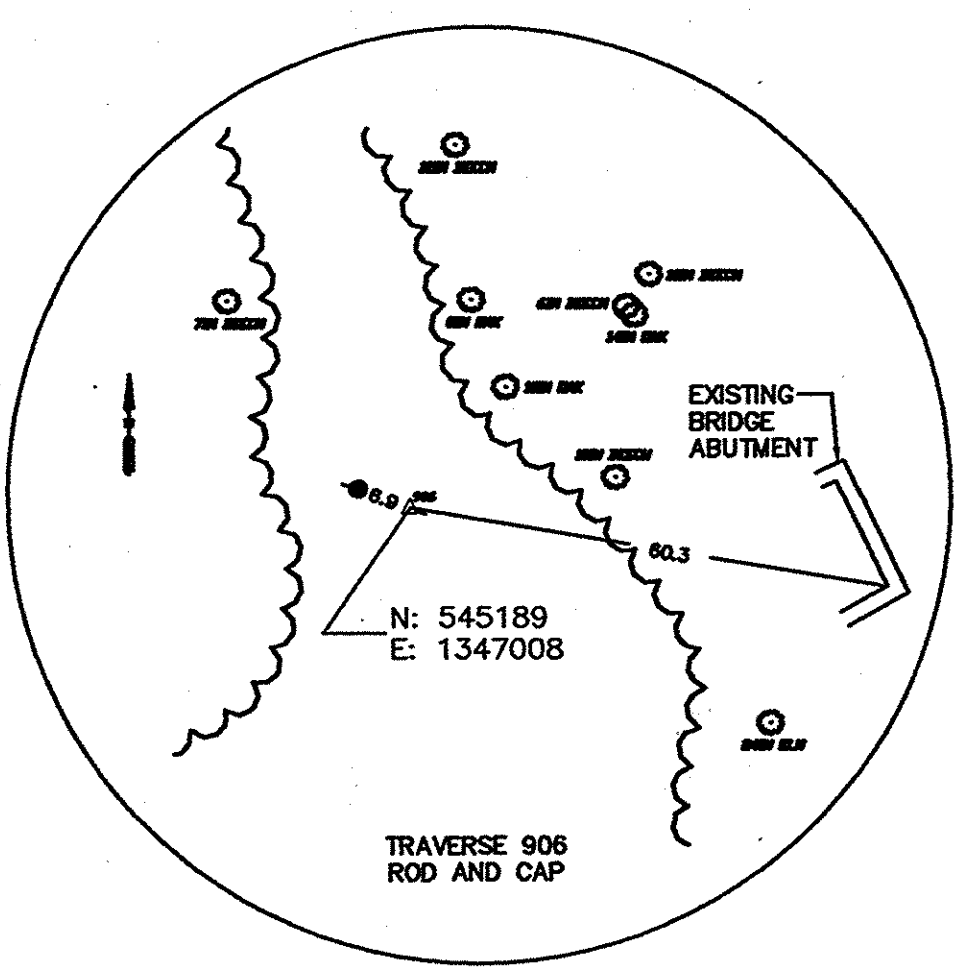
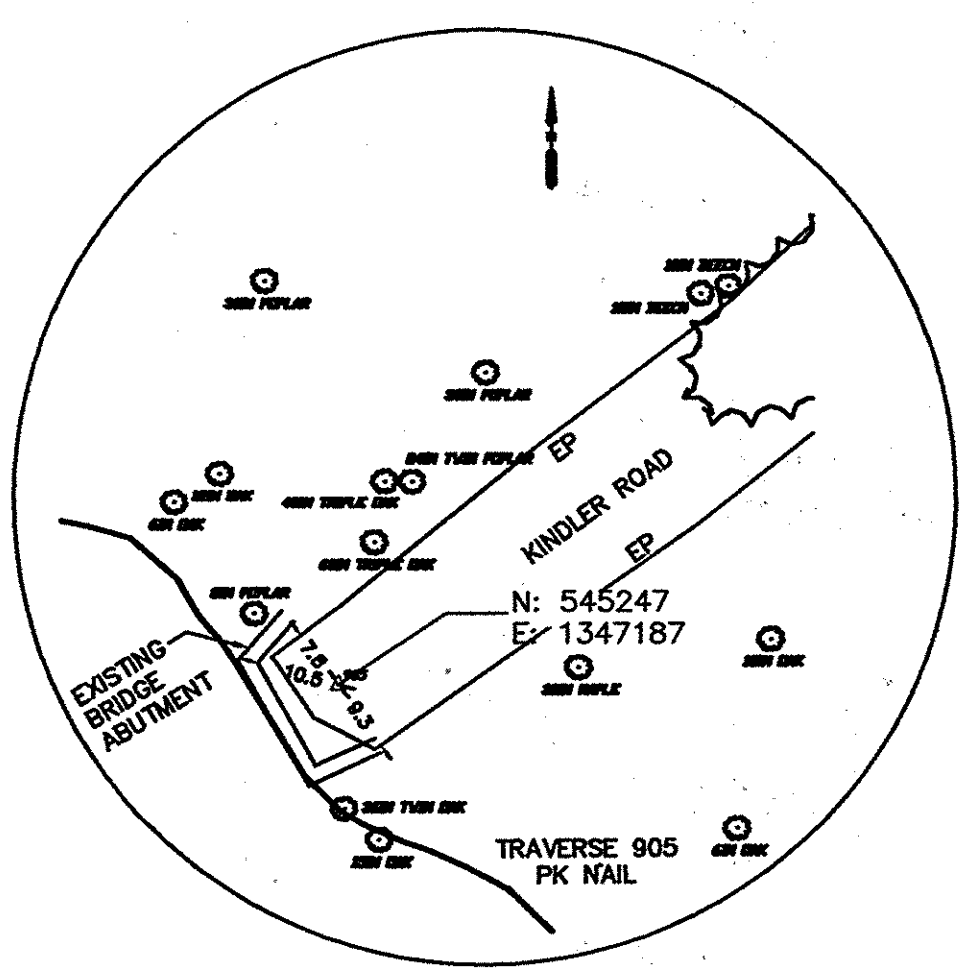
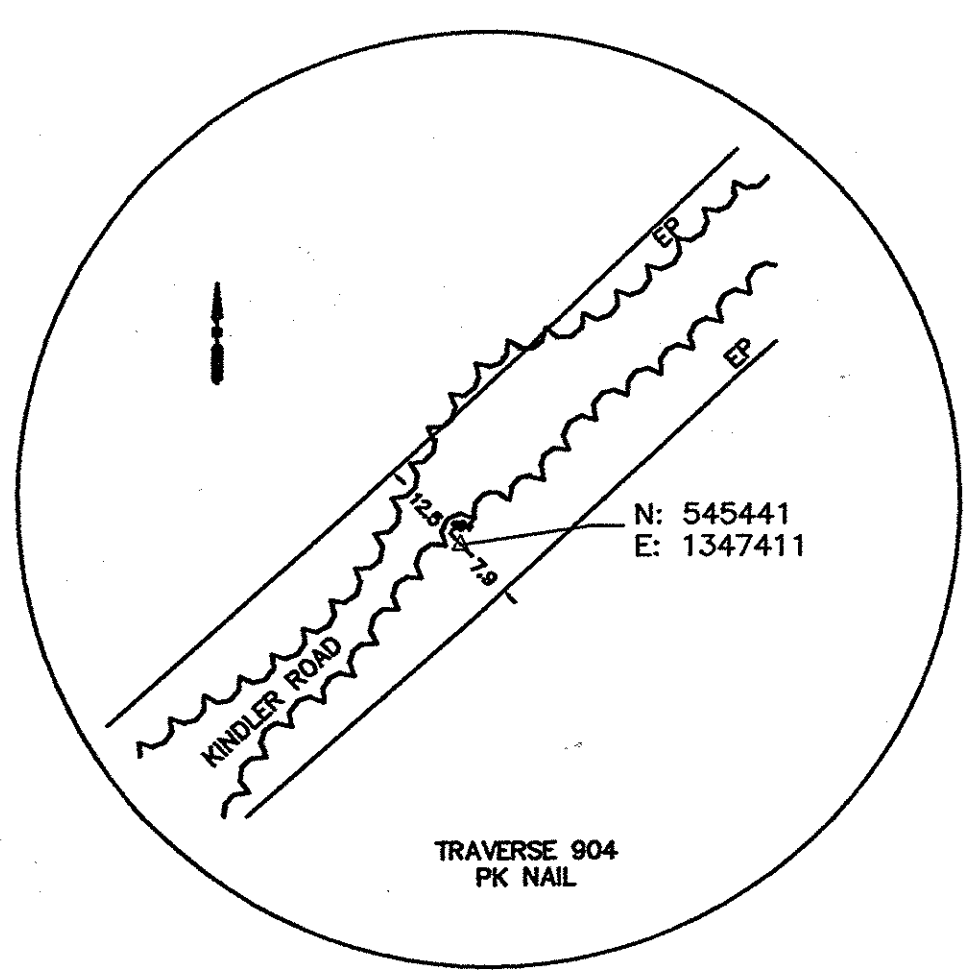
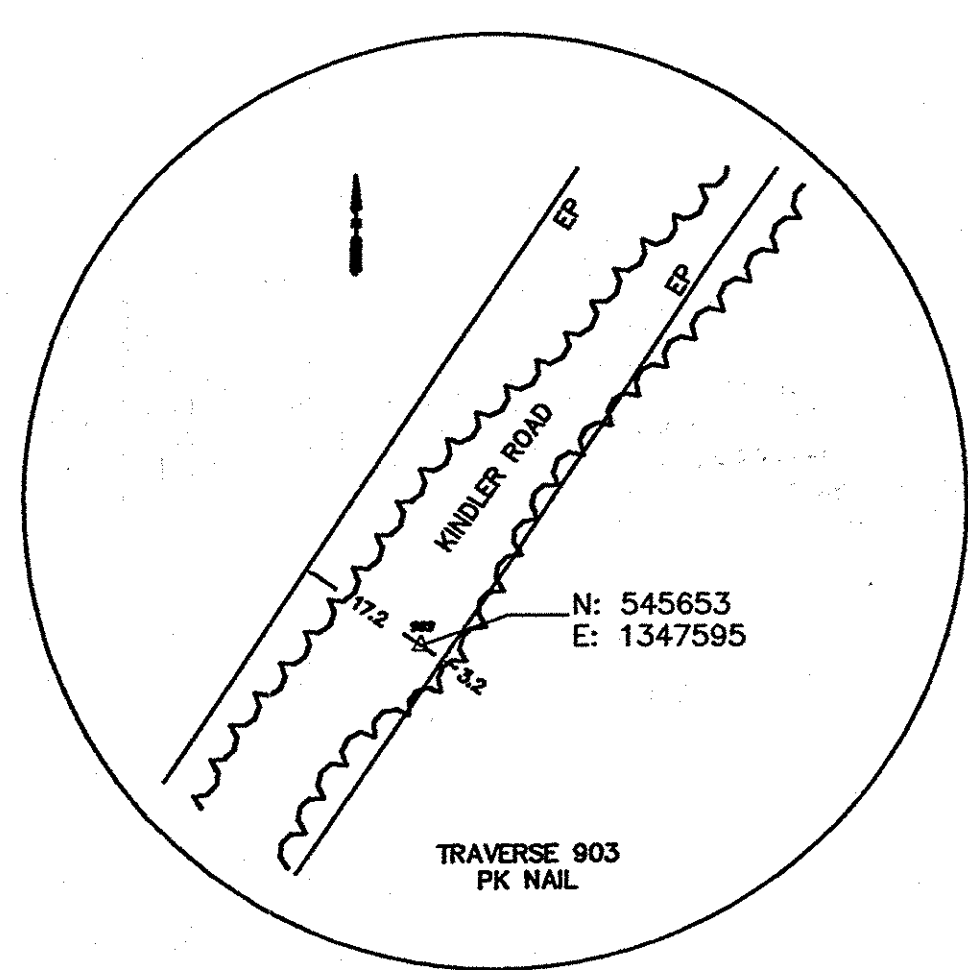
KINDLER ROAD - EDEN BROOK DRIVE
WATER MAIN CONNECTION

CAPITAL PROJECT: W-8297
CONTRACT NO.: 44-4675
ELECTION DISTRICT: 6
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 4 OF 20



NOTE:
SEE RESTORATION SCHEDULE ON SHEET 2



RECORD DRAWINGS
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O'BRIEN & GERE
ENGINEERS, INC.
BY: *[Signature]*

GRAPHIC SCALES HORIZONTAL 1"=50'

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

[Signature] 10/7/13
DIRECTOR OF PUBLIC WORKS DATE

[Signature] 9/24/13
CHIEF - BUREAU OF ENGINEERING DATE

[Signature] 10/14/13
CHIEF, BUREAU OF UTILITIES DATE

[Signature] 9/24/13
CHIEF, UTILITY DESIGN DIVISION DATE

O'BRIEN & GERE
4201 MITCHELLVILLE ROAD
SUITE 500
BOWIE, MD 20716
PHONE: 301-731-5622

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DATE:	AUG, 2013	RJD	0	AS ISSUED FOR BID	09/13
		BY	NO.	REVISION	DATE

PLAN
STA. 10+50 TO STA. 22+50

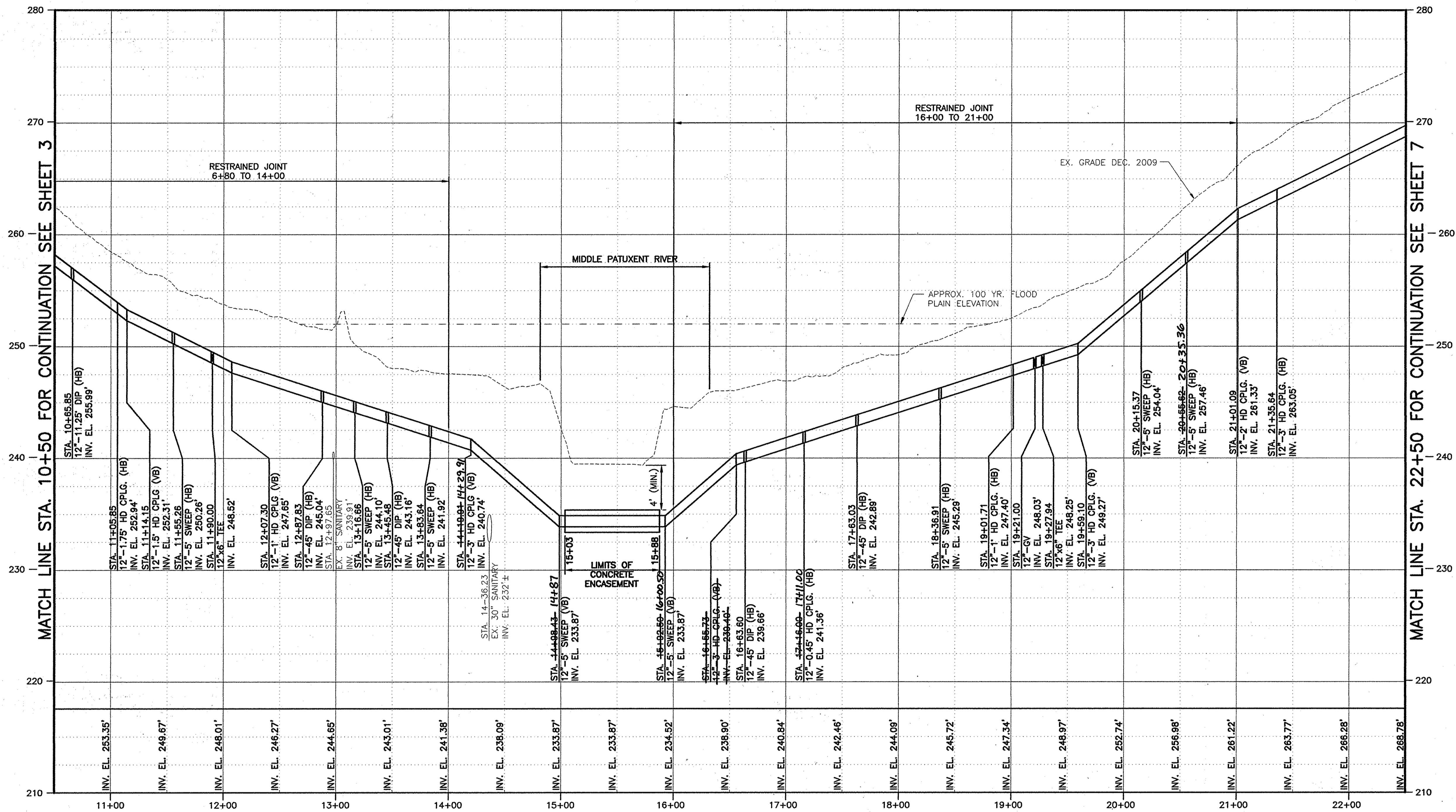
600' SCALE MAP NO. 42 BLOCK NO. 7

AS-BUILT 6/2014

KINDLER ROAD - EDEN BROOK DRIVE
WATER MAIN CONNECTION

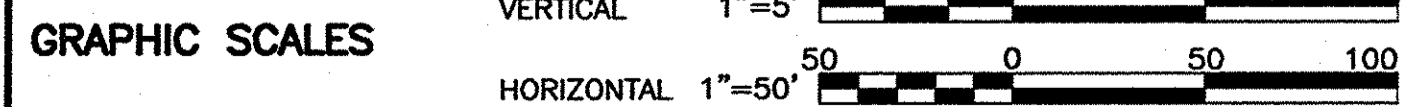
CAPITAL PROJECT: W-8297
CONTRACT NO.: 44-4675
ELECTION DISTRICT: 6
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 5 OF 20



RECORD DRAWINGS
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O'BRIEN & GERE
ENGINEERS, INC.
BY: *[Signature]*



DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

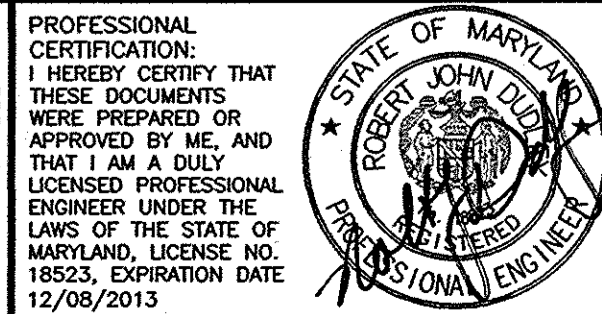
[Signature] 10/7/13
DIRECTOR OF PUBLIC WORKS DATE

[Signature] 9/24/13
CHIEF - BUREAU OF ENGINEERING DATE

[Signature] 10/12
CHIEF, BUREAU OF UTILITIES DATE

[Signature] 9/24/13
CHIEF, UTILITY DESIGN DIVISION DATE

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DRN. BY:	RPW			
CHK. BY:	RJD	RJD	1	AS-BUILT/RECORD DRAWING
DATE:	AUG, 2013			AS ISSUED FOR BID
		BY	NO.	REVISION
				6/14
				09/13
				DATE

PROFILE
STA. 10+50 TO STA. 22+50

600' SCALE MAP NO. 42 BLOCK NO. 7

KINDLER ROAD - EDEN BROOK DRIVE
WATER MAIN CONNECTION

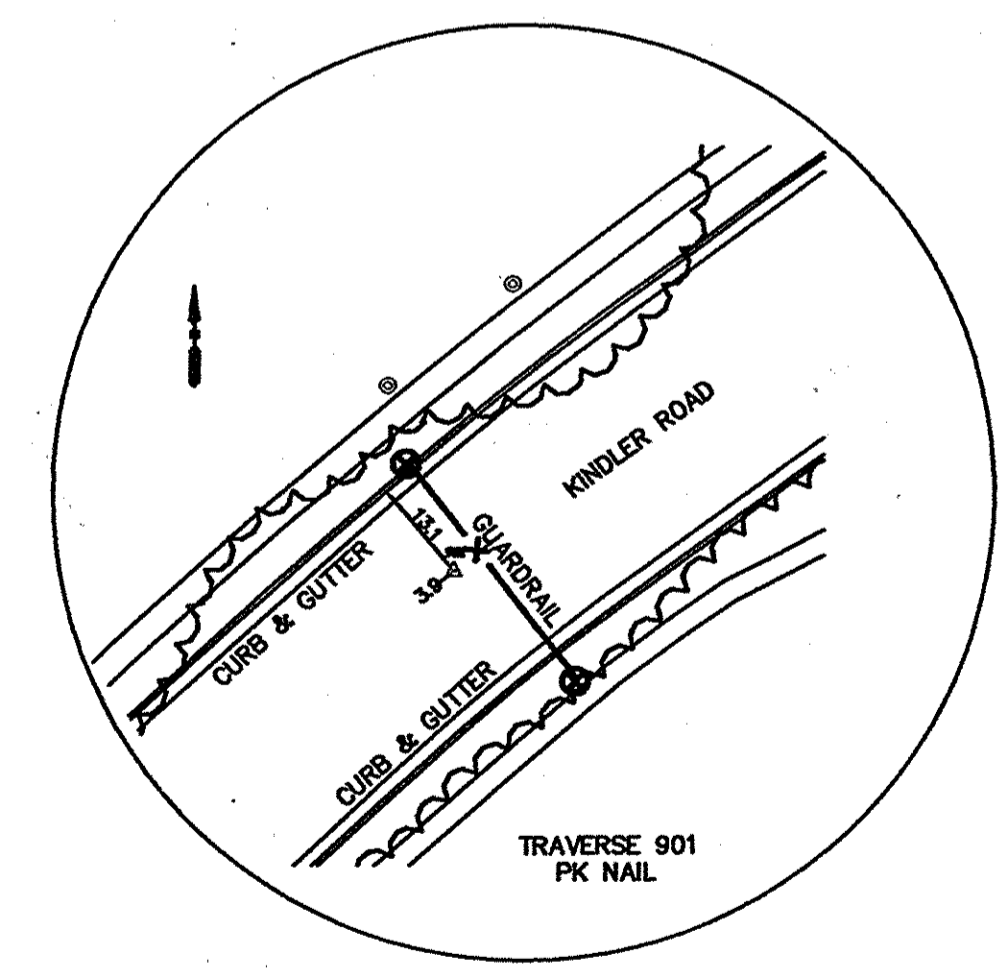
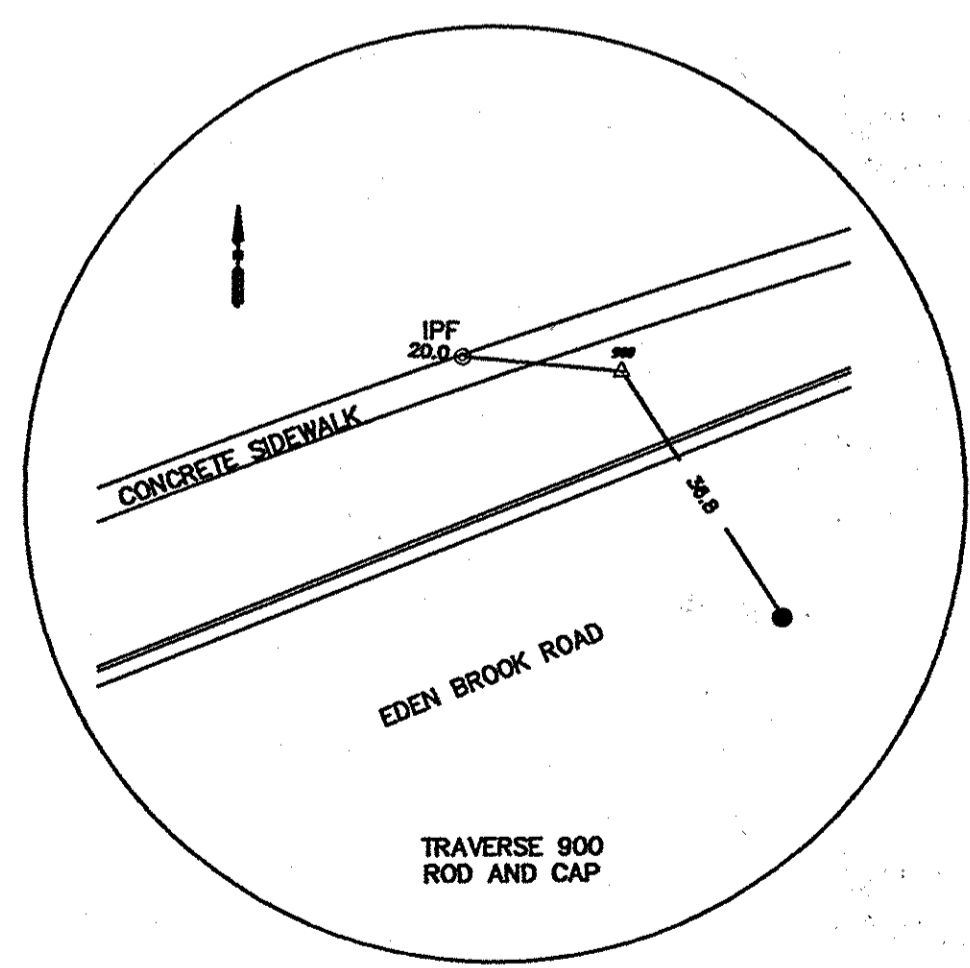
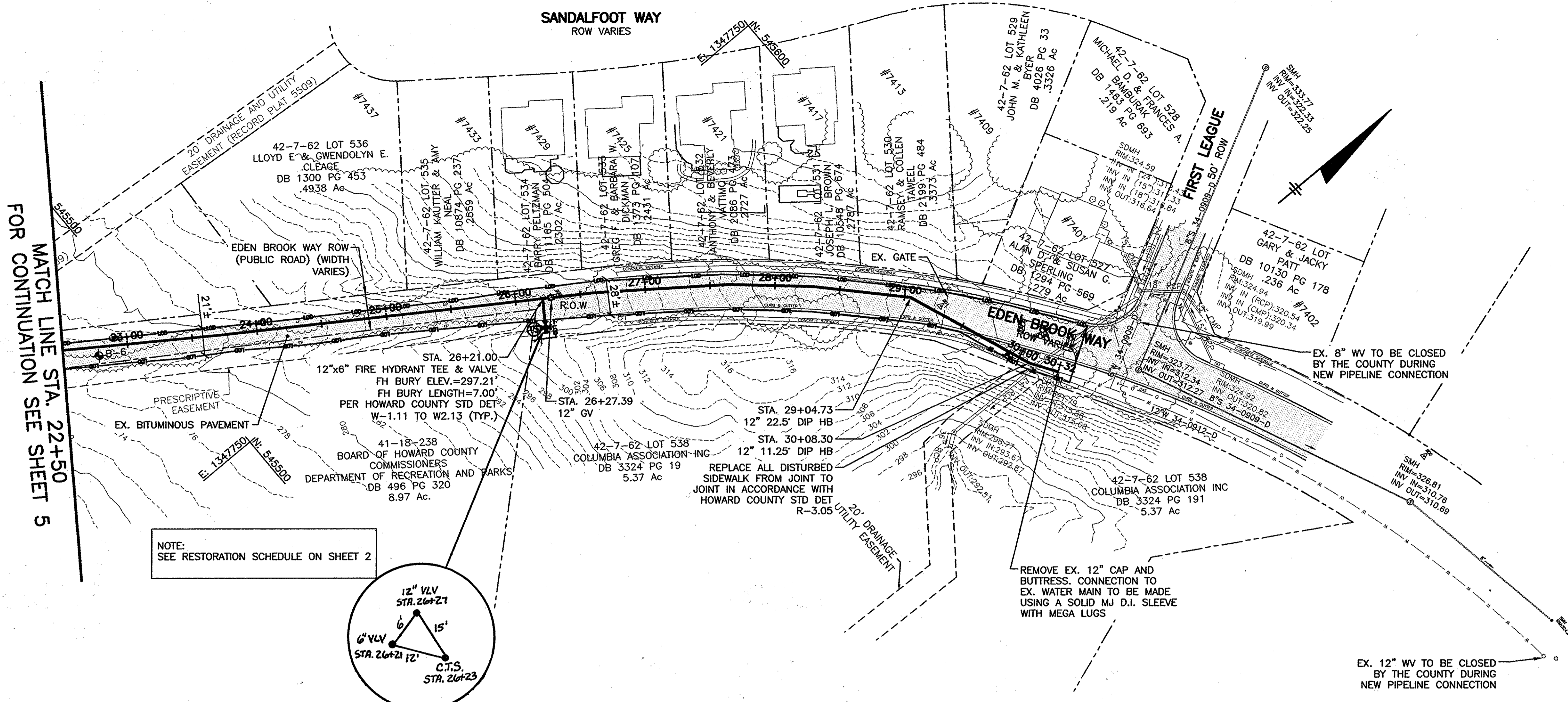
CAPITAL PROJECT: W-8297
CONTRACT NO.: 44-4675
ELECTION DISTRICT: 6
HOWARD COUNTY, MARYLAND

AS-BUILT 6/2014

SCALE AS SHOWN

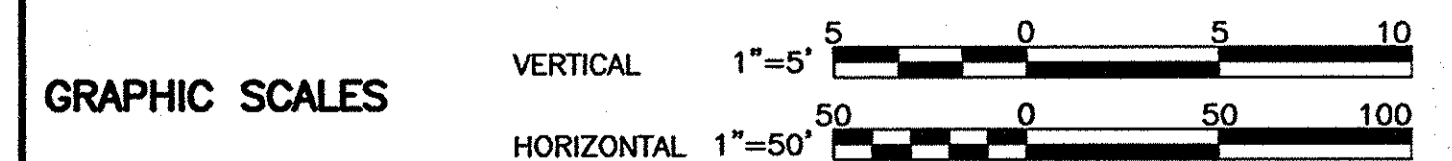
SHEET 6 OF 20

FOR CONTINUATION SEE SHEET 5
MATCH LINE STA. 22+50



RECORD DRAWINGS
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O'BRIEN & GERE
ENGINEERS, INC.
BY: *[Signature]*



DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

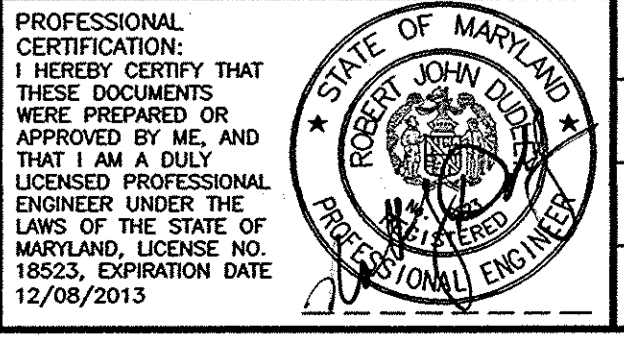
[Signature] 10/7/13
DIRECTOR OF PUBLIC WORKS DATE

[Signature] 9/24/13
CHIEF - BUREAU OF ENGINEERING DATE

[Signature] 9/24/13
CHIEF, BUREAU OF UTILITIES DATE

[Signature] 9/24/13
CHIEF UTILITY DESIGN DIVISION DATE

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4201 MITCHELLVILLE ROAD
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BOWIE, MD 20716
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DATE:	AUG, 2013	RJD	0	AS ISSUED FOR BID	09/13
BY NO.				REVISION	DATE

PLAN
STA. 22+50 TO STA. 30+32

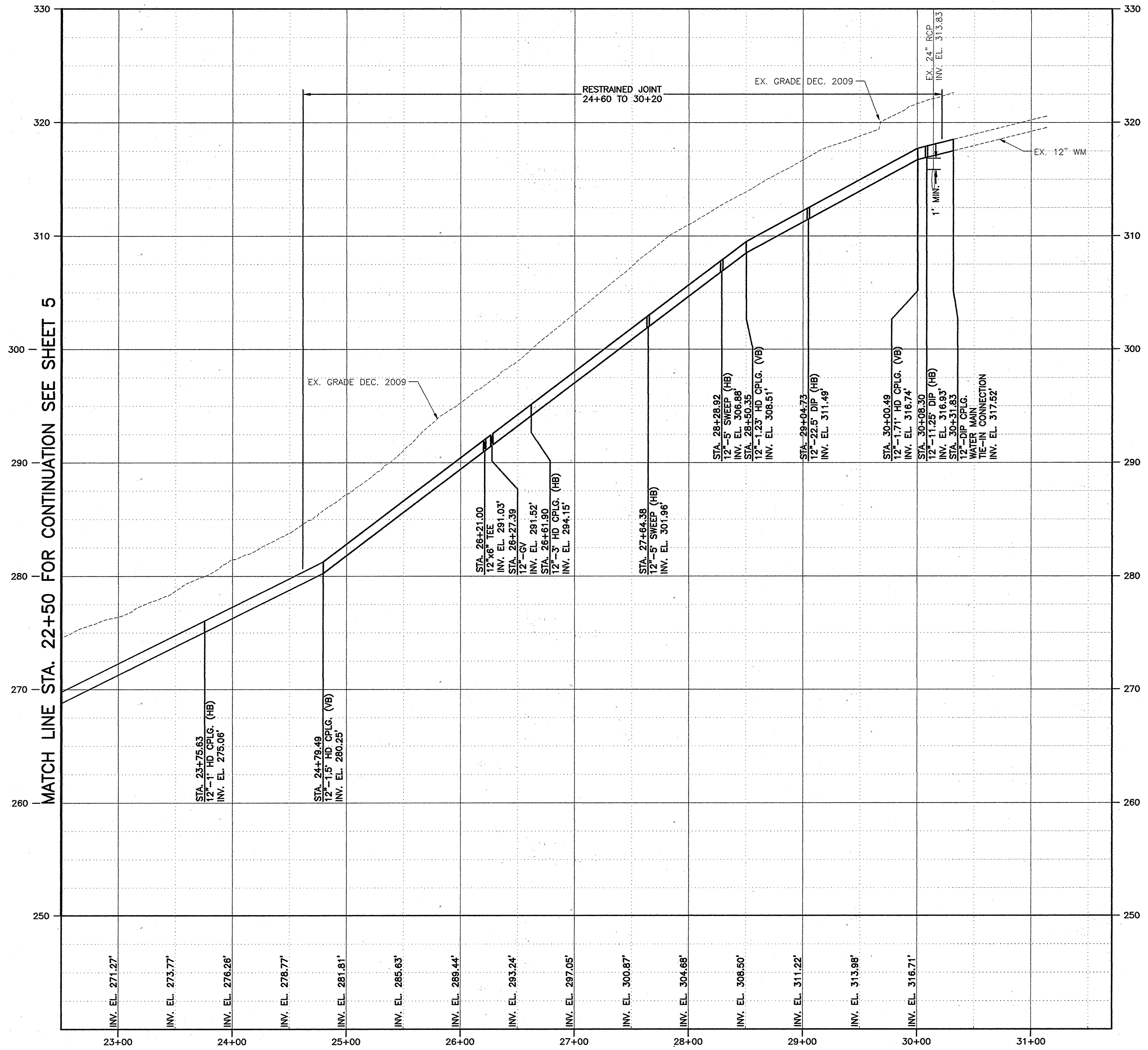
600' SCALE MAP NO. 42 BLOCK NO. 7

AS-BUILT 6/2014

KINDLER ROAD - EDEN BROOK DRIVE
WATER MAIN CONNECTION

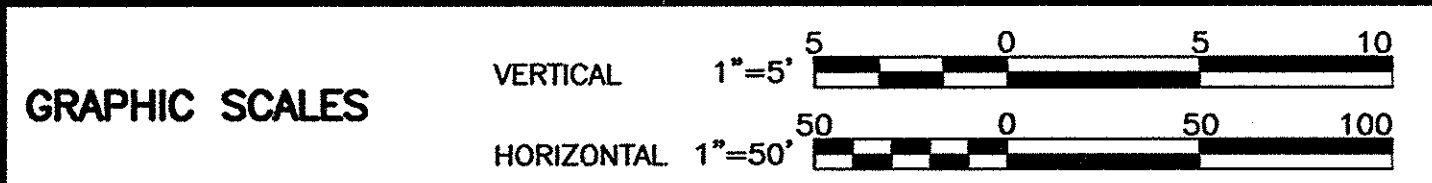
CAPITAL PROJECT: W-8297
CONTRACT NO.: 44-4675
ELECTION DISTRICT: 6
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 7 OF 20



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O'BRIEN & GERE ENGINEERS, INC.
 BY: *[Signature]* AS-BUILT 6/2014



DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND

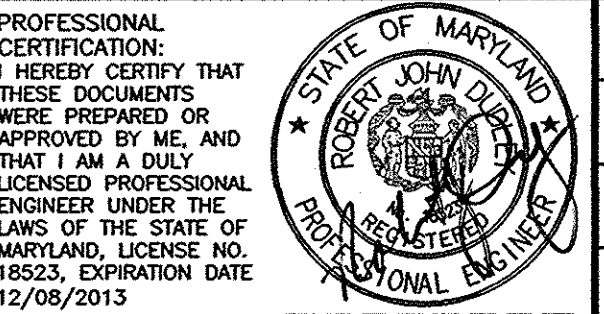
[Signature] 10/6/13
 DIRECTOR OF PUBLIC WORKS DATE

[Signature] 9/24/13
 CHIEF - BUREAU OF ENGINEERING DATE

[Signature] 10/1/13
 CHIEF, BUREAU OF UTILITIES DATE

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 BOWIE, MD 20716
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DATE:	AUG, 2013	RJD	0 AS ISSUED FOR BID 09/13
		BY	NO.

PROFILE
 STA. 22+50 TO STA. 30+32

600' SCALE MAP NO. 42 BLOCK NO. 7

KINDLER ROAD - EDEN BROOK DRIVE
 WATER MAIN CONNECTION

CAPITAL PROJECT: W-8297
 CONTRACT NO.: 44-4675
 ELECTION DISTRICT: 6
 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
 SHEET 8 OF 20

I:\HOWARD.CO.2343\45452.KINDLER-ROAD.DWG SHEETS\45452-C112.DWG

MINIMUM DIMENSIONS OF BUTRESS FOR HORIZONTAL BENDS

DIAMETER (D)	4" (102)	6" (152)	8" (203)	10" (254)	12" (305)
BEND					
1/2 (11.25°)	A 1'-10"	2'-0"	3'-0"	3'-2"	
	B 6"	6"	10"	1'-0"	
	C 1'-0"	1'-3"	1'-6"	1'-6"	
1/4 (45°)	A 2'-6"	3'-0"	3'-7"	4'-2"	
	B 6"	1'-0"	1'-3"	1'-6"	
	C 1'-6"	1'-6"	1'-6"	2'-0"	
1/8 (22.5°)	A 3'-7"	4'-10"	6'-0"	6'-2"	
	B 1'-0"	1'-3"	1'-6"	2'-0"	
	C 1'-6"	2'-6"	3'-0"	3'-0"	

AREA OF BEARING = Ax2B

BUTRESS FOR CAPS AND PLUGS

MINIMUM DIMENSIONS OF BUTRESS FOR CAPS AND PLUGS *

SIZE	4" (102)	6" (152)	8" (203)	10" (254)	12" (305)
D	4'-6"	8"	10"	12"	
E	1'-0"	1'-0"	1'-0"	1'-0"	
F	2'-0"	3'-0"	3'-6"	4'-0"	
G	4'-10"	5'-3"	6'-8"	8'-0"	

AREA OF BEARING = FxG

REVISIONS:

Revised	Howard County, Maryland Department of Public Works	WATER MAIN Buttress Cap & Horizontal Bend	Detail W-2.21
Approved	<i>[Signature]</i> Chief, Bureau of Engineering		

TABLE 'A'

REINFORCING BARS

SIZE (D)	1/4 (6")	1/2 (11.25")	3/4 (18.75")	1 (25.4")
6"	3-#4	3-#4	3-#4	3-#4
8"	3-#4	3-#4	3-#4	3-#4
10"	3-#4	3-#4	3-#4	3-#4
12"	3-#4	3-#4	3-#4	3-#4

TABLE 'B'

ANCHORAGES FOR UPPER VERTICAL BENDS

DIAMETER (D)	4" (102)	6" (152)	8" (203)	10" (254)	12" (305)
BEND					
5°	A 3'-0"	3'-0"	3'-0"	3'-0"	
	B 1'-3"	1'-6"	1'-0"	2'-0"	
	C 1'-6"	2'-0"	2'-6"	3'-2"	
1/2 (11.25°)	A 3'-0"	3'-0"	3'-0"	4'-0"	
	B 1'-7"	2'-0"	2'-0"	2'-0"	
	C 2'-6"	3'-4"	5'-0"	5'-4"	
1/4 (22.5°)	A 3'-0"	3'-0"	3'-6"	4'-0"	
	B 2'-0"	2'-6"	3'-0"	3'-6"	
	C 3'-10"	5'-3"	5'-6"	5'-10"	

REVISIONS:

Revised	Howard County, Maryland Department of Public Works	WATER MAIN Buttress & Anchorage Vertical Bend	Detail W-2.22
Approved	<i>[Signature]</i> Chief, Bureau of Engineering		

PLAN B

SECTION B-B

REVISIONS:

Revised	Howard County, Maryland Department of Public Works	WATER MAIN Buttress Tee & 1/4 Bend	Detail W-2.23
Approved	<i>[Signature]</i> Chief, Bureau of Engineering		

PAVEMENT REPAIR DETAIL
NOT TO SCALE

2" MIN. ASPHALT SURFACE COURSE (12.5 MM SUPERPAVE)
3" MIN. ASPHALT BASE COURSE (25.0 MM SUPERPAVE)
COMPACTED 6" GRADED AGGREGATE BASE

NOTES:

- REMOVE EXISTING PAVEMENT TO FULL DEPTH.
- ROLL EXISTING GRADED AGGREGATE BASE TO ACHIEVE MAXIMUM DENSITY.
- INSTALL 3" MINIMUM ASPHALT VASE COURSE, PROVIDED A TACK COAT OF AE-4 EMULSION APPLIED AT THE RATE OF 0.05 GAL/SQ. YD. AND INSTALL 2" MINIMUM ASPHALT SURFACE COURSE.
- SAWCUT JOINTS FULL DEPTH OF ASPHALT COURSES, TACK COAT JOINTS IN SURFACE COURSE.
- FOOTPATH SHALL BE REPLACED TO THE EXISTING WIDTH. CONTRACTOR SHALL USE SELECT FILL AS REQUIRED WHERE EXISTING PAVEMENT HAS BEEN REMOVED.

PATHWAY RESTORATION DETAIL
TYPICAL SECTION
NOT TO SCALE

3:1 MAX. SLOPE
SEED & MULCH
4" BITUMINOUS CONCRETE BAND, BF
6" CR-6 COMPACTED & ROLLED COMPACTED SUBGRADE

RECORD DRAWINGS TO THE BEST OF OUR KNOWLEDGE, INFORMATION AND BELIEF, BASED ON INFORMATION PROVIDED BY OTHERS, THESE RECORD DRAWINGS SUBSTANTIALLY REPRESENT THE PROJECT AS CONSTRUCTED.

O'BRIEN & GERE ENGINEERS, INC.
BY: *[Signature]*

AS-BUILT 6/2014

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Director of Public Works: *[Signature]* 10/6/13
Date: 9/24/13

Chief, Bureau of Engineering: *[Signature]* 9/24/13
Date: 9/24/13

Chief, Bureau of Utilities: *[Signature]* 10/6/13
Date: 9/24/13

Chief, Utility Design Division: *[Signature]* 9/24/13
Date: 9/24/13

O'BRIEN & GERE

4201 MITCHELLVILLE ROAD
SUITE 500
BOWIE, MD 20716
PHONE: 301-731-5622

PROFESSIONAL CERTIFICATION: I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DAILY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND. LICENSE NO. 18523. EXPIRATION DATE 12/08/2013

STATE OF MARYLAND
JOHN D. QUINN
PROFESSIONAL ENGINEER

DSN. BY: SSD
DRN. BY: RPW
CHK. BY: RJD
DATE: AUG, 2013

RJD 1 AS-BUILT/RECORD DRAWING 6/14
RJD 0 AS ISSUED FOR BID 09/13

REVISION

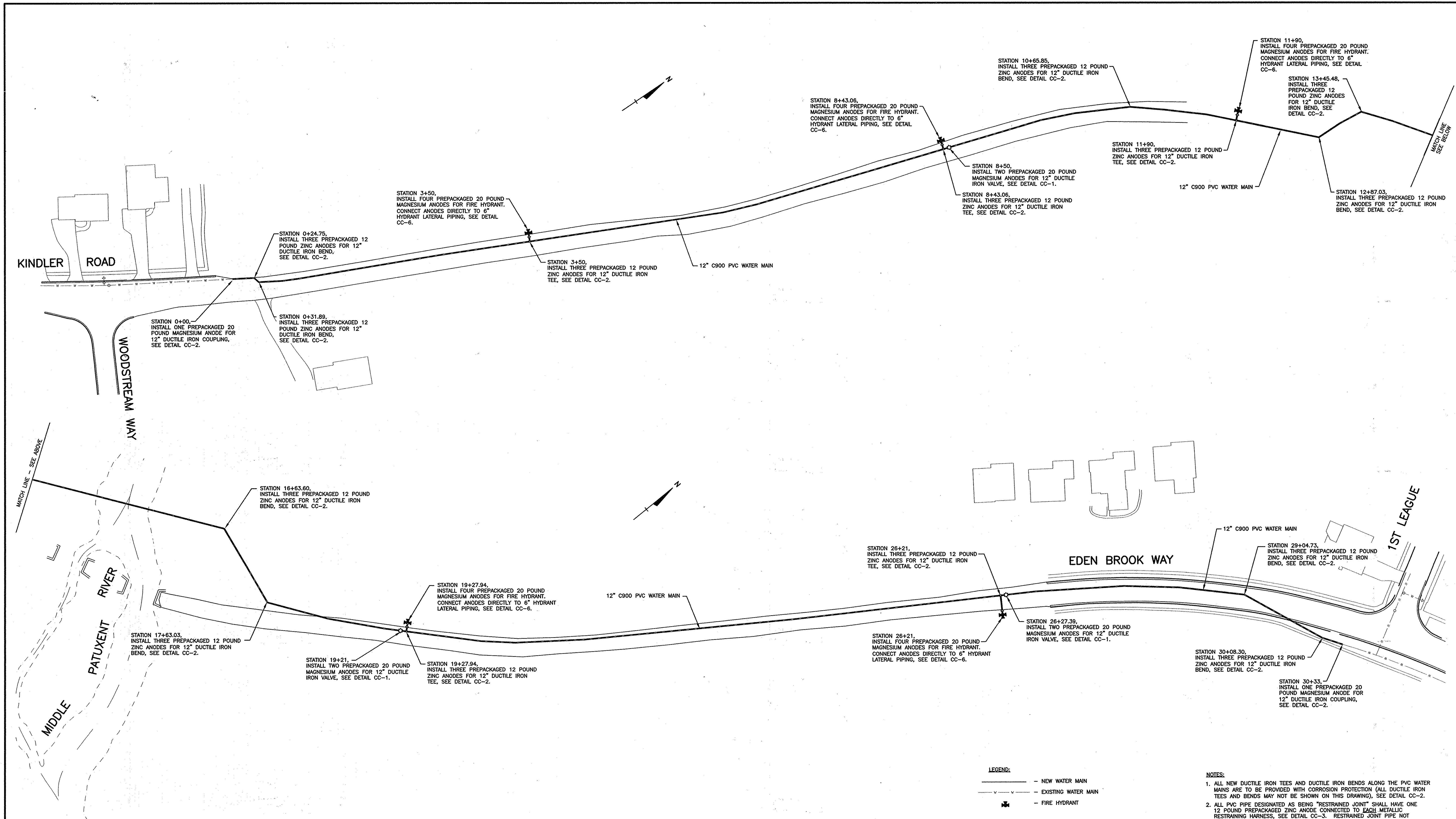
GENERAL DETAILS

600' SCALE MAP NO. 42 BLOCK NO. 7

KINDLER ROAD - EDEN BROOK DRIVE WATER MAIN CONNECTION

CAPITAL PROJECT: W-8297
CONTRACT NO.: 44-4675
ELECTION DISTRICT: 6
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 9 OF 20



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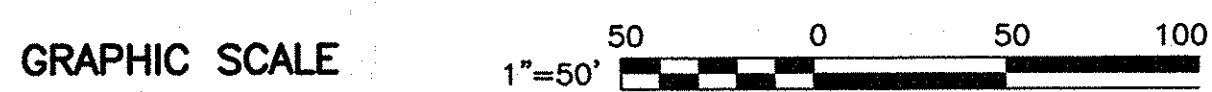
RECORD DRAWINGS
TO THE BEST OF OUR KNOWLEDGE, INFORMATION AND BELIEF, BASED ON INFORMATION PROVIDED BY OTHERS, THESE RECORD DRAWINGS SUBSTANTIALLY REPRESENT THE PROJECT AS CONSTRUCTED.

O'BRIEN & GERE
ENGINEERS, INC.
BY: *[Signature]*

CATHODIC PROTECTION LAYOUT
SCALE: 1"=50'

- LEGEND:**
- NEW 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 BE SHOWN ON THIS DRAWING). SEE DETAIL CC-2.
 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-3. RESTRAINED JOINT PIPE NOT SHOWN ON THIS DRAWING.
 3. ALL WATER SERVICE CONNECTIONS UTILIZING METALLIC SERVICE SADDLES SHALL HAVE TWO 12 POUND PREPACKAGED ZINC ANODES CONNECTED TO THE SERVICE SADDLE (SEE DETAIL CC-4), AND AN INSULATING CORPORATION INSTALLED TO ELECTRICALLY ISOLATE THE COPPER SERVICE FROM THE SERVICE SADDLE (SEE DETAIL CC-8). ALL WATER SERVICES MAY NOT BE SHOWN ON THIS DRAWING.
 4. DO NOT THERMITE WELD TO PVC PIPE.
 5. POLYETHYLENE ENCASEMENT SHALL NOT BE INSTALLED ON ANY DUCTILE IRON PIPE OR FITTINGS.



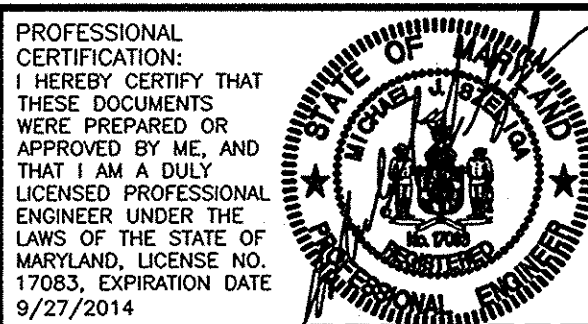
DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

[Signature] 10/15/13
DIRECTOR OF PUBLIC WORKS DATE

[Signature] 9/24/13
CHIEF - BUREAU OF ENGINEERING DATE

[Signature] 9/24/13
CHIEF, UTILITY DESIGN DIVISION DATE

RUSSELL CORROSION CONSULTANTS, INC.
Columbia, Maryland



DSN. BY:	DJD				
DRN. BY:	DJD				
CHK. BY:	MJS				
DATE:	AUGUST 2013				
BY:	1	AS-BUILT/RECORD DRAWING	6/14		
NO.:		REVISION	DATE		

CATHODIC PROTECTION LAYOUT

600' SCALE MAP NO. 42 BLOCK NO. 7

KINDLER ROAD - EDEN BROOK DRIVE WATER MAIN CONNECTION

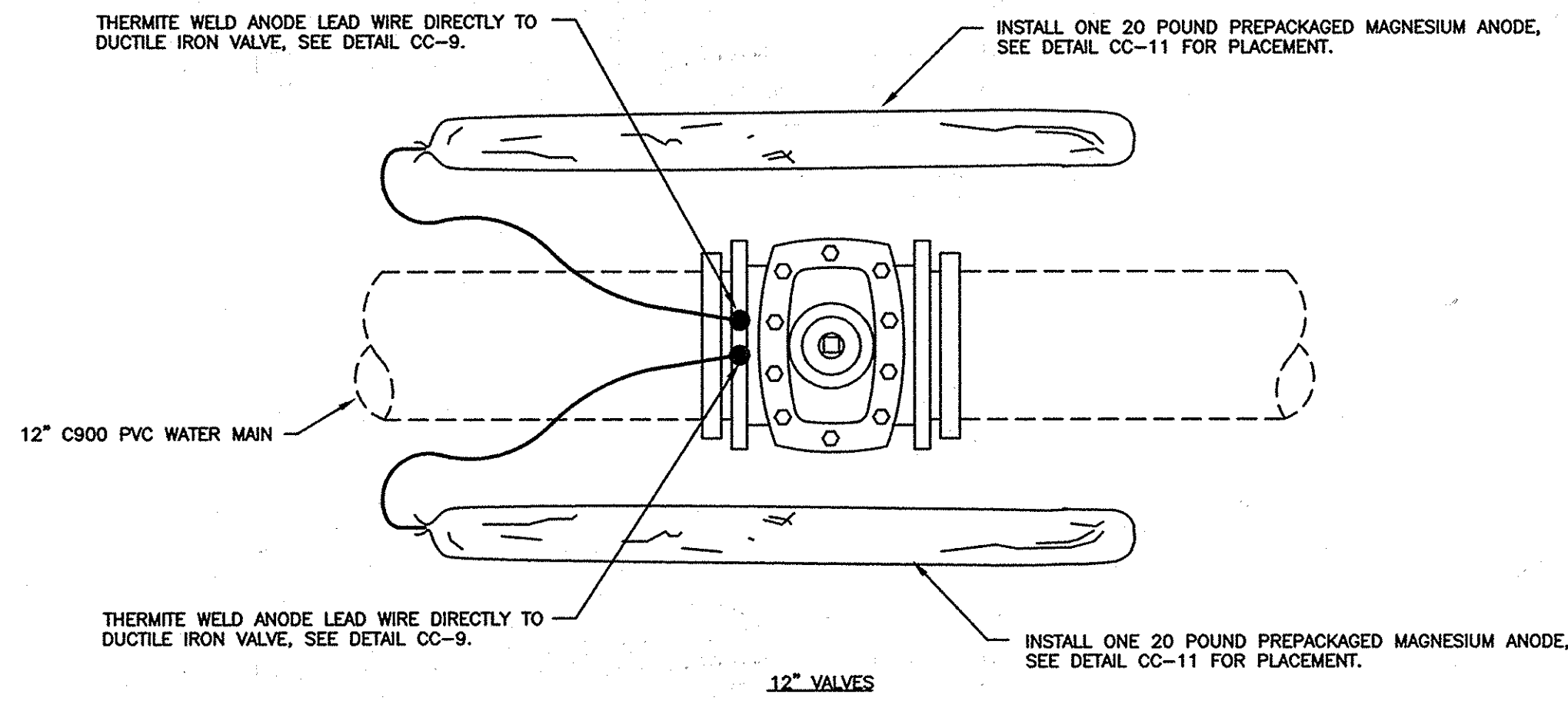
CAPITAL PROJECT: W-8297
CONTRACT NO.: 44-4675
ELECTION DISTRICT: 6
HOWARD COUNTY, MARYLAND

AS-BUILT 6/2014

SCALE AS SHOWN

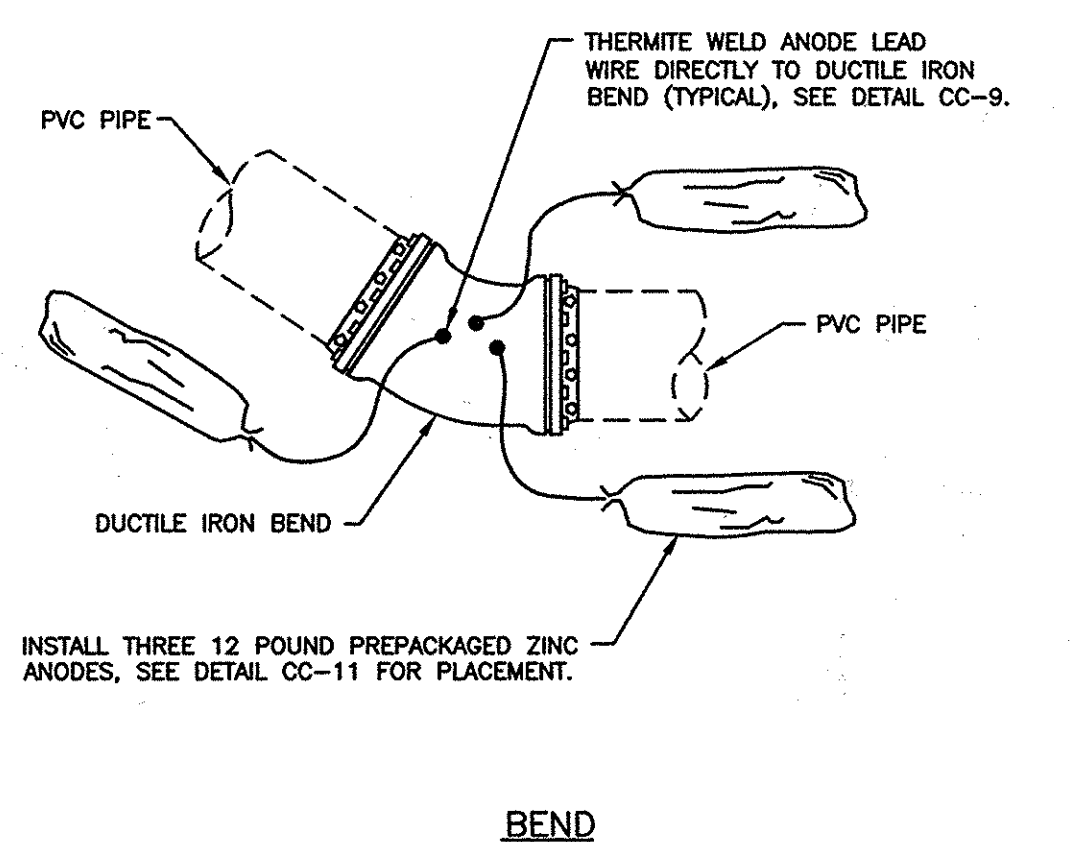
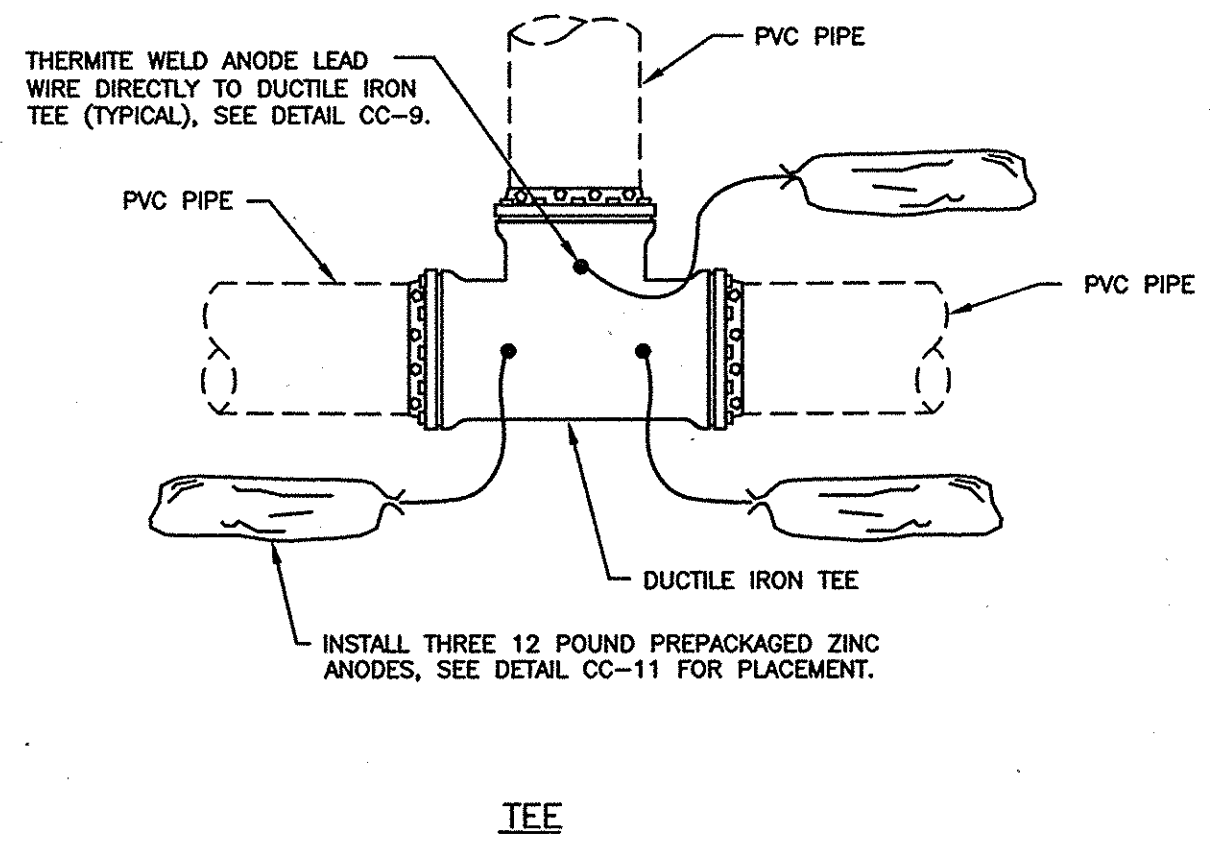
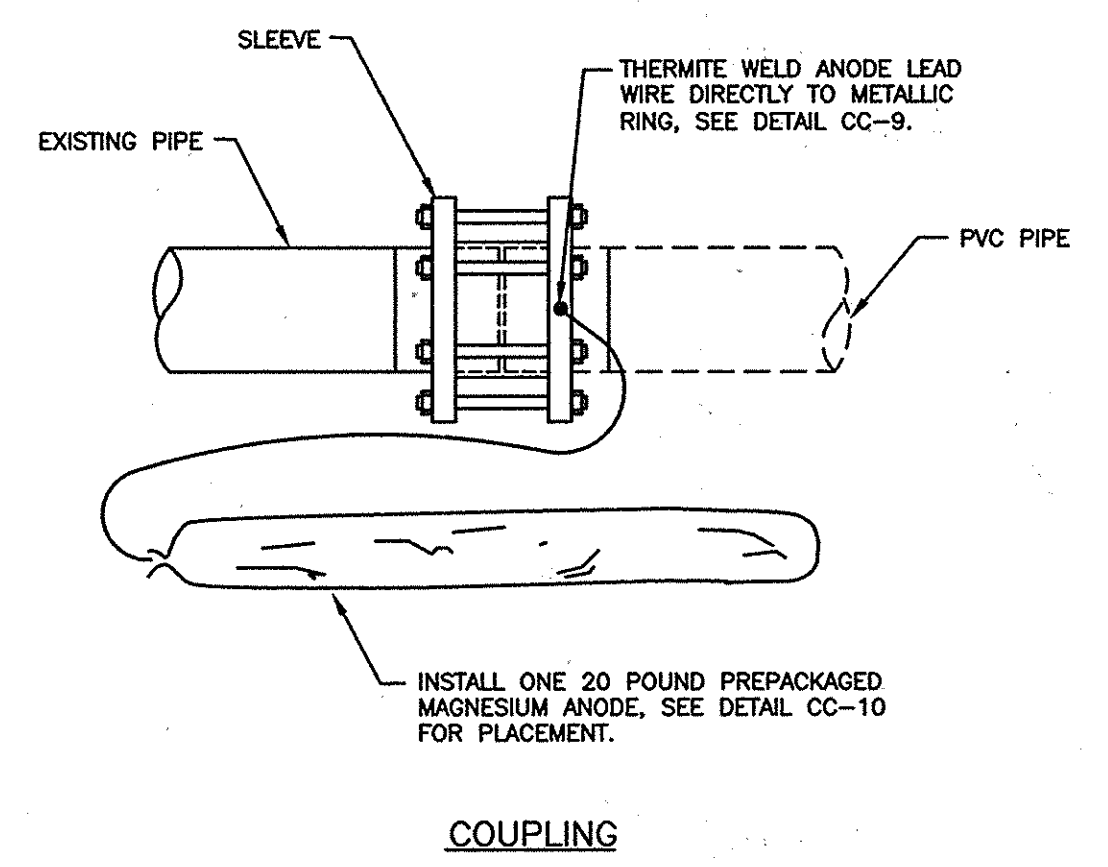
SHEET 11 OF 20

FILE NO. 45452-



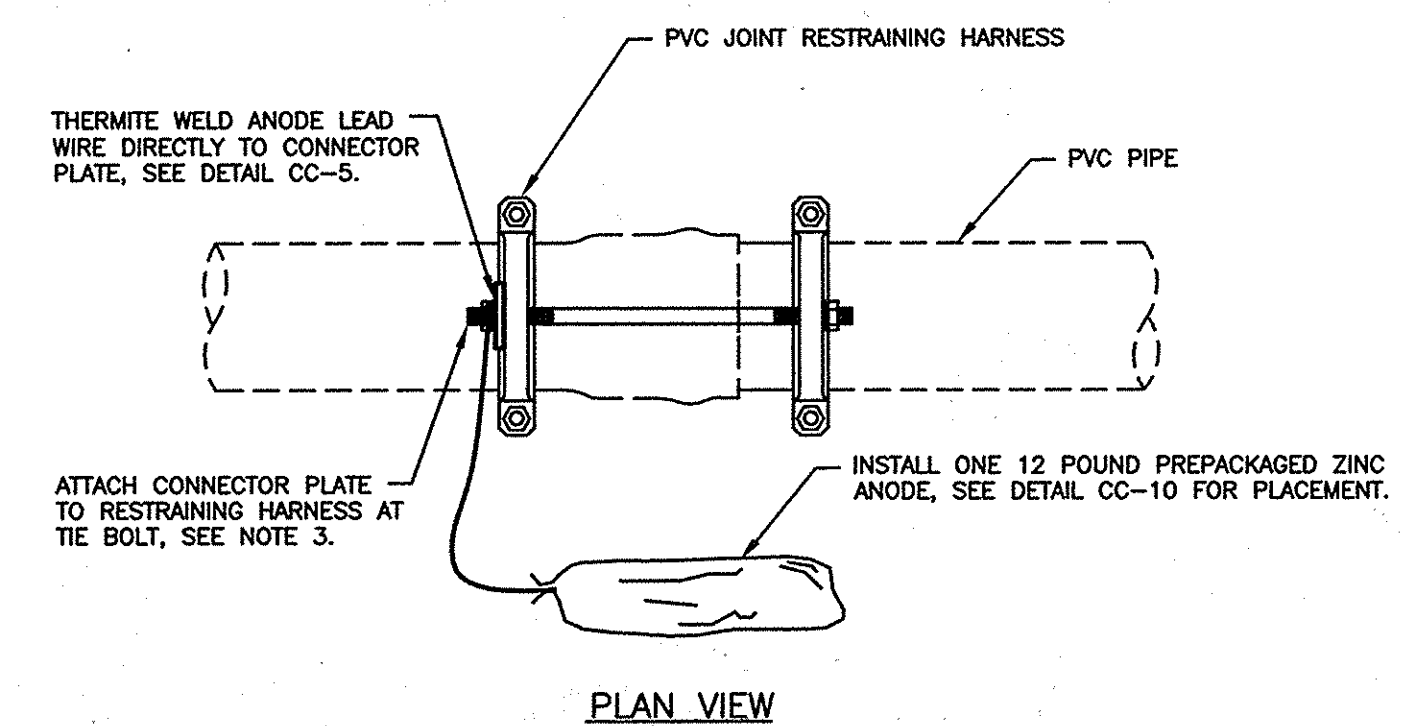
- NOTES:
1. ANODES PLACED AT SAME DEPTH AS THE BOTTOM OF PIPE AND AT A MINIMUM OF 12" FROM EDGE OF PIPE, SEE DETAIL CC-11.
 2. DO NOT THERMITE WELD TO PVC PIPE.

CC-1: CORROSION PROTECTION FOR DUCTILE IRON VALVES
NOT TO SCALE

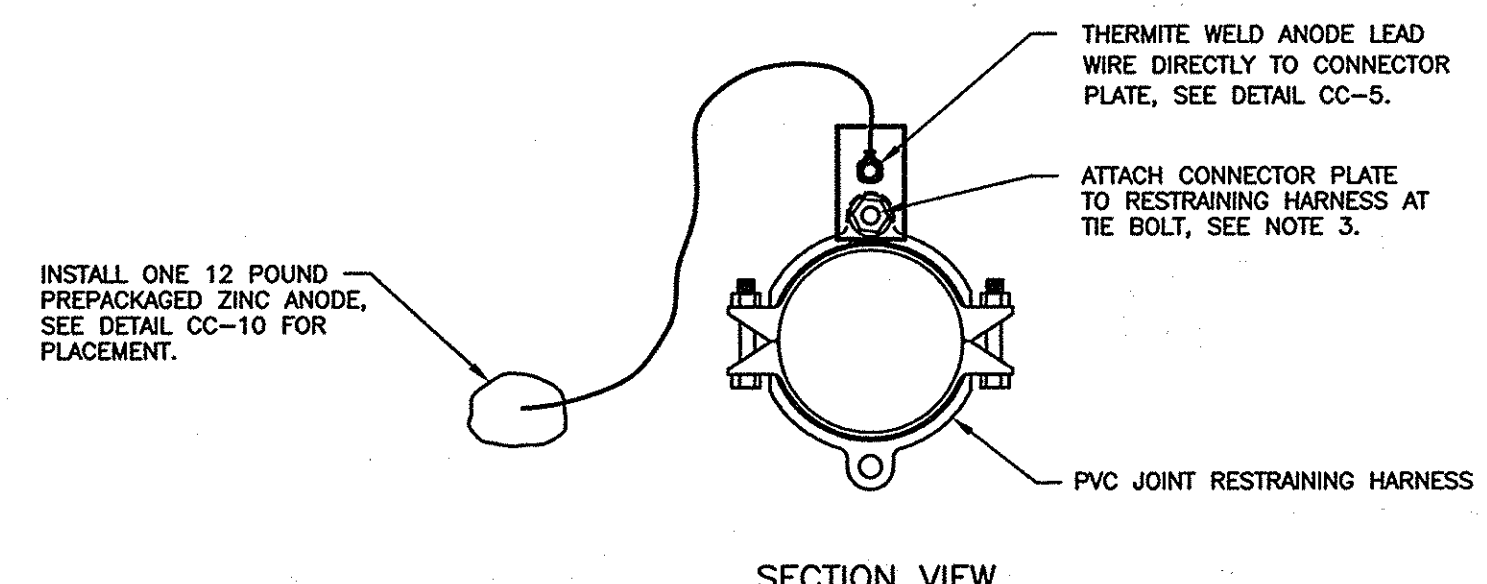


- NOTES:
1. ANODES PLACED AT SAME DEPTH AS THE BOTTOM OF PIPE AND AT A MINIMUM OF 12" FROM EDGE OF PIPE, SEE DETAILS CC-10 AND CC-11.
 2. DO NOT THERMITE WELD TO PVC PIPE.

CC-2: CORROSION PROTECTION FOR DUCTILE IRON FITTINGS
NOT TO SCALE



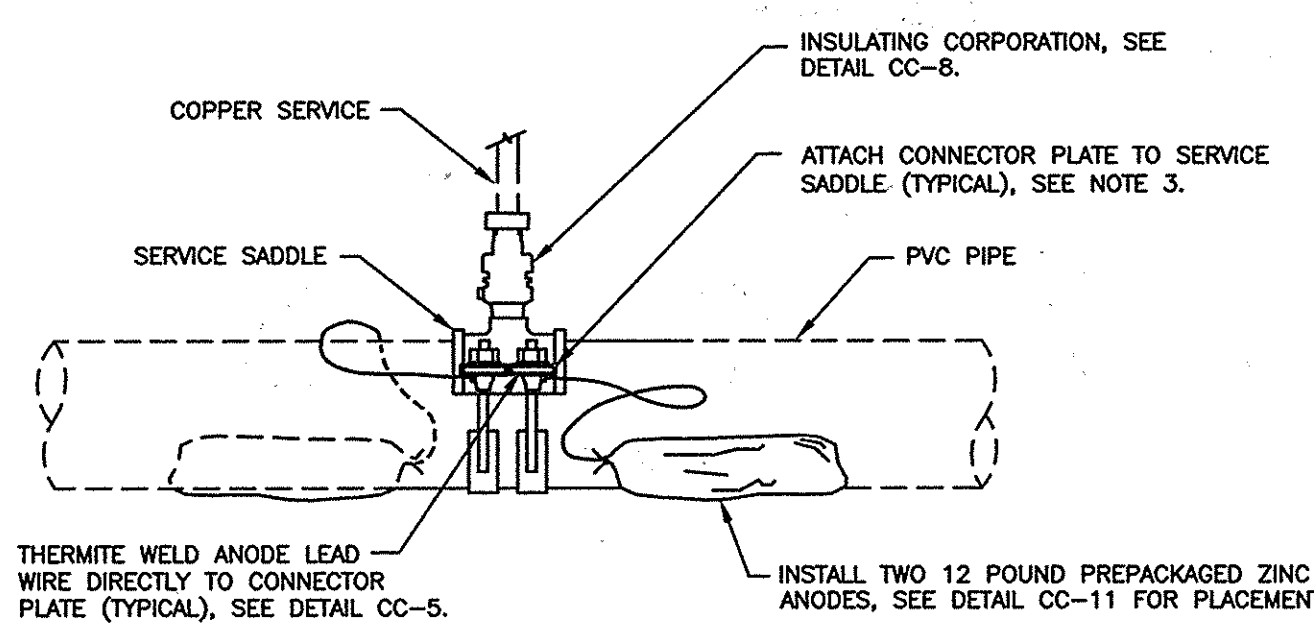
PLAN VIEW



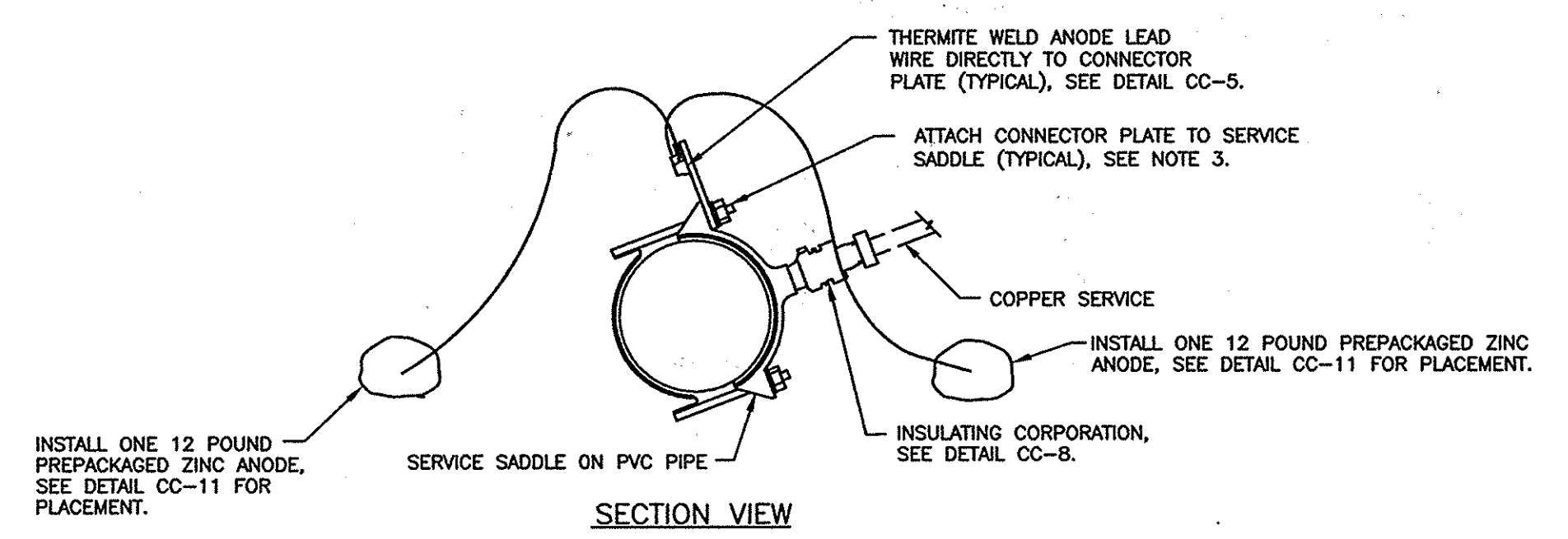
SECTION VIEW

- 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-10.
 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-3: CORROSION PROTECTION OF RESTRAINING HARNESS
NOT TO SCALE



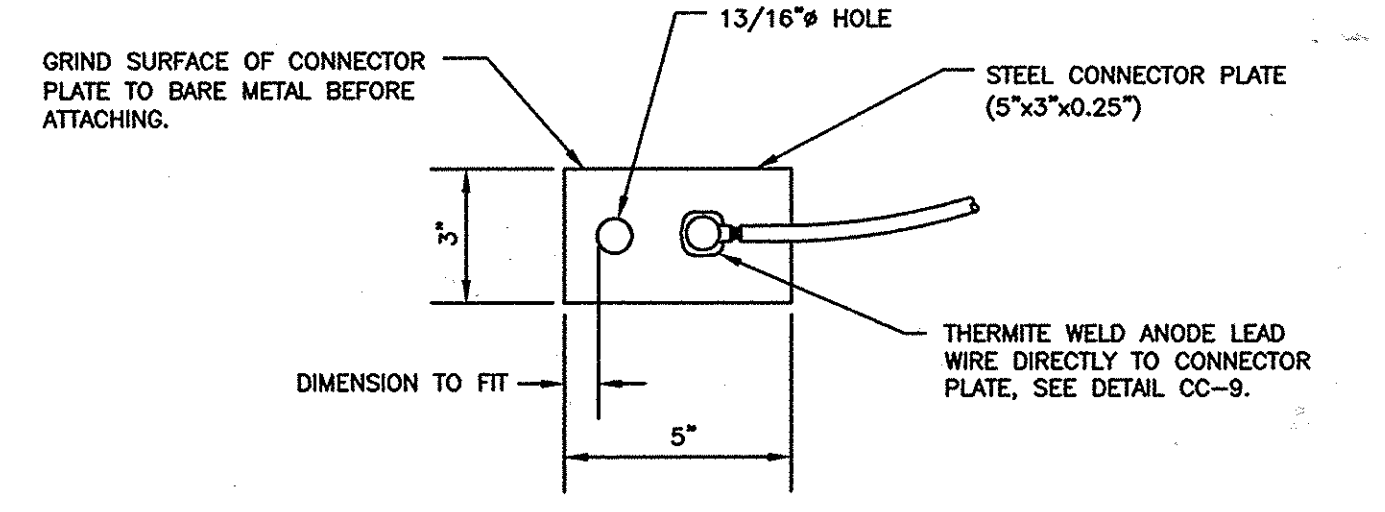
PLAN VIEW



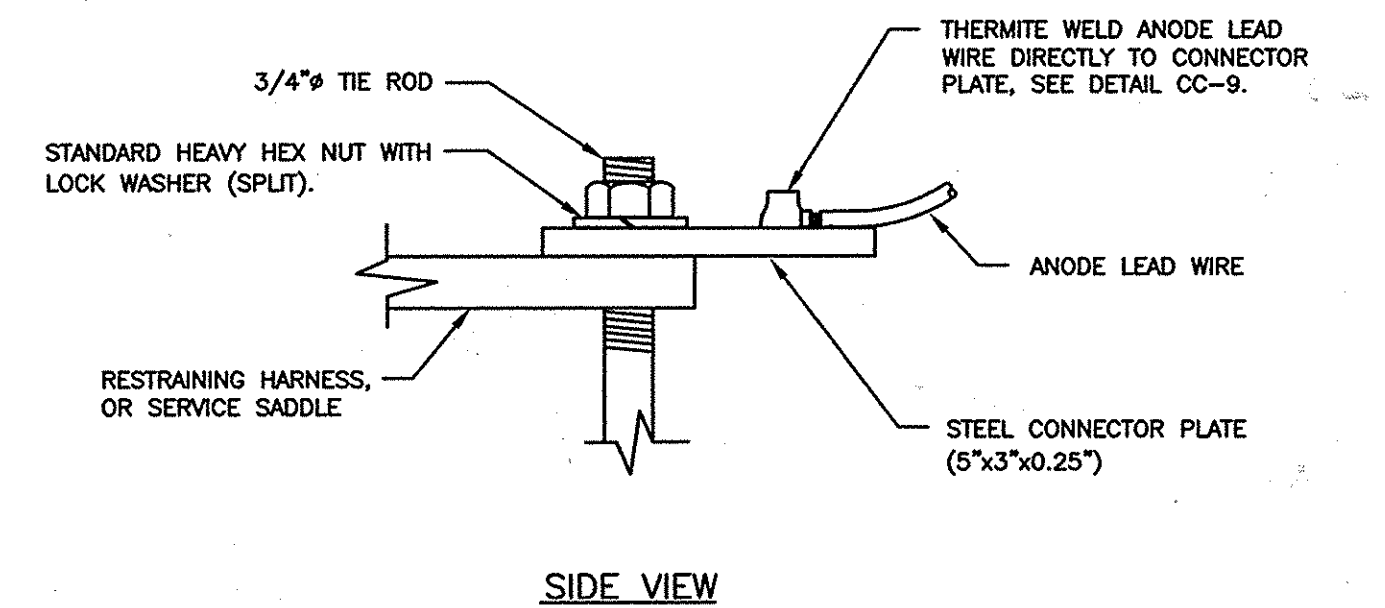
SECTION VIEW

- NOTES:
1. ANODE LEAD WIRES TO BE THERMITE WELDED TO CONNECTOR PLATES PRIOR TO ATTACHING CONNECTOR PLATES TO SERVICE SADDLE.
 2. ANODES PLACED AT SAME DEPTH AS THE BOTTOM OF PIPE AND AT A MINIMUM OF 12" FROM EDGE OF PIPE, SEE DETAIL CC-11.
 3. REMOVE COATING FROM SERVICE SADDLE 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 SERVICE SADDLE
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 SERVICE SADDLE.
 2. 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

RECORD DRAWINGS TO THE BEST OF OUR KNOWLEDGE, INFORMATION AND BELIEF, BASED ON INFORMATION PROVIDED BY OTHERS, THESE RECORD DRAWINGS SUBSTANTIALLY REPRESENT THE PROJECT AS CONSTRUCTED.

O'BRIEN & GERE ENGINEERS, INC.
BY: *[Signature]*

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DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND	
<i>[Signature]</i> DIRECTOR OF PUBLIC WORKS DATE: 10/7/13	<i>[Signature]</i> CHIEF - BUREAU OF ENGINEERING DATE: 7/24/13
<i>[Signature]</i> CHIEF, BUREAU OF UTILITIES DATE: 10/14/13	<i>[Signature]</i> CHIEF UTILITY DESIGN DIVISION DATE: 7/24/13

RUSSELL CORROSION CONSULTANTS, INC.
Columbia, Maryland

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 9/27/2014.

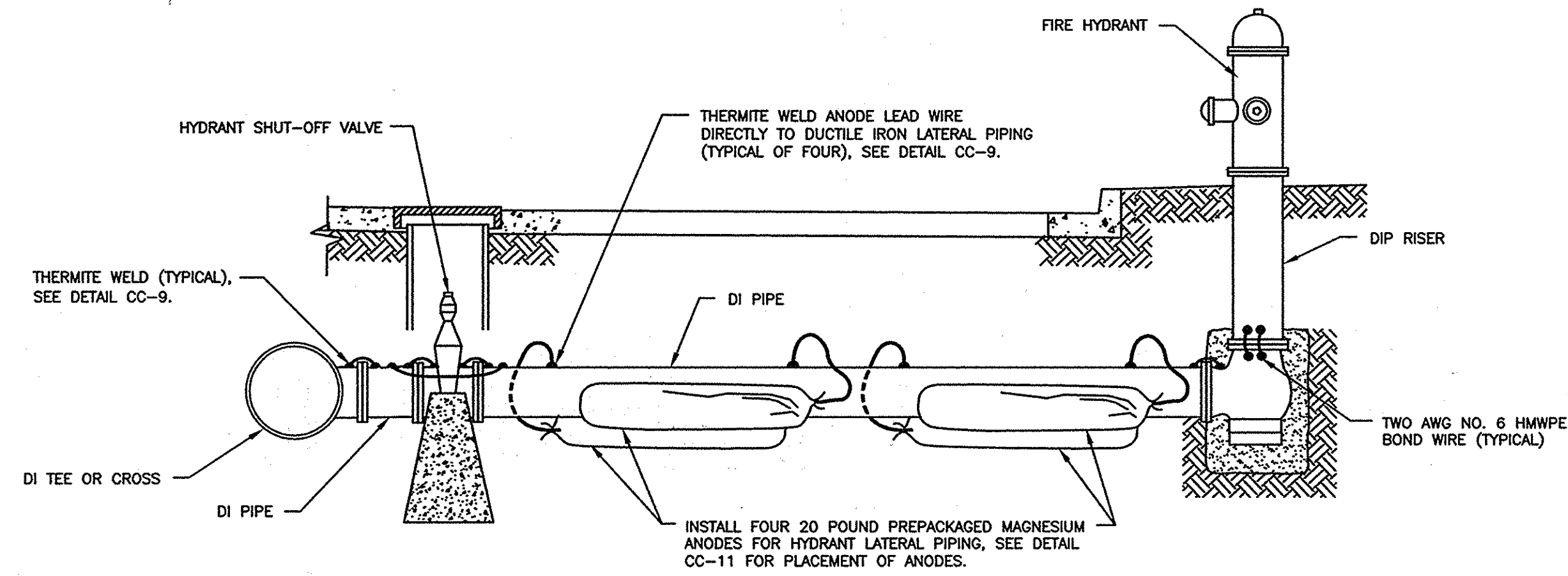
DSN. BY: DJD	
DRN. BY: DJD	
CHK. BY: MJS	
DATE: AUGUST 2013	
BY NO. 1	AS-BUILT/RECORD DRAWING
REVISION	6/14
DATE	

CATHODIC PROTECTION DETAILS - 1
600' SCALE MAP NO. 92 BLOCK NO. 7

KINDLER ROAD - EDEN BROOK DRIVE
WATER MAIN CONNECTION
CAPITAL PROJECT: W-8297
CONTRACT NO.: 44-4675
ELECTION DISTRICT: 6
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 12 OF 20
FILE NO. 45452-

AS-BUILT 6/2014

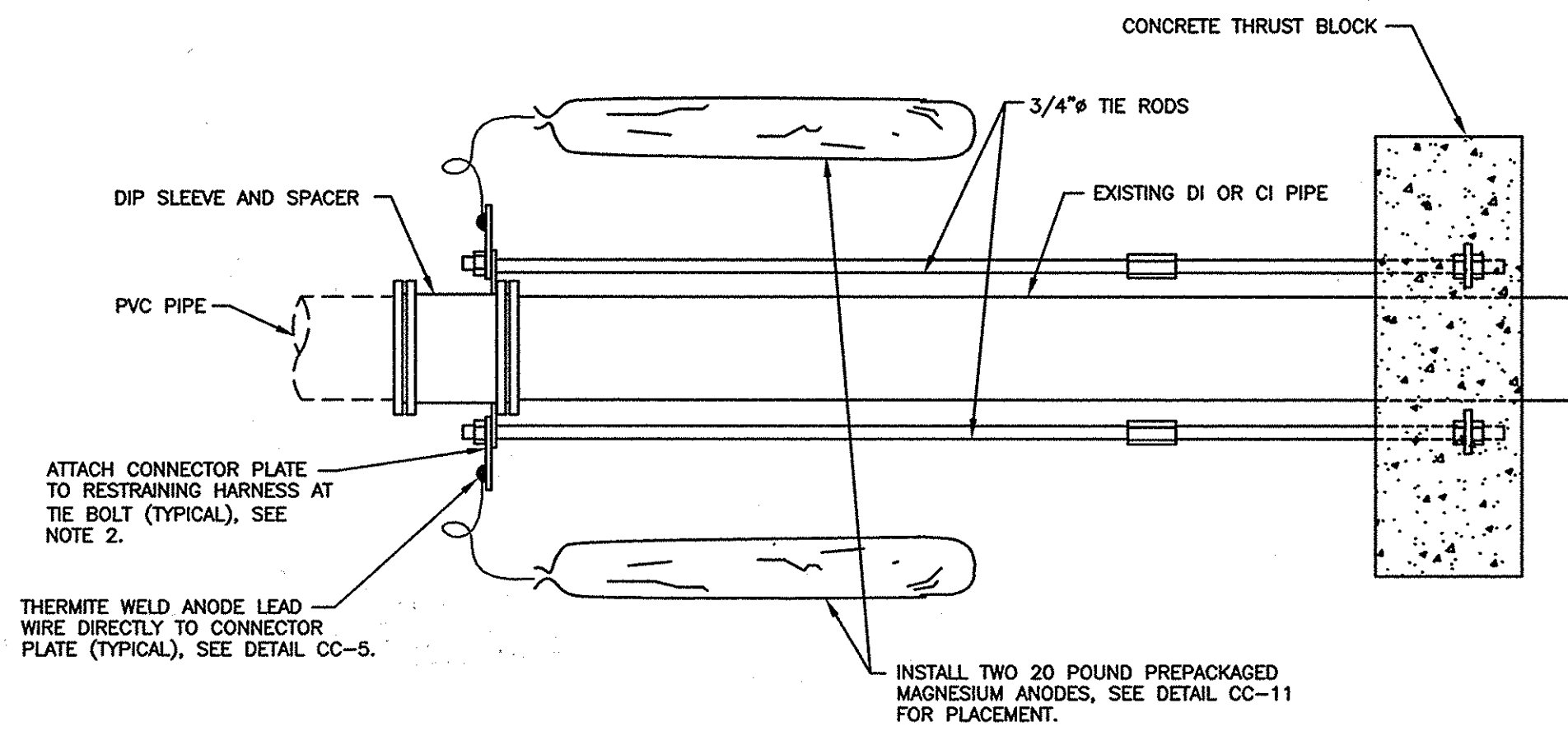


NOTES:

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-11.
4. INSTALL BOND CABLES ON HYDRANT RISER PIPE AND RISER BEND BEFORE INSTALLING HYDRANT.
5. DO NOT THERMITE WELD TO PVC PIPE.

CC-6: CORROSION PROTECTION AT FIRE HYDRANT

SCALE: NONE

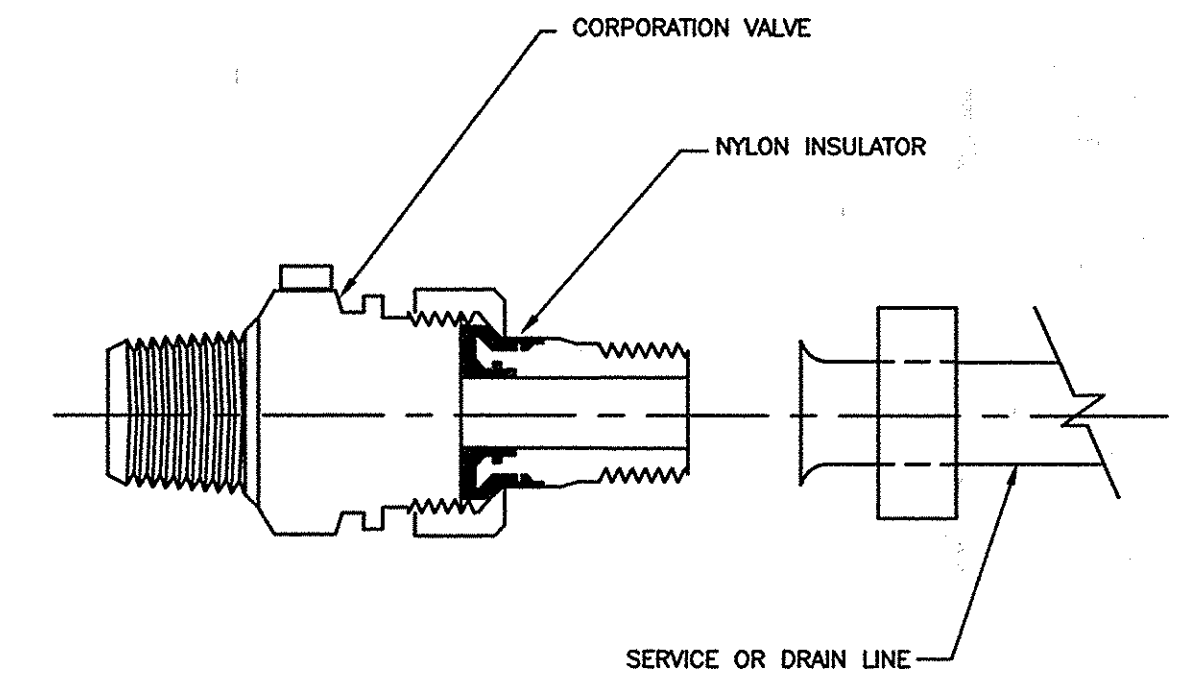


NOTES:

1. ANODES PLACED AT SAME DEPTH AS THE BOTTOM OF PIPE AND AT A MINIMUM OF 12" FROM EDGE OF PIPE, SEE DETAIL CC-11.
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-7: CORROSION PROTECTION AT IN-LINE THRUST BLOCK

NOT TO SCALE

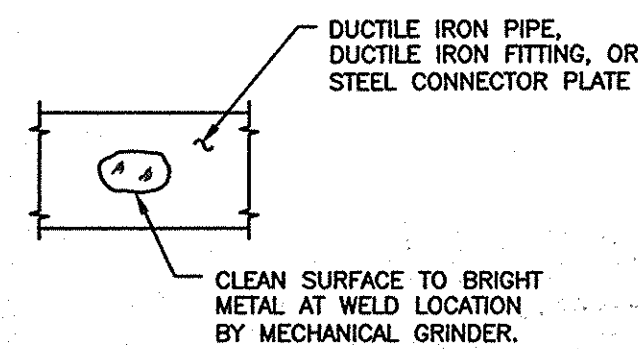


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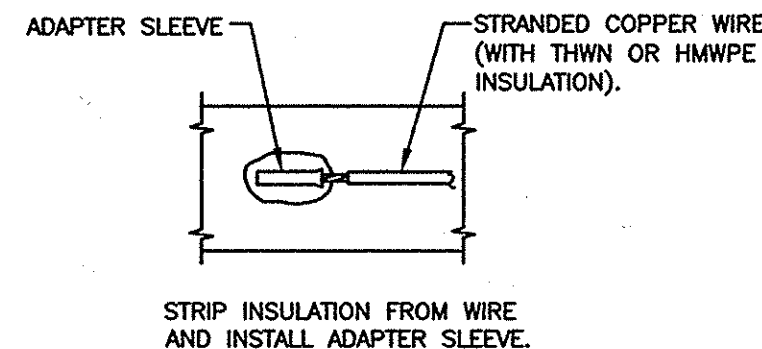
1. INSTALL ELECTRICAL ISOLATION ON ALL WATER SERVICE AND DRAIN LINE CONNECTIONS TO MAIN.
2. COAT EXTERIOR OF CORPORATION STOP, AND SERVICE PIPING AND/OR DRAIN LINE FOR A DISTANCE OF 12 INCHES WITH MASTIC COATING (ROYSTON ROSKOTE R28). MASTIC COATING TO BE MINIMUM OF 20 MILS IN THICKNESS.
3. INSULATED CORPORATION NOT REQUIRED FOR PLASTIC SERVICES.

CC-8: INSULATING CORPORATION

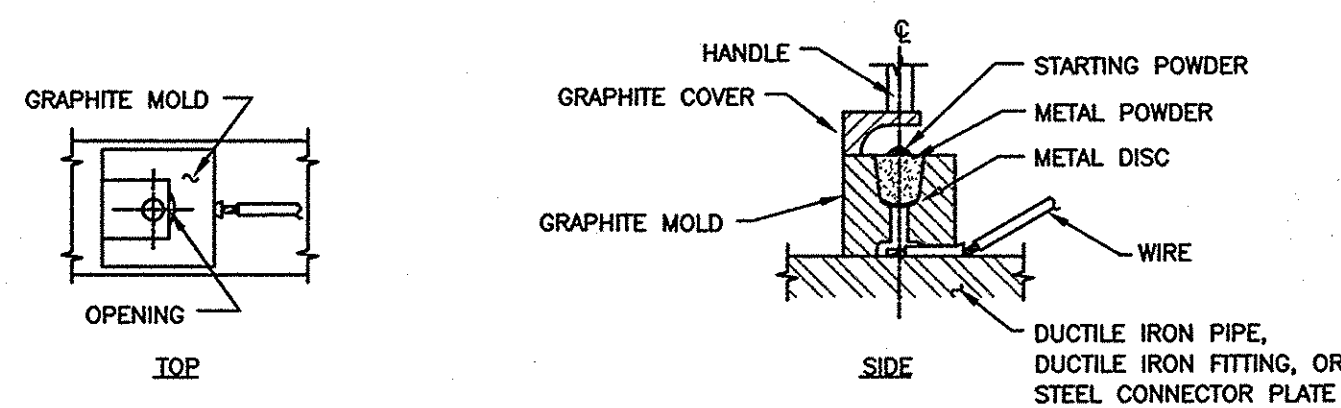
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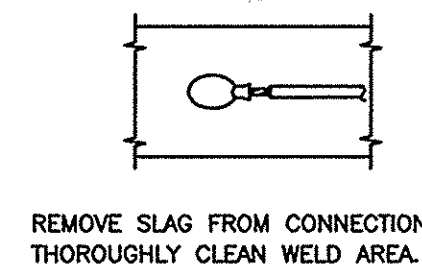
STEP 1



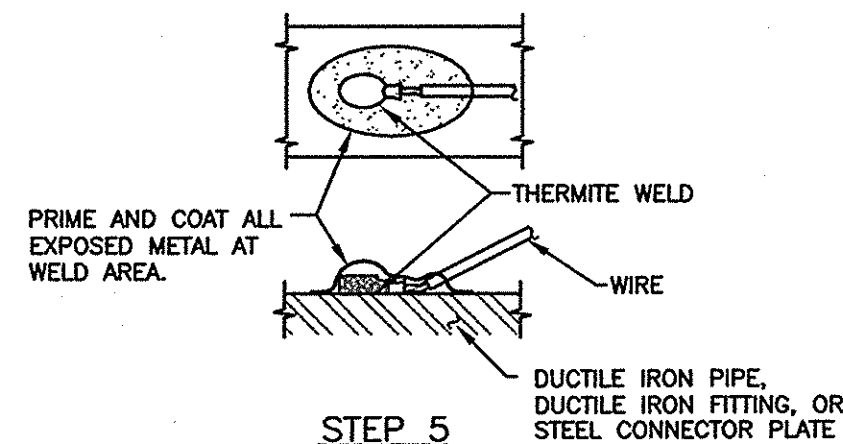
STEP 2



STEP 3



STEP 4



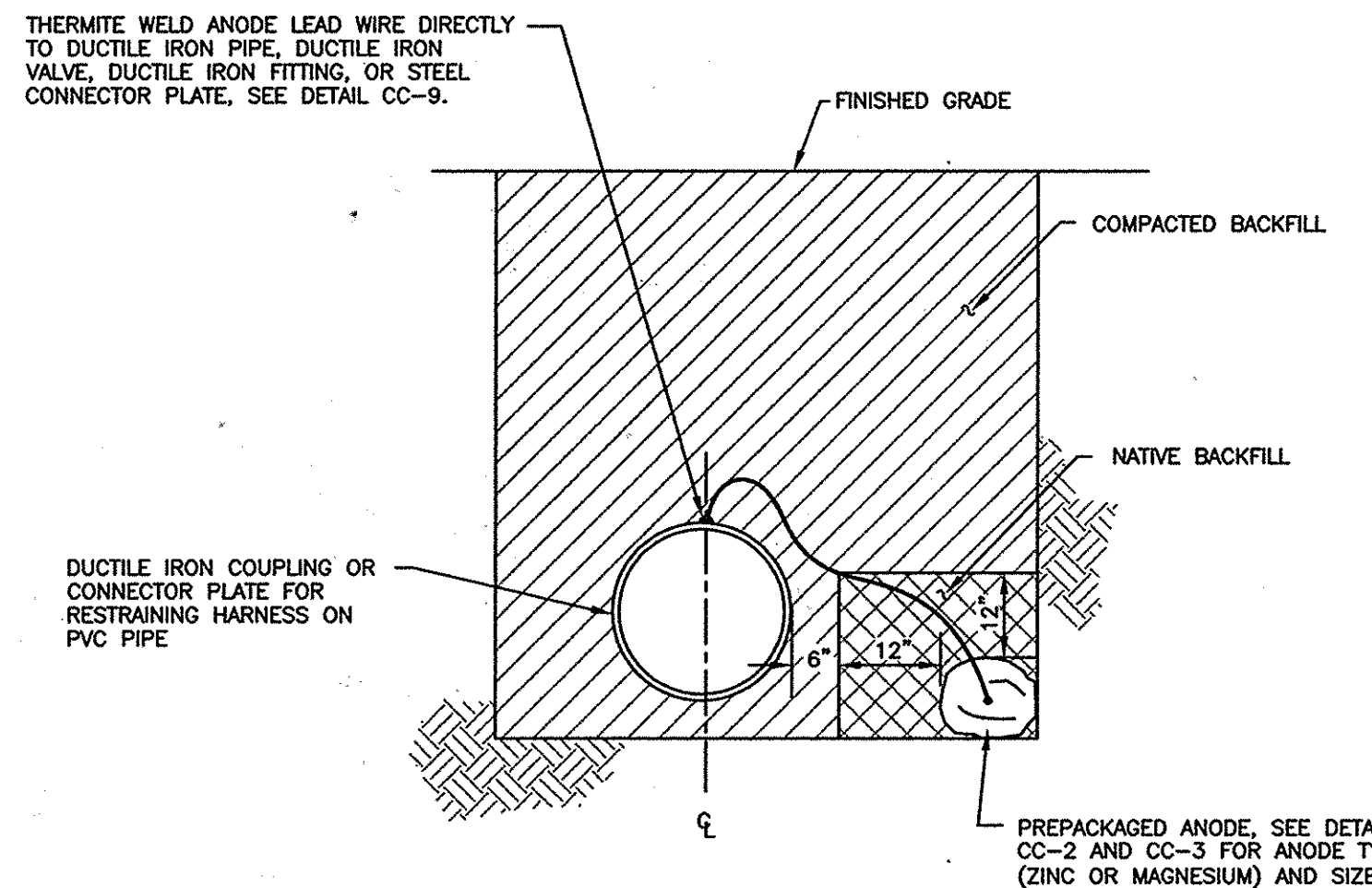
STEP 5

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-9: HORIZONTAL THERMITE WELD

SCALE: NONE

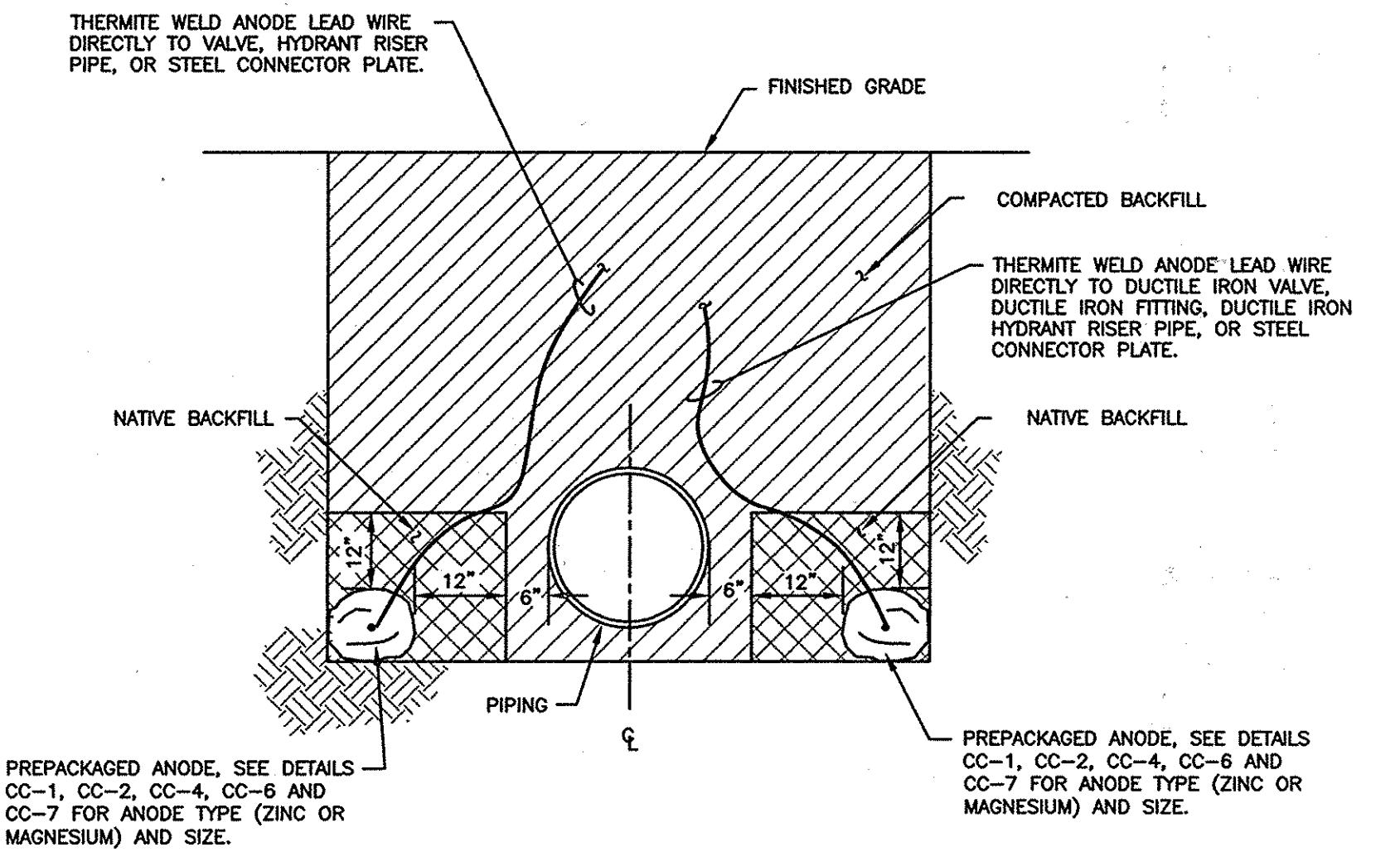


NOTES:

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

CC-10: SINGLE ANODE PLACEMENT

NOT TO SCALE



NOTES:

1. WHEN INSTALLING ANODES AT HYDRANTS, ATTACH ANODE LEADS TO HYDRANT LATERAL PIPE, SEE DETAIL CC-6.
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-11: DOUBLE ANODE PLACEMENT

NOT TO SCALE

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RECORD DRAWINGS TO THE BEST OF OUR KNOWLEDGE, INFORMATION AND BELIEF, BASED ON INFORMATION PROVIDED BY OTHERS, THESE RECORD DRAWINGS SUBSTANTIALLY REPRESENT THE PROJECT AS CONSTRUCTED.

O'BRIEN & GERE ENGINEERS, INC.
BY: [Signature]

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND	
Director of Public Works [Signature] DATE: 10/2/13	Chief - Bureau of Engineering [Signature] DATE: 9/24/13
Chief, Bureau of Utilities [Signature] DATE: 10/15/13	Chief, Utility Design Division [Signature] DATE: 9/24/13

RUSSELL CORROSION CONSULTANTS, INC.
Columbia, Maryland

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 9/27/2014.

DSN. BY: DJD	
DRN. BY: DJD	
CHK. BY: MJS	
DATE: AUGUST 2013	
BY NO. 1	AS-BUILT/RECORD DRAWING
REVISION	
DATE	

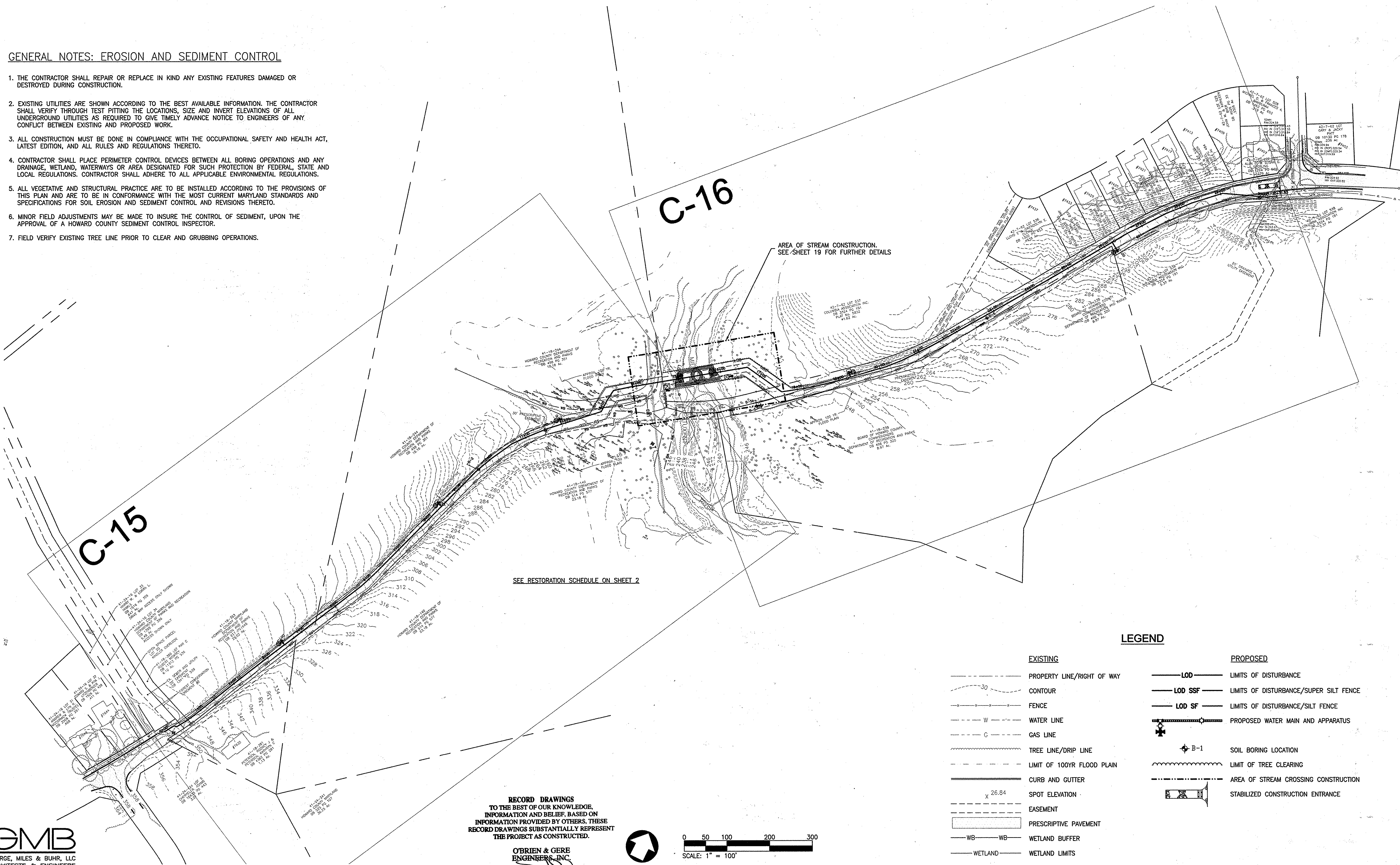
CATHODIC PROTECTION DETAILS - 2
600' SCALE MAP NO. 42 BLOCK NO. 7

KINDLER ROAD - EDEN BROOK DRIVE WATER MAIN CONNECTION	
CAPITAL PROJECT: W-8297 CONTRACT NO.: 44-4675 ELECTION DISTRICT: 6 HOWARD COUNTY, MARYLAND	
AS-BUILT 6/2014	FILE NO. 45462-
SHEET 13 OF 20	

\\GMB\BYSTORE01\VOL2\PROJECTS\2010\100070 KINDLER RD WATER MAIN DRAWINGS\WORKING SETS\FINAL SITE PLANS\C-14 EROSION & SEDIMENT CONTROL KEY PLAN.DWG

GENERAL NOTES: EROSION AND SEDIMENT CONTROL

1. THE CONTRACTOR SHALL REPAIR OR REPLACE IN KIND ANY EXISTING FEATURES DAMAGED OR DESTROYED DURING CONSTRUCTION.
2. EXISTING UTILITIES ARE SHOWN ACCORDING TO THE BEST AVAILABLE INFORMATION. THE CONTRACTOR SHALL VERIFY THROUGH TEST PITTING THE LOCATIONS, SIZE AND INVERT ELEVATIONS OF ALL UNDERGROUND UTILITIES AS REQUIRED TO GIVE TIMELY ADVANCE NOTICE TO ENGINEERS OF ANY CONFLICT BETWEEN EXISTING AND PROPOSED WORK.
3. ALL CONSTRUCTION MUST BE DONE IN COMPLIANCE WITH THE OCCUPATIONAL SAFETY AND HEALTH ACT, LATEST EDITION, AND ALL RULES AND REGULATIONS THERETO.
4. CONTRACTOR SHALL PLACE PERIMETER CONTROL DEVICES BETWEEN ALL BORING OPERATIONS AND ANY DRAINAGE, WETLAND, WATERWAYS OR AREA DESIGNATED FOR SUCH PROTECTION BY FEDERAL, STATE AND LOCAL REGULATIONS. CONTRACTOR SHALL ADHERE TO ALL APPLICABLE ENVIRONMENTAL REGULATIONS.
5. ALL VEGETATIVE AND STRUCTURAL PRACTICE ARE TO BE INSTALLED ACCORDING TO THE PROVISIONS OF THIS PLAN AND ARE TO BE IN CONFORMANCE WITH THE MOST CURRENT MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL AND REVISIONS THERETO.
6. MINOR FIELD ADJUSTMENTS MAY BE MADE TO INSURE THE CONTROL OF SEDIMENT, UPON THE APPROVAL OF A HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.
7. FIELD VERIFY EXISTING TREE LINE PRIOR TO CLEAR AND GRUBBING OPERATIONS.



SEE RESTORATION SCHEDULE ON SHEET 2

AREA OF STREAM CONSTRUCTION.
SEE SHEET 19 FOR FURTHER DETAILS

LEGEND

- | EXISTING | PROPOSED |
|--------------------------------|--|
| --- PROPERTY LINE/RIGHT OF WAY | — LOD — LIMITS OF DISTURBANCE |
| --- CONTOUR | — LOD SSF — LIMITS OF DISTURBANCE/SUPER SILT FENCE |
| --- FENCE | — LOD SF — LIMITS OF DISTURBANCE/SILT FENCE |
| --- W --- WATER LINE | --- PROPOSED WATER MAIN AND APPARATUS |
| --- G --- GAS LINE | ◆ B-1 SOIL BORING LOCATION |
| --- TREE LINE/D RIP LINE | --- LIMIT OF TREE CLEARING |
| --- LIMIT OF 100YR FLOOD PLAIN | --- AREA OF STREAM CROSSING CONSTRUCTION |
| --- CURB AND GUTTER | --- STABILIZED CONSTRUCTION ENTRANCE |
| x 26.84 SPOT ELEVATION | |
| --- EASEMENT | |
| --- WB --- WETLAND BUFFER | |
| --- WETLAND --- WETLAND LIMITS | |

RECORD DRAWINGS
TO THE BEST OF OUR KNOWLEDGE,
INFORMATION AND BELIEF, BASED ON
INFORMATION PROVIDED BY OTHERS, THESE
RECORD DRAWINGS SUBSTANTIALLY REPRESENT
THE PROJECT AS CONSTRUCTED.

O'BRIEN & GERE
ENGINEERS, INC.
BY: *[Signature]*



0 50 100 200 300
SCALE: 1" = 100'

GMB
GEORGE, MILES & BUHR, LLC
ARCHITECTS & ENGINEERS
BALTIMORE - BALTIMORE - LEWES - SEAFORD - YORK
www.gmbnet.com

DEPARTMENT OF PUBLIC WORKS

HOWARD COUNTY, MARYLAND

[Signature] 10/21/13
DIRECTOR OF PUBLIC WORKS DATE

[Signature] 9/24/13
CHIEF - BUREAU OF ENGINEERING DATE

[Signature] 10/21/13
CHIEF, BUREAU OF UTILITIES DATE

[Signature] 9/24/13
CHIEF/UTILITY DESIGN DIVISION DATE

O'BRIEN & GERE
4201 MITCHELLVILLE ROAD
SUITE 500
BOWIE, MD 20716
PHONE: 301-731-5622

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.
22749, EXPIRATION DATE
6/22/2014

DSN. BY: JJS			
DRN. BY: RFT			
CHK. BY: SLM			
DATE: AUGUST 2013	SLM	0	08/13
	BY	NO.	REVISION
			DATE

EROSION & SEDIMENT
CONTROL KEY PLAN

600' SCALE MAP NO. 42 BLOCK NO. 7

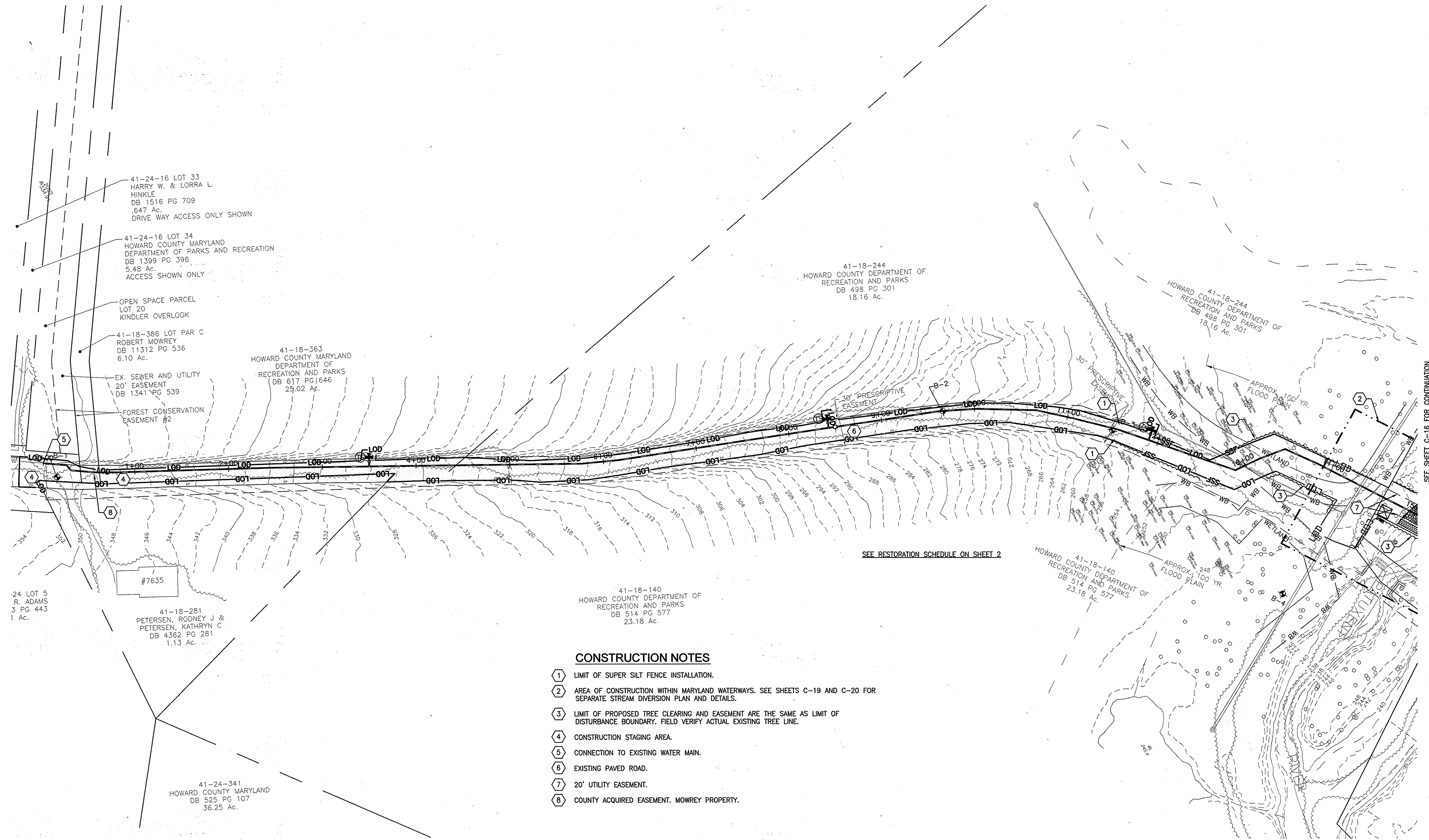
KINDLER ROAD - EDEN BROOK DRIVE
WATER MAIN CONNECTION
CAPITAL PROJECT: W-8297
CONTRACT NO.: 44-4675
ELECTION DISTRICT: 6
HOWARD COUNTRY, MARYLAND

C-14
SHEET
14 OF 20

AS-BUILT 6/2014

GMB FILE NO. 100070 KINDLER ROAD WATER MAIN

G:\MSB\STORED1\VOL2\PROJECTS\2010\100070 KINDLER RD WATER MAIN DRAWINGS\WORKING SETS\FINAL SITE PLANS\C-15 EROSION & SEDIMENT CONTROL SITE PLANDWG

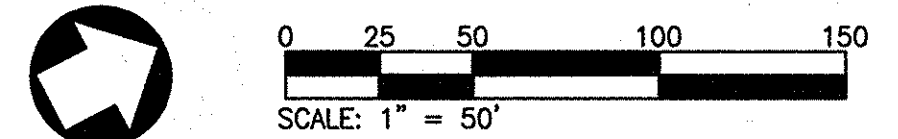


CONSTRUCTION NOTES

- ① LIMIT OF SUPER SILT FENCE INSTALLATION.
- ② AREA OF CONSTRUCTION WITHIN MARYLAND WATERWAYS. SEE SHEETS C-19 AND C-20 FOR SEPARATE STREAM DIVERSION PLAN AND DETAILS.
- ③ LIMIT OF PROPOSED TREE CLEARING AND EASEMENT ARE THE SAME AS LIMIT OF DISTURBANCE BOUNDARY. FIELD VERIFY ACTUAL EXISTING TREE LINE.
- ④ CONSTRUCTION STAGING AREA.
- ⑤ CONNECTION TO EXISTING WATER MAIN.
- ⑥ EXISTING PAVED ROAD.
- ⑦ 20' UTILITY EASEMENT.
- ⑧ COUNTY ACQUIRED EASEMENT. MOWREY PROPERTY.

RECORD DRAWINGS
 TO THE BEST OF OUR KNOWLEDGE,
 INFORMATION AND BELIEF, BASED ON
 INFORMATION PROVIDED BY OTHERS, THESE
 RECORD DRAWINGS SUBSTANTIALLY REPRESENT
 THE PROJECT AS CONSTRUCTED.

O'BRIEN & GERE
 ENGINEERS
 BY: *[Signature]*



AS-BUILT 6/2014



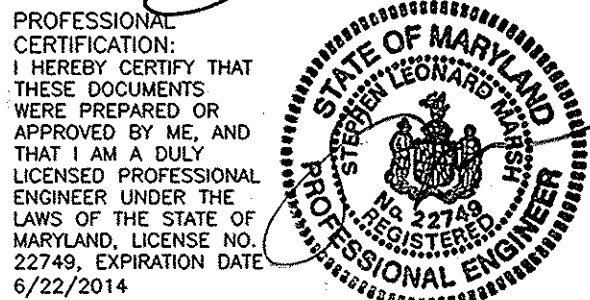
DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND

[Signature] 10/7/13
 DIRECTOR OF PUBLIC WORKS DATE

[Signature] 7/24/13
 CHIEF - BUREAU OF ENGINEERING DATE

[Signature] 9/21/13
 CHIEF UTILITY DESIGN DIVISION DATE

O'BRIEN & GERE
 4201 MITCHELLVILLE ROAD
 SUITE 500
 BOWIE, MD 20716
 PHONE: 301-731-5622



DSN. BY:	JJS		
DRN. BY:	RFT		
CHK. BY:	SLM	1	AS-BUILT/RECORD DRAWING
DATE:	AUGUST 2013	SLM	0
		BY	NO.
		REVISION	DATE
			6/14
			08/13

EROSION & SEDIMENT CONTROL SITE PLAN

600' SCALE MAP NO. 42 BLOCK NO. 7

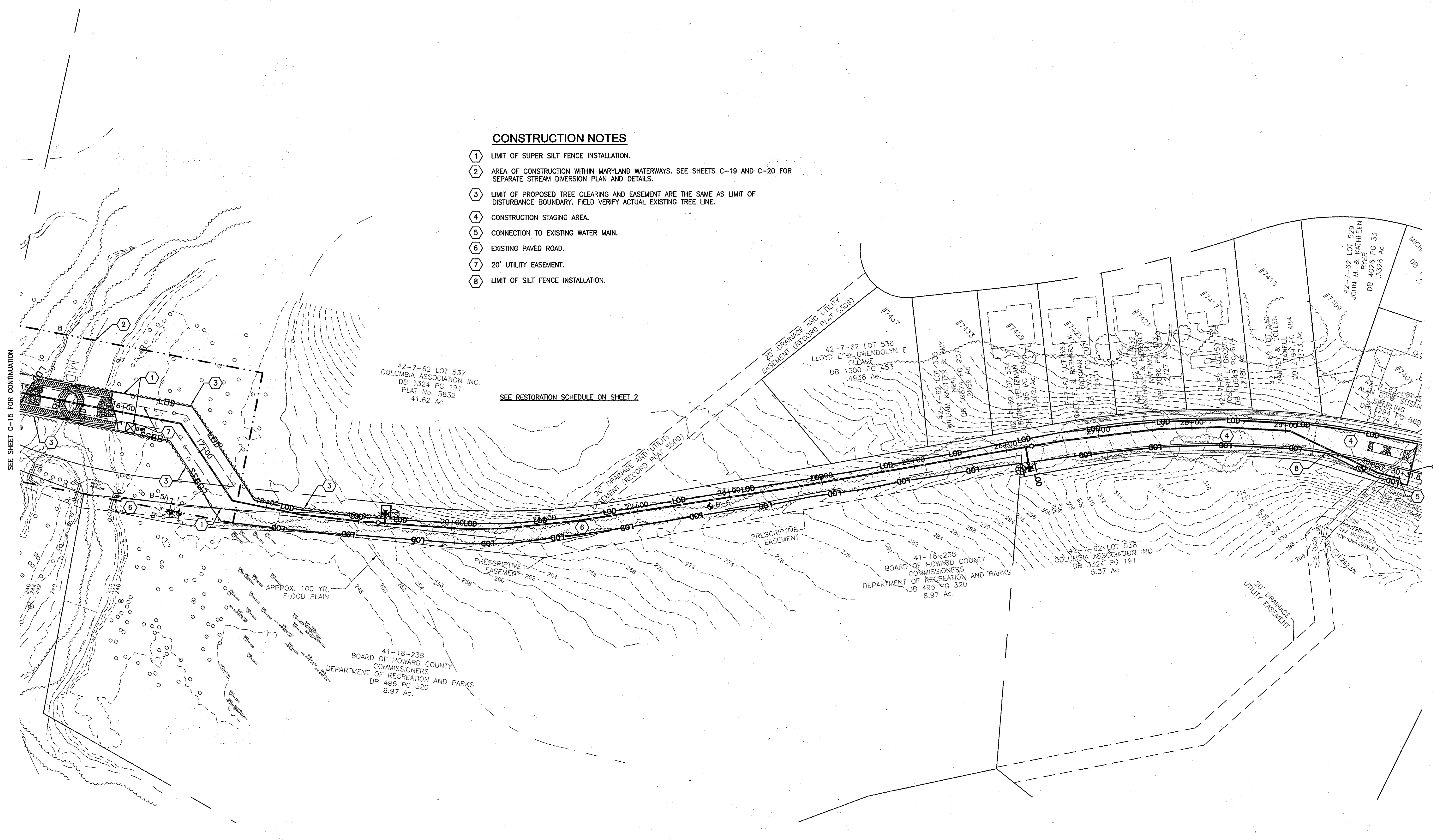
KINDLER ROAD - EDEN BROOK DRIVE WATER MAIN CONNECTION

CAPITAL PROJECT: W-8297
 CONTRACT NO.: 44-4675
 ELECTION DISTRICT: 6
 HOWARD COUNTRY, MARYLAND

C-15
 SHEET
 15 OF 20

GMB FILE NO. 100070 KINDLER ROAD WATER MAIN

\\GMBSESTORE01\VOL2\PROJECTS\2010\100070 KINDLER RD WATER MAIN DRAWINGS\WORKING SETS\FINAL SITE PLANS\C-16 EROSION & SEDIMENT CONTROL SITE PLAN.DWG



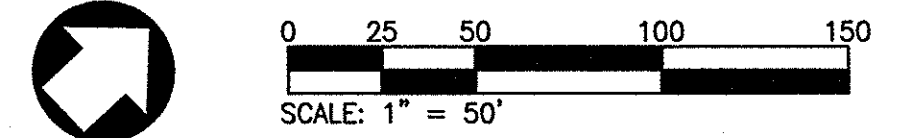
CONSTRUCTION NOTES

- 1 LIMIT OF SUPER SILT FENCE INSTALLATION.
- 2 AREA OF CONSTRUCTION WITHIN MARYLAND WATERWAYS. SEE SHEETS C-19 AND C-20 FOR SEPARATE STREAM DIVERSION PLAN AND DETAILS.
- 3 LIMIT OF PROPOSED TREE CLEARING AND EASEMENT ARE THE SAME AS LIMIT OF DISTURBANCE BOUNDARY. FIELD VERIFY ACTUAL EXISTING TREE LINE.
- 4 CONSTRUCTION STAGING AREA.
- 5 CONNECTION TO EXISTING WATER MAIN.
- 6 EXISTING PAVED ROAD.
- 7 20' UTILITY EASEMENT.
- 8 LIMIT OF SILT FENCE INSTALLATION.

SEE RESTORATION SCHEDULE ON SHEET 2

RECORD DRAWINGS
TO THE BEST OF OUR KNOWLEDGE,
INFORMATION AND BELIEF, BASED ON
INFORMATION PROVIDED BY OTHERS, THESE
RECORD DRAWINGS SUBSTANTIALLY REPRESENT
THE PROJECT AS CONSTRUCTED.

O'BRIEN & GERE
ENGINEERS, INC.
BY: *[Signature]*



AS-BUILT 6/2014

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

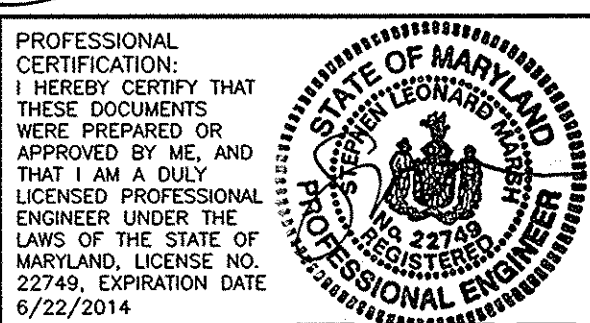
[Signature] 10/6/13
DIRECTOR OF PUBLIC WORKS DATE

[Signature] 9/21/13
CHIEF - BUREAU OF ENGINEERING DATE

[Signature] 10/1/13
CHIEF, BUREAU OF UTILITIES DATE

[Signature] 9/21/13
CHIEF, UTILITY DESIGN DIVISION DATE

O'BRIEN & GERE
4201 MITCHELLVILLE ROAD
SUITE 500
BOWIE, MD 20716
PHONE: 301-731-5622



DSN. BY:	JJS				
DRN. BY:	RFT				
CHK. BY:	SLM				
DATE:	AUGUST 2013				
SLM	0	1	AS-BUILT RECORD DRAWING	6/14	
BY	NO.		AS ISSUED FOR BID	08/13	
			REVISION	DATE	

EROSION & SEDIMENT
CONTROL SITE PLAN

600' SCALE MAP NO. 42 BLOCK NO. 7

KINDLER ROAD - EDEN BROOK DRIVE
WATER MAIN CONNECTION

CAPITAL PROJECT: W-8297
CONTRACT NO.: 44-4675
ELECTION DISTRICT: 6
HOWARD COUNTY, MARYLAND

C-16
SHEET
16 OF 20

GMB FILE NO. 100070 KINDLER ROAD WATER MAIN

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

- 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.
- FOR SITES HAVING SOIL TESTS PERFORMED, USE AND SHOW THE RECOMMENDED RATES BY THE TESTING AGENCY. SOIL TESTS ARE NOT REQUIRED FOR TEMPORARY SEEDING.
- 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.

PERMANENT STABILIZATION

DEFINITION

TO STABILIZE DISTURBED SOILS WITH PERMANENT VEGETATION.

PURPOSE

TO USE LONG-LIVED PERENNIAL GRASSES AND LEGUMES TO ESTABLISH PERMANENT GROUND COVER ON DISTURBED SOILS.

CONDITIONS WHERE PRACTICE APPLIES

EXPOSED SOILS WHERE GROUND COVER IS NEEDED FOR 6 MONTHS OR MORE.

CRITERIA

- SEED MIXTURES
 - GENERAL USE
 - SELECT ONE OR MORE OF THE SPECIES OR MIXTURES LISTED IN TABLE B.3 FOR THE APPROPRIATE PLANT HARDINESS ZONE (FROM FIGURE B.3) AND BASED ON THE SITE CONDITION OR PURPOSE FOUND ON TABLE B.2, ENTER SELECTED MIXTURE(S), APPLICATION RATES, AND SEEDING DATES IN THE PERMANENT SEEDING SUMMARY. THE SUMMARY IS TO BE PLACED ON THE PLAN.
 - ADDITIONAL PLANTING SPECIFICATIONS FOR EXCEPTIONAL SITES SUCH AS SHORELINES, STREAM BANKS, OR DUNES OR FOR SPECIAL PURPOSES SUCH AS WILDLIFE OR AESTHETIC TREATMENT MAY BE FOUND IN USDA-NRCS TECHNICAL FIELD OFFICE GUIDE, SECTION 342 - CRITICAL AREA PLANTING.
 - FOR SITES HAVING DISTURBED AREA OVER 5 ACRES, USE AND SHOW THE RATES RECOMMENDED BY THE SOIL TESTING AGENCY.
 - FOR AREAS RECEIVING LOW MAINTENANCE, APPLY UREA FORM FERTILIZER (46-0-0) AT 3 1/2 POUNDS PER 1000 SQUARE FEET (150 POUNDS PER ACRE) AT THE TIME OF SEEDING IN ADDITION TO THE SOIL AMENDMENTS SHOWN IN THE PERMANENT SEEDING SUMMARY.
 - TURFGRASS MIXTURES
 - AREAS WHERE TURFGRASS MAY BE DESIRED INCLUDE LAWNS, PARKS, PLAYGROUNDS, AND COMMERCIAL SITES WHICH WILL RECEIVE A MEDIUM TO HIGH LEVEL OF MAINTENANCE.
 - SELECT ONE OR MORE OF THE SPECIES OR MIXTURES LISTED BELOW BASED ON THE SITE CONDITIONS OR PURPOSE. ENTER SELECTED MIXTURE(S), APPLICATION RATES, AND SEEDING DATES IN THE PERMANENT SEEDING SUMMARY. THE SUMMARY IS TO BE PLACED ON THE PLAN.
 - KENTUCKY BLUEGRASS: FULL SUN MIXTURE: FOR USE IN AREAS THAT RECEIVE INTENSIVE MANAGEMENT. IRRIGATION REQUIRED IN THE AREAS OF CENTRAL MARYLAND AND EASTERN SHORE. RECOMMENDED CERTIFIED KENTUCKY BLUEGRASS CULTIVARS SEEDING RATE: 1.5 TO 2.0 POUNDS PER 1000 SQUARE FEET. CHOOSE A MINIMUM OF THREE KENTUCKY BLUEGRASS CULTIVARS WITH EACH RANGING FROM 10 TO 35 PERCENT OF THE TOTAL MIXTURE BY WEIGHT.
 - KENTUCKY BLUEGRASS/PERENNIAL RYE: FULL SUN MIXTURE: FOR USE IN FULL SUN AREAS WHERE B.2.2 RAPID ESTABLISHMENT IS NECESSARY AND WHEN TURF WILL RECEIVE MEDIUM TO INTENSIVE MANAGEMENT. CERTIFIED PERENNIAL RYEGRASS CULTIVARS/CERTIFIED KENTUCKY BLUEGRASS SEEDING RATE: 2 POUNDS MIXTURE PER 1000 SQUARE FEET. CHOOSE A MINIMUM OF THREE KENTUCKY BLUEGRASS CULTIVARS WITH EACH RANGING FROM 10 TO 35 PERCENT OF THE TOTAL MIXTURE BY WEIGHT.
 - TALL FESCUE/KENTUCKY BLUEGRASS: FULL SUN MIXTURE: FOR USE IN DROUGHT PRONE AREAS AND/OR FOR AREAS RECEIVING LOW TO MEDIUM MANAGEMENT IN FULL SUN TO MEDIUM SHADE. RECOMMENDED MIXTURE INCLUDES: CERTIFIED TALL FESCUE CULTIVARS 95 TO 100 PERCENT, CERTIFIED KENTUCKY BLUEGRASS CULTIVARS 0 TO 5 PERCENT. SEEDING RATE: 5 TO 8 POUNDS PER 1000 SQUARE FEET. ONE OR MORE CULTIVARS MAY BE BLENDED.
 - KENTUCKY BLUEGRASS/FINE FESCUE: SHADE MIXTURE: FOR USE IN AREAS WITH SHADE IN BLUEGRASS LAWNS. FOR ESTABLISHMENT IN HIGH QUALITY, INTENSIVELY MANAGED TURF AREA. MIXTURE INCLUDES: CERTIFIED KENTUCKY BLUEGRASS CULTIVARS 30 TO 40 PERCENT AND CERTIFIED FINE FESCUE AND 60 TO 70 PERCENT. SEEDING RATE: 1 1/2 TO 3 POUNDS PER 1000 SQUARE FEET.
- NOTES
 - SELECT TURFGRASS VARIETIES FROM THOSE LISTED IN THE MOST CURRENT UNIVERSITY OF MARYLAND PUBLICATION, AGRONOMY MEMO #77, "TURFGRASS CULTIVAR RECOMMENDATIONS FOR MARYLAND". CHOOSE CERTIFIED MATERIAL. CERTIFIED MATERIAL IS THE BEST GUARANTEE OF CULTIVAR PURITY. THE CERTIFICATION PROGRAM OF THE MARYLAND DEPARTMENT OF AGRICULTURE, TURF AND SEED SECTION, PROVIDES A RELIABLE MEANS OF CONSUMER PROTECTION AND ASSURES A PURE GENETIC LINE.
 - IDEAL TIMES OF SEEDING FOR TURF GRASS MIXTURES
 - WESTERN MD: MARCH 15 TO JUNE 1, AUGUST 1 TO OCTOBER 1 (HARDINESS ZONES: 5B, 6A)
 - CENTRAL MD: MARCH 1 TO MAY 15, AUGUST 15 TO OCTOBER 15 (HARDINESS ZONE: 6B)
 - SOUTHERN MD, EASTERN SHORE: MARCH 1 TO MAY 15, AUGUST 15 TO OCTOBER 15 (HARDINESS ZONES: 7A, 7B)
 - TILL AREAS TO RECEIVE SEED BY DISKING OR OTHER APPROVED METHODS TO A DEPTH OF 2 TO 4 INCHES, LEVEL AND RAKE THE AREAS TO PREPARE A PROPER SEEDBED. REMOVE STONES AND DEBRIS OVER 1 1/2 INCHES IN DIAMETER. THE RESULTING SEEDBED MUST BE IN SUCH CONDITION THAT FUTURE MOWING OF GRASSES WILL POSSE NO DIFFICULTY.
 - IF SOIL MOISTURE IS DEFICIENT, SUPPLY NEW SEEDINGS WITH ADEQUATE WATER FOR PLANT GROWTH (1/2 TO 1 INCH EVERY 3 TO 4 DAYS DEPENDING ON SOIL TEXTURE) UNTIL THEY ARE FIRMLY ESTABLISHED. THIS IS ESPECIALLY TRUE WHEN SEEDINGS ARE MADE LATE IN THE PLANTING SEASON, IN ABNORMALLY DRY OR HOT SEASONS, OR ON ADVERSE SITES.

TEMPORARY SEED MIXTURE FOR HARDINESS ZONE 7B (FROM TABLE B.1 AND FIGURE B.3)					FERTILIZER RATE (10-20-20)		LIME RATE
NO.	SPECIES	APPL. RATE (lbs/oc)	SEEDING DATES	SEEDING DEPTHS	N	P205	K20
1	RYE	140	2/1 TO 4/30 8/15 TO 11/30	1 TO 2	43lbs/oc 10lbs/1000sf	90lb/oc	2 Tons/oc 90lb/1000sf

PERMANENT SEEDING SUMMARY SEE TABLE

- SOD: TO PROVIDE QUICK COVER ON DISTURBED AREAS (2:1 GRADE OR FLATTER).
 - GENERAL SPECIFICATIONS
 - CLASS OF TURFGRASS SOD MUST BE MARYLAND STATE CERTIFIED. SOD LABELS MUST BE MADE AVAILABLE TO THE JOB FOREMAN AND INSPECTOR.
 - SOD MUST BE MACHINE CUT AT A UNIFORM SOIL THICKNESS OF 3/4 INCH, PLUS OR MINUS 1/8 INCH AT THE TIME OF CUTTING. MEASUREMENT FOR THICKNESS MUST EXCLUDE TOP GROWTH AND THATCH. BROKEN PADS OR TORN OR UNEVEN ENDS WILL NOT BE ACCEPTABLE.
 - STANDARD SIZE SECTIONS OF SOD MUST BE STRONG ENOUGH TO SUPPORT THEIR OWN WEIGHT AND RETAIN THEIR SIZE AND SHAPE WHEN SUSPENDED VERTICALLY WITH A FIRM GRASP ON THE UPPER 10 PERCENT OF THE SECTION.
 - SOD MUST NOT BE HARVESTED OR TRANSPORTED WHEN MOISTURE CONTENT (EXCESSIVELY DRY OR WET) MAY ADVERSELY AFFECT ITS SURVIVAL.
 - SOD MUST BE HARVESTED, DELIVERED, AND INSTALLED WITHIN A PERIOD OF 36 HOURS. SOD NOT TRANSPORTED WITHIN THIS PERIOD MUST BE APPROVED BY AN AGRONOMIST OR SOIL SCIENTIST PRIOR TO ITS INSTALLATION.
 - SOD INSTALLATION
 - DURING PERIODS OF EXCESSIVELY HIGH TEMPERATURE OR IN AREAS HAVING DRY SUBSOIL, LIGHTLY IRRIGATE THE SUBSOIL IMMEDIATELY PRIOR TO LAYING THE SOD.
 - LAY THE FIRST ROW OF SOD IN A STRAIGHT LINE WITH SUBSEQUENT ROWS PLACED PARALLEL TO IT AND TIGHTLY WEDGED AGAINST EACH OTHER. STAGGER LATERAL JOINTS TO PROMOTE MORE UNIFORM GROWTH AND STRENGTH. ENSURE THAT SOD IS NOT STRETCHED OR OVERLAPPED AND THAT ALL JOINTS ARE BUTTED TIGHT IN ORDER TO PREVENT VOIDS WHICH WOULD CAUSE AIR DRYING OF THE ROOTS.
 - WHEREVER POSSIBLE, LAY SOD WITH THE LONG EDGES PARALLEL TO THE CONTOUR AND WITH STAGGERING JOINTS. ROLL AND TAMP, PEG OR OTHERWISE SECURE THE SOD TO PREVENT SLIPPAGE ON SLOPES. ENSURE SOLID CONTACT EXISTS BETWEEN SOD ROOTS AND THE UNDERLYING SOIL SURFACE.
 - WATER THE SOD IMMEDIATELY FOLLOWING ROLLING AND TAMPING UNTIL THE UNDERSIDE OF THE NEW SOD PAD AND SOIL SURFACE BELOW THE SOD ARE THOROUGHLY WET. COMPLETE THE OPERATIONS OF LAYING, TAMPING AND IRRIGATING FOR ANY PIECE OF SOD WITHIN EIGHT HOURS.
- IN THE ABSENCE OF ADEQUATE RAINFALL, WATER DAILY DURING THE FIRST WEEK OR AS OFTEN AND SUFFICIENTLY AS NECESSARY TO MAINTAIN MOIST SOIL TO A DEPTH OF 4 INCHES. WATER SOD DURING THE HEAT OF THE DAY TO PREVENT WILTING.
 - AFTER THE FIRST WEEK, SOD WATERING IS REQUIRED AS NECESSARY TO MAINTAIN ADEQUATE MOISTURE CONTENT.
 - DO NOT MOW UNTIL THE SOD IS FIRMLY ROOTED. NO MORE THAN 1/2 OF THE GRASS LEAF MUST BE REMOVED BY INITIAL CUTTING OR SUBSEQUENT CUTTINGS. MAINTAIN A GRASS HEIGHT OF AT LEAST 3 INCHES UNLESS OTHERWISE SPECIFIED.

PERMANENT SEED MIXTURE FOR HARDINESS ZONE 7B (FROM TABLE B.3 AND FIGURE B.3)					FERTILIZER RATE (10-20-20)			LIME RATE
NO.	SPECIES	APPL. RATE (lbs/oc)	SEEDING DATES	SEEDING DEPTH	N	P205	K20	
3	TALL FESCUE (85%)	125	3/1 TO 5/15 8/15 TO 11/15	1/4 TO 1/2				
	PERENNIAL RYE GRASS (10%)	15	3/1 TO 5/15 8/15 TO 11/15	1/4 TO 1/2	45lb/ac 1/1000sf	90lb/oc 2lb/1000sf	90lb/oc 2lb/1000sf	2 Tons/ac 90lb/1000sf
	KENTUCKY BLUEGRASS (5%)	10	3/1 TO 5/15 8/15 TO 11/15	1/4 TO 1/2				

ENGINEERS CERTIFICATION:

"I, STEPHEN L. MARSH, P.E., HEREBY 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."

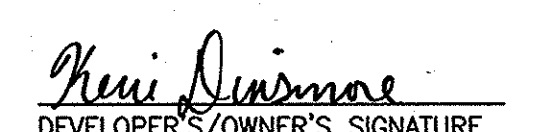

STEPHEN L. MARSH, P.E., LEED AP

ENGINEER: GEORGE, MILES & BUHR, LLC
206 WEST MAIN STREET
SAUSBURRY, MD 21801

CONTACT: STEPHEN L. MARSH, P.E.
PHONE: 410-742-3115
FAX: 410-548-5790

DEVELOPER/OWNER CERTIFICATION:

"1/3 I 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."


KEVIN DINSMORE
DEVELOPER'S/OWNER'S SIGNATURE
PRINT NAME: KEVIN DINSMORE

DEVELOPER/OWNER: HOWARD COUNTY DEPT. PUBLIC WORKS
3430 COURT HOUSE DRIVE
ELLICOTT CITY, MD 21043

CONTACT: PHONE: 410 313 4400

SEDIMENT CONTROL NOTES

- 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 (313-1855).
- ALL VEGETATIVE AND STRUCTURAL PRACTICES ARE TO BE INSTALLED ACCORDING TO THE PROVISIONS OF THIS PLAN AND ARE TO BE IN CONFORMANCE WITH THE MOST CURRENT MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL AND REVISIONS THERETO.
- FOLLOWING INITIAL SOIL DISTURBANCE OR RE-DISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN: A) 3 CALENDAR DAYS FOR ALL PERIMETER SEDIMENT CONTROL STRUCTURES, DIKES, PERIMETER SLOPES AND ALL SLOPES GREATER THAN 3:1, B) 7 DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE.
- ALL SEDIMENT TRAPA/BASINS SHOWN MUST BE FENCED AND WARNING SIGNS POSTED AROUND THEIR PERIMETER IN ACCORDANCE WITH VOL. 1, CHAPTER 12 OF THE HOWARD COUNTY DESIGN MANUAL, STORM DRAINAGE.
- 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. 51), SOD (SEC. 54), TEMPORARY SEEDING (SEC. 50) AND MULCHING (SEC. 52). TEMPORARY STABILIZATION WITH MULCH ALONE CAN ONLY BE DONE WHEN RECOMMENDED SEEDING DATES DO NOT ALLOW FOR PROPER GERMINATION AND ESTABLISHMENT OF GRASSES.
- ALL SEDIMENT CONTROL STRUCTURES ARE TO REMAIN IN PLACE AND ARE TO BE MAINTAINED IN OPERATIVE CONDITION UNTIL PERMISSION FOR THEIR REMOVAL HAS BEEN OBTAINED FROM THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.
- SITE ANALYSIS:

TOTAL AREA OF SITE:	1.85	ACRES
AREA DISTURBED:	1.85	ACRES
AREA TO BE ROOFED OR PAVED: (PAVEMENT RESTORATION)	1.20	ACRES
AREA TO BE VEGETATIVELY STABILIZED:	0.65	ACRES
TOTAL CUT:	N/A	CU. YDS.
TOTAL FILL:	N/A	CU. YDS.
OFFSITE WASTE/BORROW AREA LOCATION:	N/A	
- ANY SEDIMENT CONTROL PRACTICE WHICH IS DISTURBED BY GRADING ACTIVITY FOR PLACEMENT OF UTILITIES MUST BE REPAIRED ON THE SAME DAY OF DISTURBANCE.
- ADDITIONAL SEDIMENT CONTROL MUST BE PROVIDED, IF DEEMED NECESSARY BY THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.
- 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.
- TRENCHES FOR THE CONSTRUCTION OF UTILITIES IS LIMITED TO THREE PIPE LENGTHS OR THAT WHICH SHALL BE BACK-FILLED AND STABILIZED BY THE END OF EACH WORK DAY, WHICHEVER IS SHORTER.

Table B.1: Temporary Seeding for Site Stabilization

Plant Species	Seeding Rate ^{1/}		Seeding Depth ^{2/} (inches)	Recommended Seeding Dates by Plant Hardiness Zone ^{3/}		
	lb/ac	lb/1000 ft ²		5b and 6a	6b	7a and 7b
Cool-Season Grasses						
Annual Ryegrass (<i>Lolium perenne</i> spp. multiflorum)	40	1.0	0.5	Mar 15 to May 31; Aug 1 to Sep 30	Mar 1 to May 15; Aug 1 to Oct 15	Feb 15 to Apr 30; Aug 15 to Nov 30
Barley (<i>Hordeum vulgare</i>)	96	2.2	1.0	Mar 15 to May 31; Aug 1 to Sep 30	Mar 1 to May 15; Aug 1 to Oct 15	Feb 15 to Apr 30; Aug 15 to Nov 30
Oats (<i>Avena sativa</i>)	72	1.7	1.0	Mar 15 to May 31; Aug 1 to Sep 30	Mar 1 to May 15; Aug 1 to Oct 15	Feb 15 to Apr 30; Aug 15 to Nov 30
Wheat (<i>Triticum aestivum</i>)	120	2.8	1.0	Mar 15 to May 31; Aug 1 to Sep 30	Mar 1 to May 15; Aug 1 to Oct 15	Feb 15 to Apr 30; Aug 15 to Nov 30
Cereal Rye (<i>Secale cereale</i>)	112	2.8	1.0	Mar 15 to May 31; Aug 1 to Oct 31	Mar 1 to May 15; Aug 1 to Nov 15	Feb 15 to Apr 30; Aug 15 to Dec 15
Warm-Season Grasses						
Foxtail Millet (<i>Setaria italica</i>)	30	0.7	0.5	Jun 1 to Jul 31	May 16 to Jul 31	May 1 to Aug 14
Pearl Millet (<i>Pennisetum glaucum</i>)	20	0.5	0.5	Jun 1 to Jul 31	May 16 to Jul 31	May 1 to Aug 14

NOTES:
1/ Seeding rates for the warm-season grasses are in pounds of Pure Live Seed (PLS). Actual planting rates shall be adjusted to reflect percent seed germination and purity, as tested. Adjustments are usually not needed for the cool-season grasses.

Seeding rates listed above are for temporary seedings, when planted alone. When planted as a nurse crop with permanent seed mixes, use 1/3 of the seeding rate listed above for barley, oats, and wheat. For smaller-seeded grasses (annual ryegrass, pearl millet, foxtail millet), do not exceed more than 5% (by weight) of the overall permanent seeding mix. Cereal rye generally should not be used as a nurse crop, unless planting will occur in very late fall beyond the seeding dates for other temporary seedings. Cereal rye has allelopathic properties that inhibit the germination and growth of other plants. If it must be used as a nurse crop, seed at 1/3 of the rate listed above.

Oats are the recommended nurse crop for warm-season grasses.

2/ For sandy soils, plant seeds at twice the depth listed above.

3/ The planting dates listed are averages for each Zone and may require adjustment to reflect local conditions, especially near the boundaries of the zone.

SOIL INFORMATION

SYMBOL	NAME	HYDROLOGIC SOIL GROUP
Co	CODORUS AND HATBORO SILT LOAM	C
GhB	GLENELG-URBAN LAND COMPLEX	D
GhC	GLENELG-URBAN LAND COMPLEX	D
CoB	GLENVILLE-CODORUS SILT LOAM	D
Ho	HATBORO-CODORUS SILT LOAM	C
MoB	MANOR LOAM	B
MoC	MANOR LOAM	B
MoD	MANOR LOAM	B
MfF	MANOR-BRINKLOW COMPLEX	B

SOIL CLASSIFICATION OBTAINED FROM USDA-SCS SOIL SURVEY OF HOWARD COUNTY

SEQUENCE OF OPERATIONS

GENERAL NOTES

- ACQUIRE ALL NECESSARY STATE AND LOCAL PERMITS INCLUDING A GRADING PERMIT.
- NOTIFY THE HOWARD COUNTY DEPARTMENT OF INSPECTION, LICENSES AND PERMITS, SEDIMENT CONTROL DIVISION. FORTY EIGHT (48) HOURS PRIOR TO COMMENCING OF CONSTRUCTION ACTIVITIES.
- GREAT CARE SHALL BE TAKEN TO ENSURE THAT NO SEDIMENT LADEN RUNOFF WILL BE DISCHARGED OUTSIDE OF THE LIMITS OF DISTURBANCE.

PERIMETER CONTROLS

- SURVEY AND STAKEOUT PERIMETER CONTROLS AS SHOWN ON THE PLANS.
- CLEAR AND GRUB AREAS FOR PERIMETER CONTROL INSTALLATION ONLY. WETLANDS AND CONSERVATION AREAS SHALL BE CLEARLY MARKED IN THE FIELD.
- INSTALL PERIMETER CONTROLS AS SHOWN ON THE PLANS. WHERE DEEMED NECESSARY, THE CONTRACTOR SHALL INSTALL EROSION CONTROL PRACTICES IN ADDITION TO WHAT IS SHOWN ON THE PLANS TO ENSURE PROPER SEDIMENT CONTROL. ADDITIONAL SEDIMENT CONTROLS MAY ALSO BE DIRECTED BY THE SEDIMENT CONTROL INSPECTOR AS NECESSARY.

SITE WORK

- INSTALL FILTER LOGS PERPENDICULAR TO PIPE LAYOUT IMMEDIATELY DOWN STREAM OF ANTICIPATED END OF WORK DAY EXCAVATION AREA. THE FILTER LOGS SHALL BE MOVED TO THE NEXT WORK AREA PRIOR TO THE NEXT WORK DAY.
- EXCAVATE, INSTALL WATER MAIN AND APPURTENANCES, AND BACKFILL WORK AREA. WHERE WATER IS ENCOUNTERED DURING EXCAVATION, DEWATERING OPERATIONS SHALL BE APPLIED. SEDIMENT LADEN WATER SHALL BE PUMPED THROUGH AN APPROVED STATE AND LOCAL TEMPORARY SEDIMENT PRACTICES (DEWATERING BAG). SEE SEPARATE NOTES AND DETAIL FOR STREAM CROSSING CONSTRUCTION.
- STOCKPILE EXCAVATED MATERIALS ON AREAS WITH LITTLE OR NO SLOPE. IF NOT POSSIBLE, PLACE MATERIALS UP SLOPE OF THE TRENCH OPENING.
- ALL OPEN TRENCHES SHALL BE BACKFILLED AT THE END OF EACH WORKING DAY. ALL DISTURBED AREAS SHALL BE STABILIZED AND RESTORED TO THEIR ORIGINAL GRADES.
- AT THE END OF EACH WORK DAY, ALL SEDIMENT CONTROL DEVICES SHALL BE INSPECTED TO ENSURE PROPER WORKING CONDITIONS.

FINAL STABILIZATION

- AT THE END OF THE CONSTRUCTION ACTIVITIES AND ALL DISTURBED AREAS HAVE BEEN PERMANENTLY STABILIZED, REMOVE SEDIMENT CONTROL MEASURES UPON THE APPROVAL OF A HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.

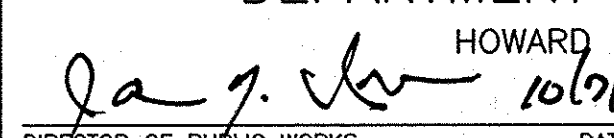
START OF CONSTRUCTION: JUNE 2013 (TENTATIVE)
END OF CONSTRUCTION: JUNE 2014

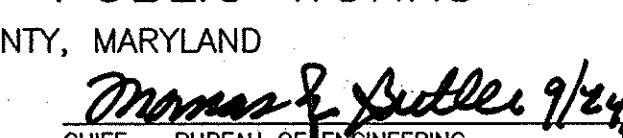
Appendix G: Best Management Practices for Working in Nontidal Wetlands, Wetland Buffers, Waterways, and 100-Year Floodplains


- No excess fill, construction material, or debris shall be stockpiled or stored in nontidal wetlands, nontidal wetland buffers, waterways, or the 100-year floodplain.
- Place materials in a location and manner which does not adversely impact surface or subsurface water flow into or out of nontidal wetlands, nontidal wetland buffers, waterways, or the 100-year floodplain.
- 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 is required, use clean material free of waste metal products, unsightly debris, toxic material, or any other deleterious substance.
- Place heavy equipment on mats or suitably operate the equipment to prevent damage to nontidal wetlands, nontidal wetland buffers, waterways, or the 100-year floodplain.
- Repair and maintain any serviceable structure or fill so there is no permanent loss of nontidal wetlands, nontidal wetland buffers, or waterways, or permanent modification of the 100-year floodplain in excess of that lost under the originally authorized structure or fill.
- Rectify any nontidal wetlands, wetland buffers, waterways, or 100-year floodplain temporarily impacted by any construction.
- All stabilization in the nontidal wetland and nontidal wetland buffer shall consist of the following species: Annual Ryegrass (*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 wetland or buffer areas. The area should be seeded and mulched to reduce erosion after construction activities have been completed.
- After installation has been completed, make post-construction grades and elevations the same as the original grades and elevations in temporarily impacted areas.
- To protect aquatic species, in-stream work is prohibited as determined by the classification of the stream:
 - Use I waters: In-stream work shall not be conducted during the period March 1 through June 15, inclusive, during any year.
 - Use III waters: In-stream work shall not be conducted during the period October 1 through April 30, inclusive, during any year.
 - Use IV waters: In-stream work shall not be conducted during the period March 1 through May 31, inclusive, during any year.
- Stormwater runoff from impervious surfaces shall be controlled to prevent the washing of debris into the waterway.
- Culverts 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.



DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

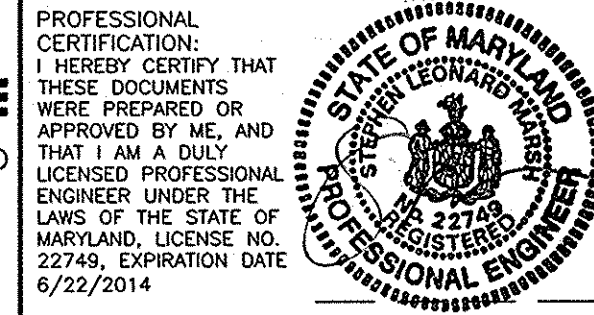

DIRECTOR OF PUBLIC WORKS DATE 10/6/13


CHIEF - BUREAU OF ENGINEERING DATE 9/24/13


CHIEF, UTILITY DESIGN DIVISION DATE 9/24/13

OBRIEN & GERE
4201 MITCHELLVILLE ROAD
SUITE 500
BOWIE, MD 20716
PHONE: 301-731-5622

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. 22748, EXPIRATION DATE 6/22/2014



DSN. BY: JJS

DRN. BY: RFT

CHK. BY: SLM

DATE: AUGUST 2013

SLM 0

BY NO.

AS-BUILT RECORD DRAWING

AS ISSUED FOR BID

REVISION

DATE: 8/14/13

EROSION & SEDIMENT CONTROL NOTES & DETAILS

600' SCALE MAP NO. 42 BLOCK NO. 7

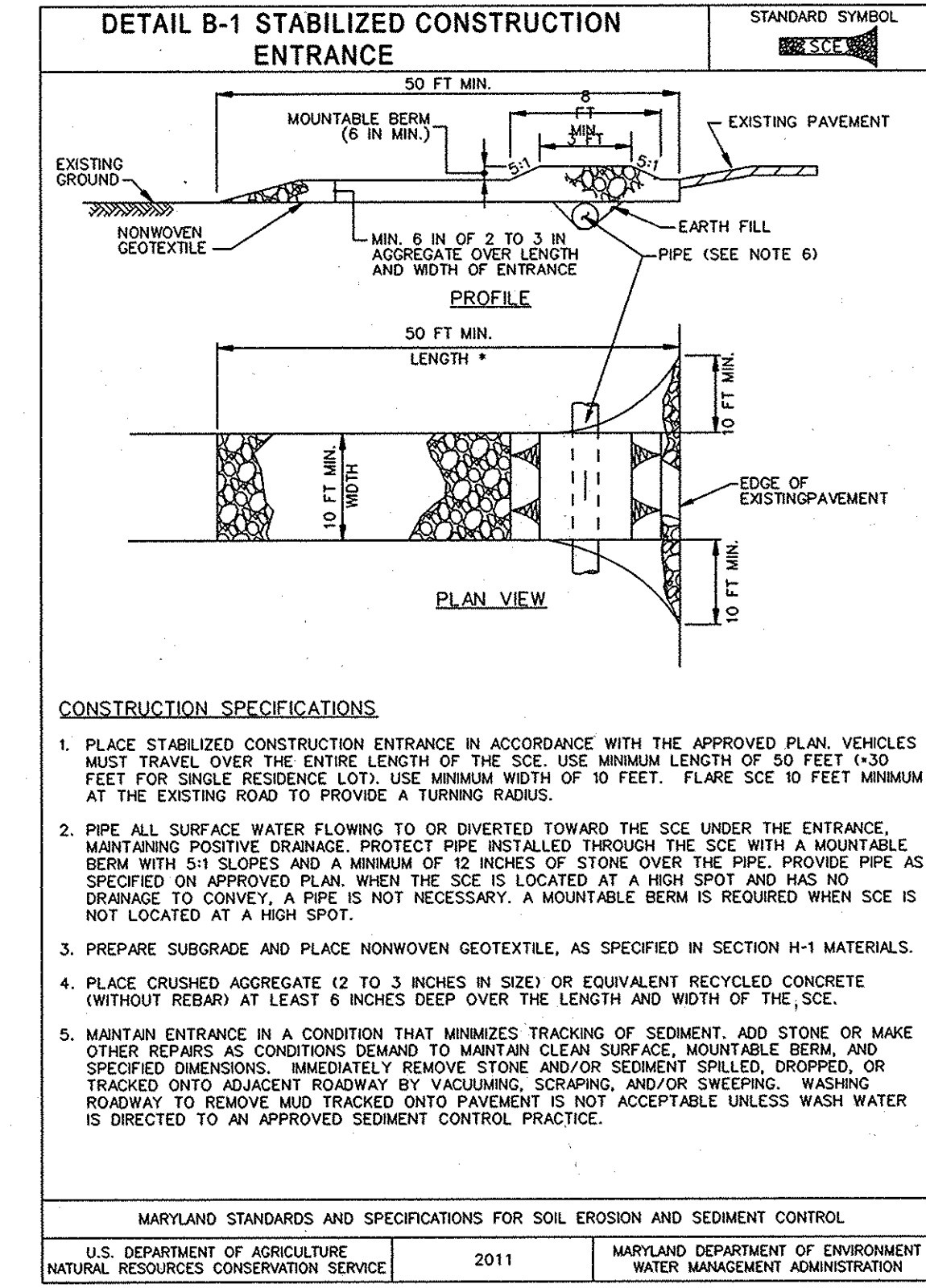
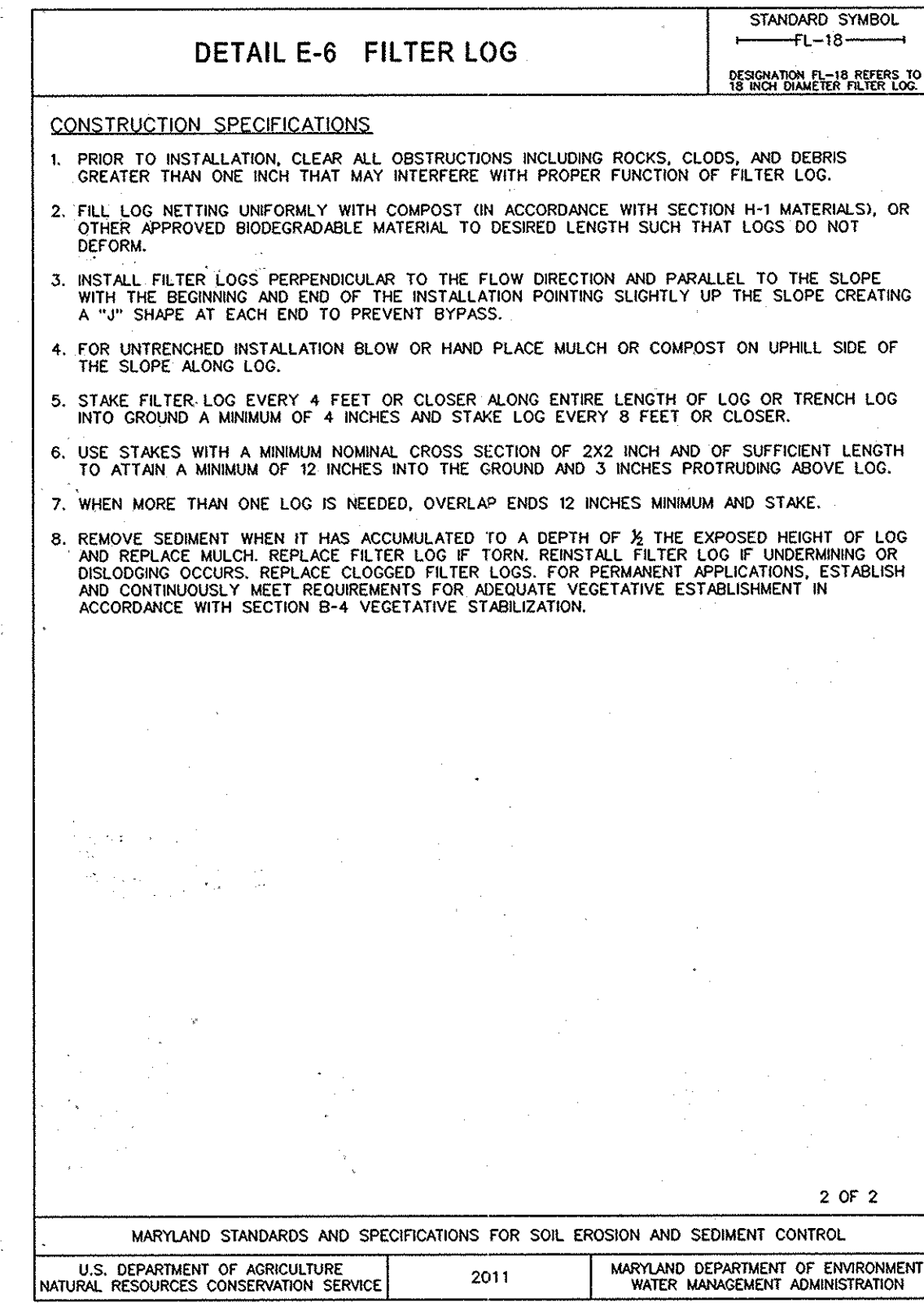
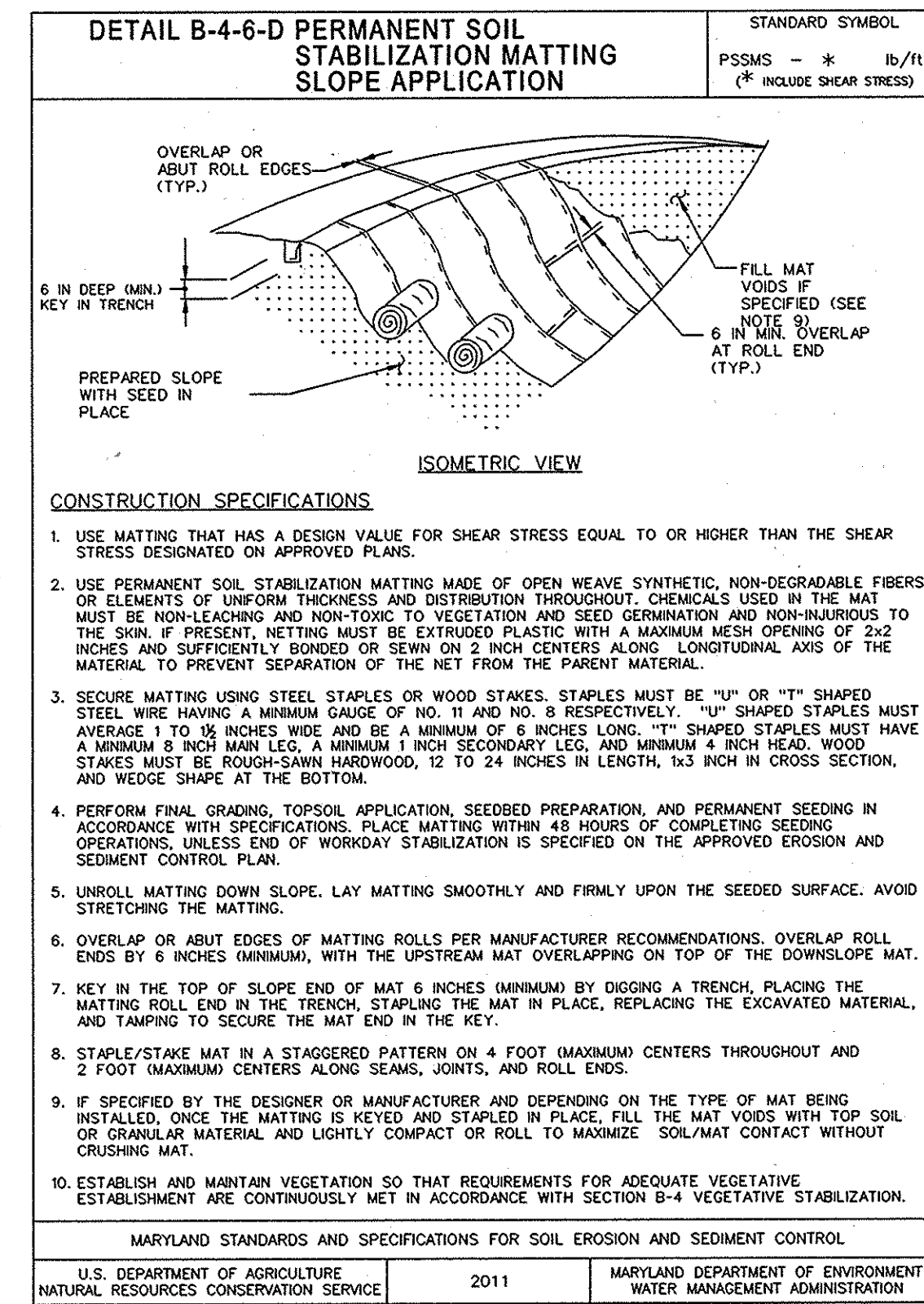
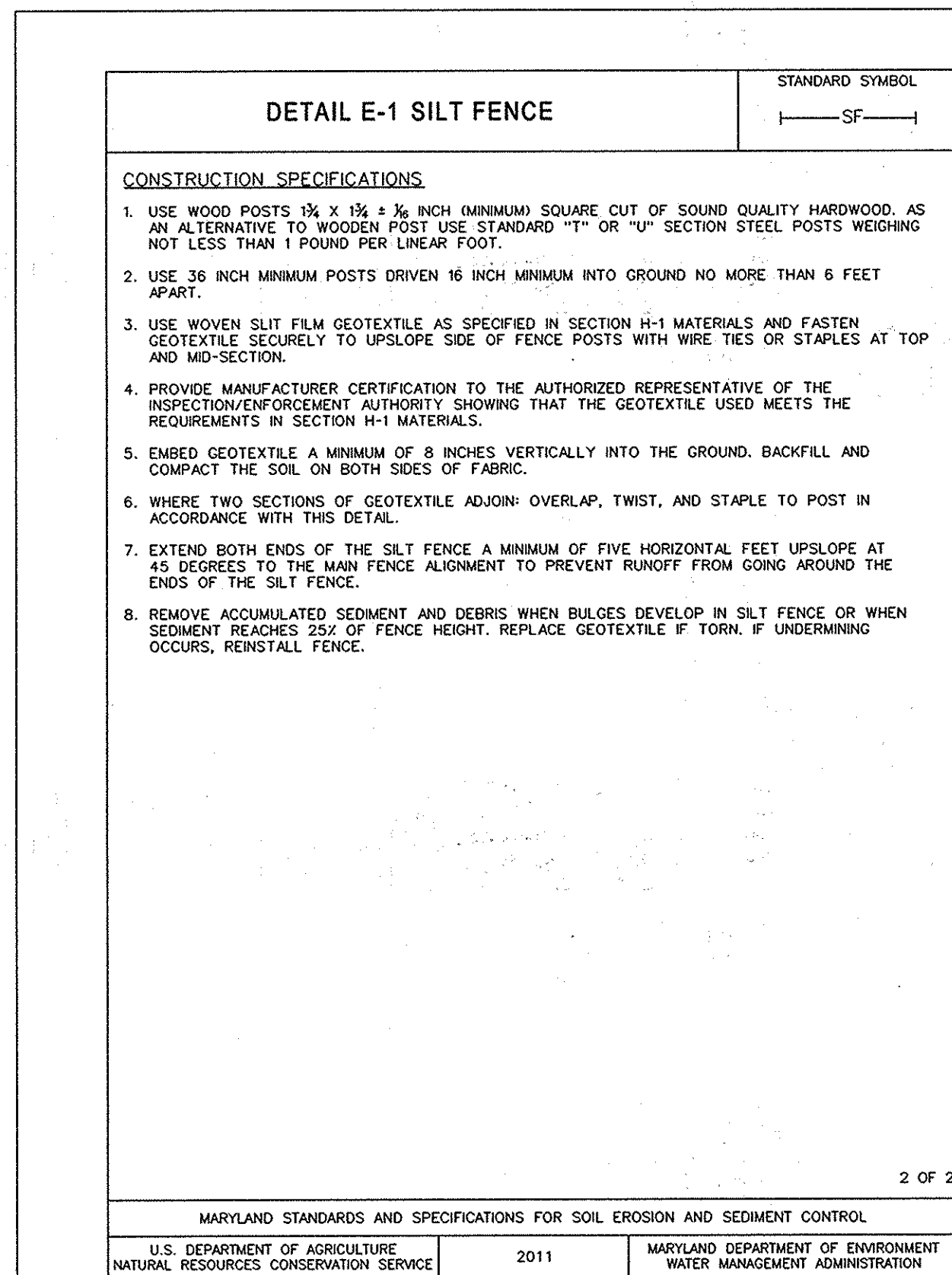
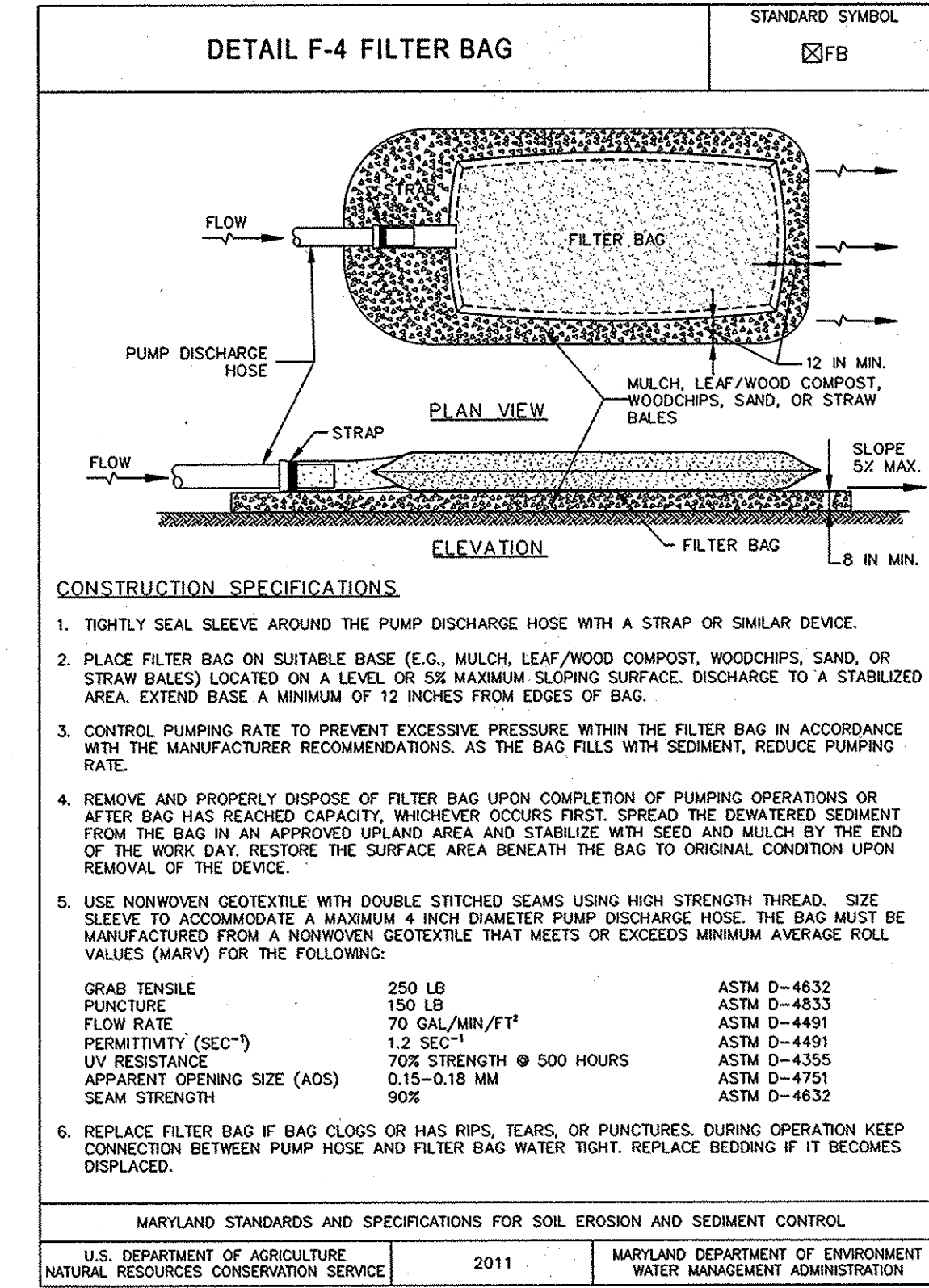
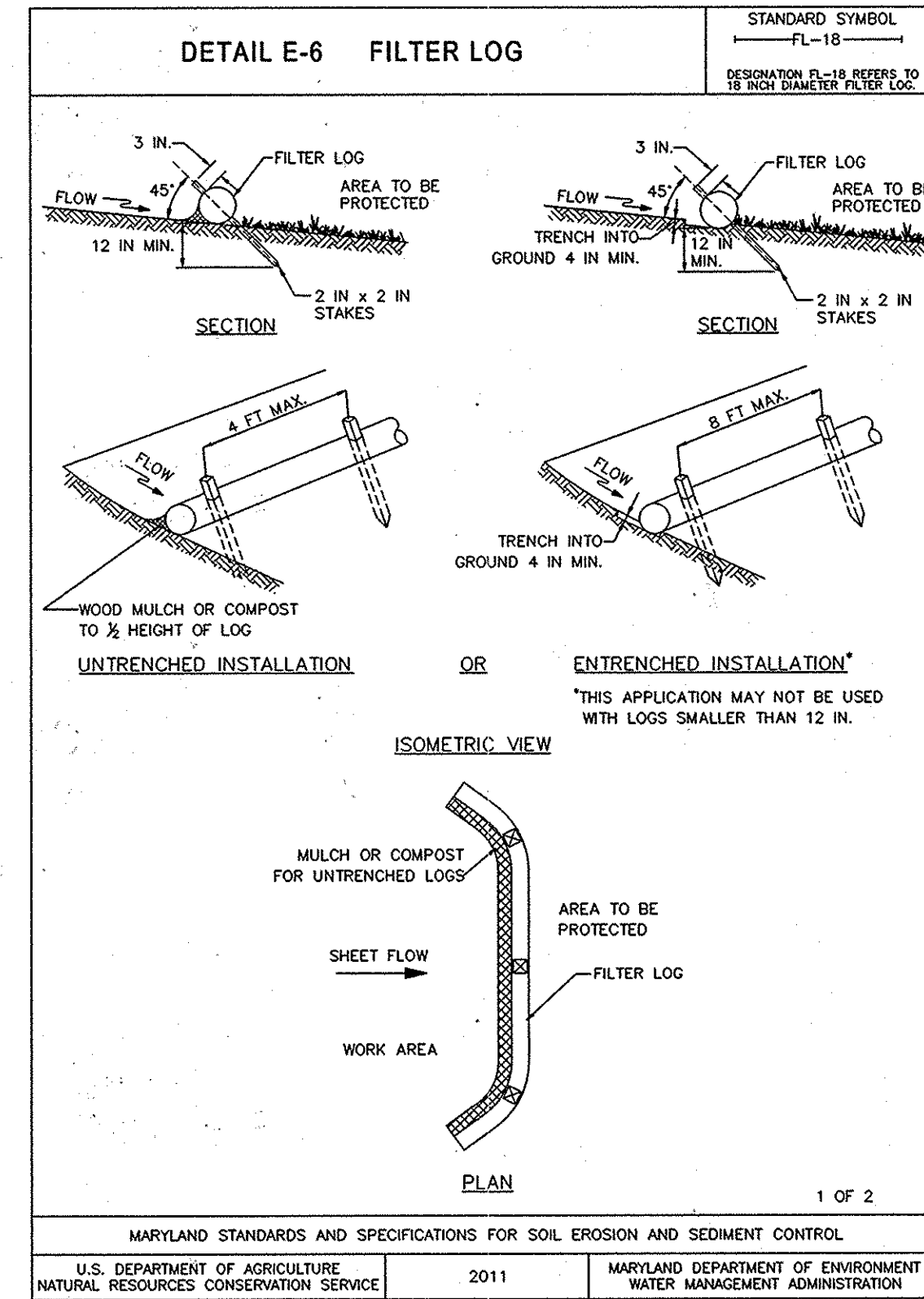
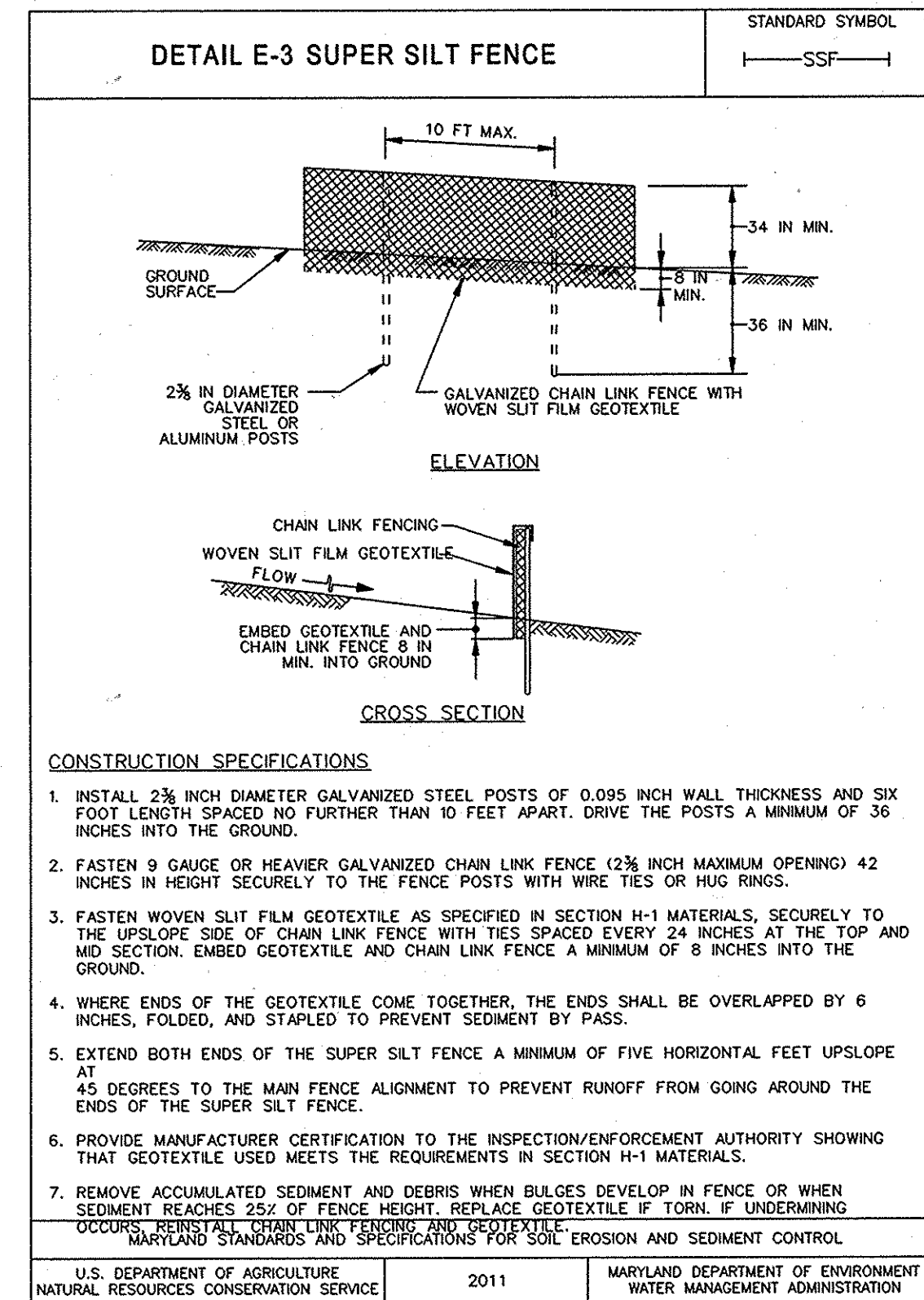
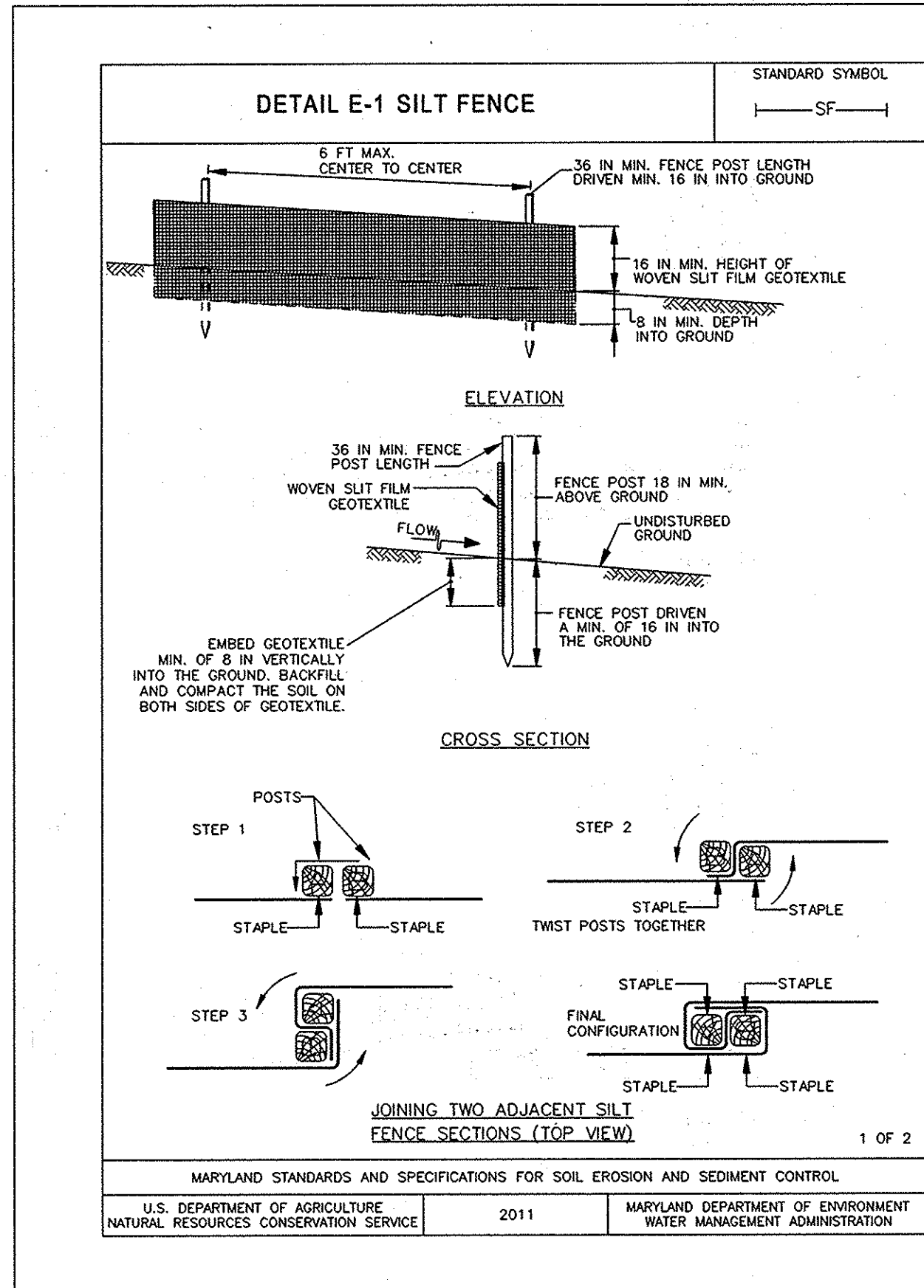
KINDLER ROAD - EDEN BROOK DRIVE WATER MAIN CONNECTION

CAPITAL PROJECT: W-8297
CONTRACT NO.: 44-4675
ELECTION DISTRICT: 6
HOWARD COUNTY, MARYLAND

AS-BUILT 6/2014

C-17 SHEET 17 OF 20

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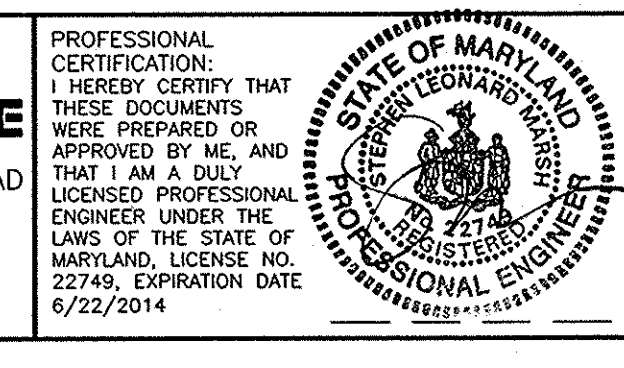
DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Janey... 10/17/13
DIRECTOR OF PUBLIC WORKS DATE

Thomas E.... 7/24/13
CHIEF - BUREAU OF ENGINEERING DATE

... 9/24/13
CHIEF, BUREAU OF UTILITIES DATE

O'BRIEN & GERE
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DSN. BY:	JJS		
DRN. BY:	RFT		
CHK. BY:	SLM		
DATE:	AUGUST 2013		
BY NO.	SLM 0	AS-BUILT/RECORD DRAWING	6/14
REVISION		AS ISSUED FOR BID	07/13

EROSION & SEDIMENT CONTROL NOTES & DETAILS

60' SCALE MAP NO. 42 BLOCK NO. 7

KINDLER ROAD - EDEN BROOK DRIVE
WATER MAIN CONNECTION

CAPITAL PROJECT: W-8297
CONTRACT NO.: 44-4675
ELECTION DISTRICT: 6
HOWARD COUNTRY, MARYLAND

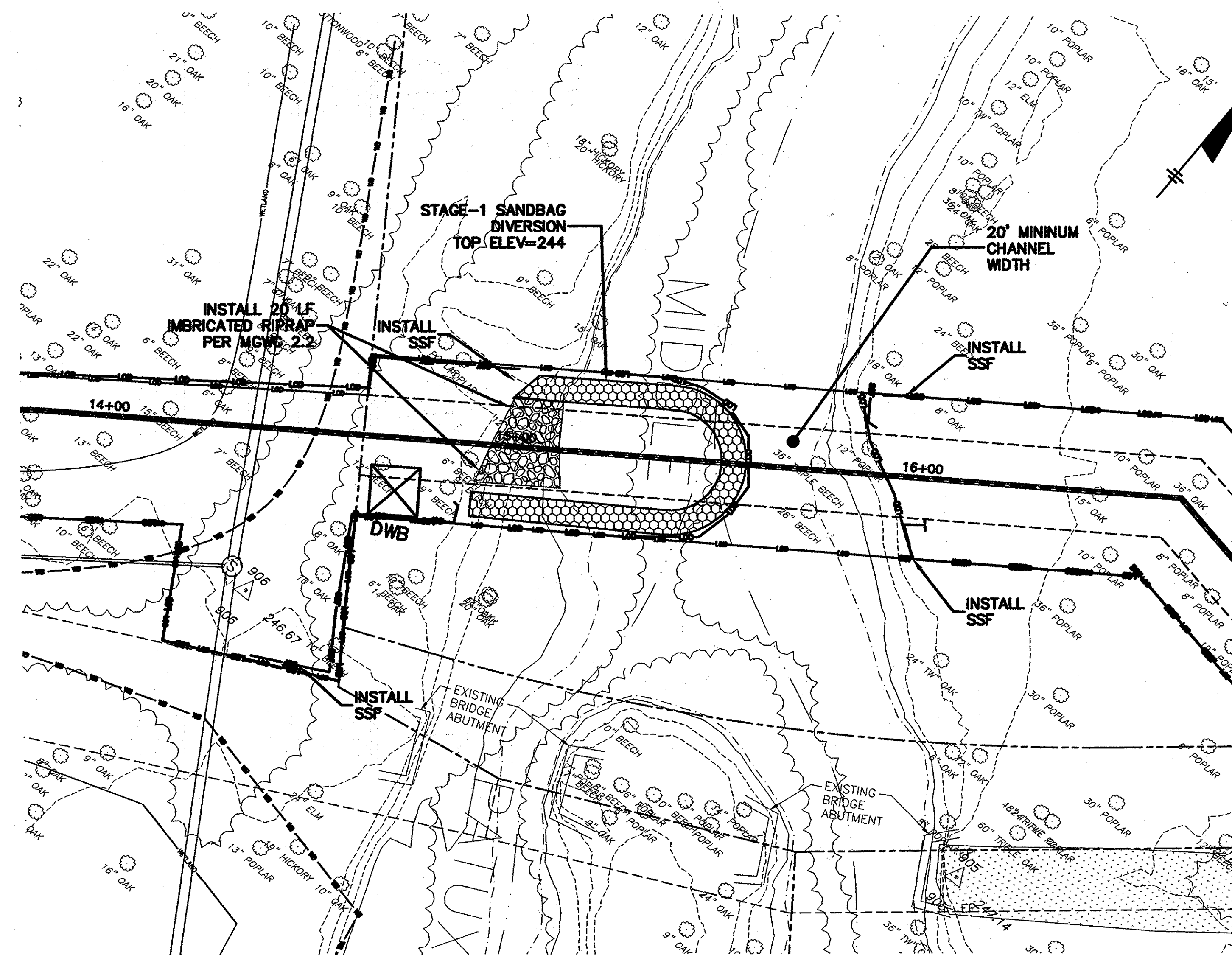
C-18
SHEET
18 OF 20

RECORD DRAWINGS TO THE BEST OF OUR KNOWLEDGE, INFORMATION PROVIDED BY OTHERS. THESE RECORD DRAWINGS SUBSTANTIALLY REPRESENT THE PROJECT AS CONSTRUCTED.

O'BRIEN & GERE ENGINEERS, INC.

AS-BUILT 6/2014 BY: *[Signature]*

GMB FILE NO. 100070 KINDLER ROAD WATER MAIN



PLAN - DIVERSION CHANNEL STAGE 1
SCALE: 1"=20'

STREAM DIVERSION SEQUENCE OF CONSTRUCTION - STAGE-1:

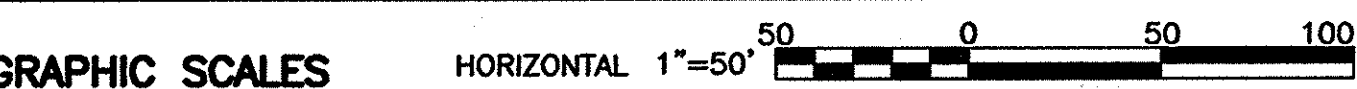
1. INSTALL DEWATERING BASIN(S) AS SHOWN IN ACCORDANCE WITH MGWC DETAIL 1.1 ON SHEET 20.
2. INSTALL STAGE-1 STONE/SANDBAG DIVERSION IN ACCORDANCE WITH THE MGWC DETAIL 1.5 ON SHEET 20.
3. CONSTRUCT WATER LINE ACROSS THE STREAM DIVERSION UP TO THE LOCATION OF THE STAGE-1 DIVERSION. THE STREAM CHANNEL CONSTRUCTION SHALL BE IN ACCORDANCE WITH MGWC DETAILS 4.2(a) AND 4.2(b) ON SHEET 20.
4. ONCE THE STAGE-1 WATER LINE IS INSTALLED, STABILIZE THE STREAM BANK WITH IMBRICATED RIPRAP IN ACCORDANCE MGWC DETAIL 2.2 ON SHEET 20.
5. ONCE THE STAGE-1 STREAM BANK RIPRAP IS INSTALLED AND THE STREAM CHANNEL IS STABILIZED, WITH THE APPROVAL FROM THE SEDIMENT CONTROL INSPECTOR, REMOVE THE STAGE-1 DIVERSION AND PROCEED WITH STAGE-2.

LEGEND - SEDIMENT CONTROL

- LIMIT OF DISTURBANCE
- SILT FENCE
- SUPER SILT FENCE
- TREE PROTECTION
- DEWATERING BASIN

RECORD DRAWINGS
TO THE BEST OF OUR KNOWLEDGE,
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INFORMATION PROVIDED BY OTHERS, THESE
RECORD DRAWINGS SUBSTANTIALLY REPRESENT
THE PROJECT AS CONSTRUCTED.

O'BRIEN & GERE
ENGINEERS, INC.
BY:



DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND
10/2/13
9/24/13
DATE DATE
CHIEF - BUREAU OF ENGINEERING
CHIEF/UTILITY DESIGN DIVISION

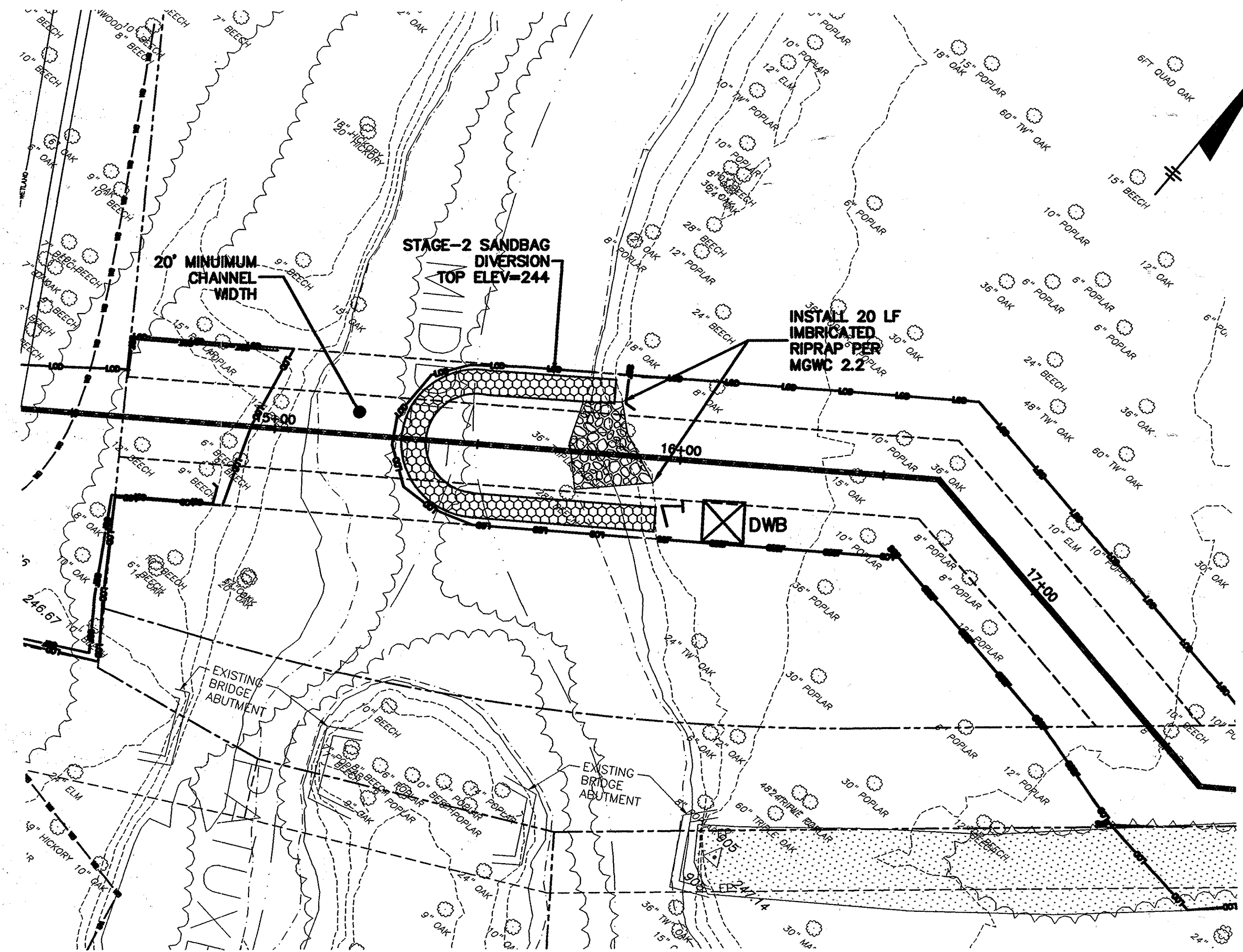
O'BRIEN & GERE
4201 MITCHELLVILLE ROAD
SUITE 500
BOWIE, MD 20716
PHONE: 301-731-5622

PROFESSIONAL
CERTIFICATION:
I HEREBY CERTIFY THAT
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APPROVED BY ME, AND
THAT I AM A DULY
LICENSED PROFESSIONAL
ENGINEER UNDER THE
LAWS OF THE STATE OF
MARYLAND, LICENSE NO.
18523, EXPIRATION DATE
12/08/2013

DSN. BY:				
DRN. BY:				
CHK. BY:	RJD	1	AS-BUILT RECORD DRAWING	6/14
DATE:	AUG, 2013	RJD	0	AS ISSUED FOR BID
		BY	NO.	REVISION
				DATE

600' SCALE MAP NO.	42	BLOCK NO.	7
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PLAN - DIVERSION CHANNEL STAGE 2
SCALE: 1"=20'



STREAM DIVERSION SEQUENCE OF CONSTRUCTION - STAGE-2:

1. REBUILD THE STONE/SANDBAG DIVERSION FOR STAGE-2 IN ACCORDANCE MGWC DETAIL 1.5 ON SHEET 20.
2. COMPLETE THE CONSTRUCTION OF THE WATER LINE ACROSS THE STREAM DIVERSION. THE STREAM CHANNEL CONSTRUCTION SHALL BE IN ACCORDANCE WITH MGWC DETAIL 4.2(a) AND 4.2(b) ON SHEET 20.
3. ONCE THE WATER LINE IS CONSTRUCTED BEYOND THE STREAM BANK, INSTALL IMBRICATED RIPRAP ALONG THE STREAM BANK IN ACCORDANCE WITH MGWC DETAIL 2.2 ON SHEET 20.
4. ONCE THE STREAM CHANNEL AND STREAM BANK IS STABILIZED, WITH THE APPROVAL FROM THE SEDIMENT CONTROL INSPECTOR, REMOVE THE STAGE-2 STREAM DIVERSION AND STABILIZED ANY REMAINING DISTURBED AREAS.

NOTES:

1. CONSTRUCTION OF THE WATER LINE SHALL BE LIMITED TO THAT WHICH CAN BE BACKFILLED AND STABILIZED AT THE END OF EACH WORK DAY.
2. ADDITIONAL INSTALLATION OF STABILIZED CONSTRUCTION ENTRANCE IF NEEDED, SHALL BE LOCATED BY THE INSPECTOR.
3. FINAL UTILITY ACCESS AREAS TO BE DETERMINED IN THE FIELD WITH APPROVAL FROM INSPECTOR.
4. ALL EXCESS SOIL GENERATED DUE TO THE EXCAVATION OF THE WATERLINE AND ITS BACKFILL MUST BE REMOVED FROM THE 100-YEAR FLOODPLAIN. STOCKPILING AT THE SITE IS NOT PERMITTED.
5. SEE SHEET C-17 FOR CONDITIONS AND MANAGEMENT PRACTICES FOR WORK IN NONTIDAL WETLANDS AND BUFFERS.
6. SEE SHEET C-17 FOR OVERALL SEQUENCE OF CONSTRUCTION AND THIS SHEET FOR STREAM DIVERSION SEQUENCE OF CONSTRUCTION.

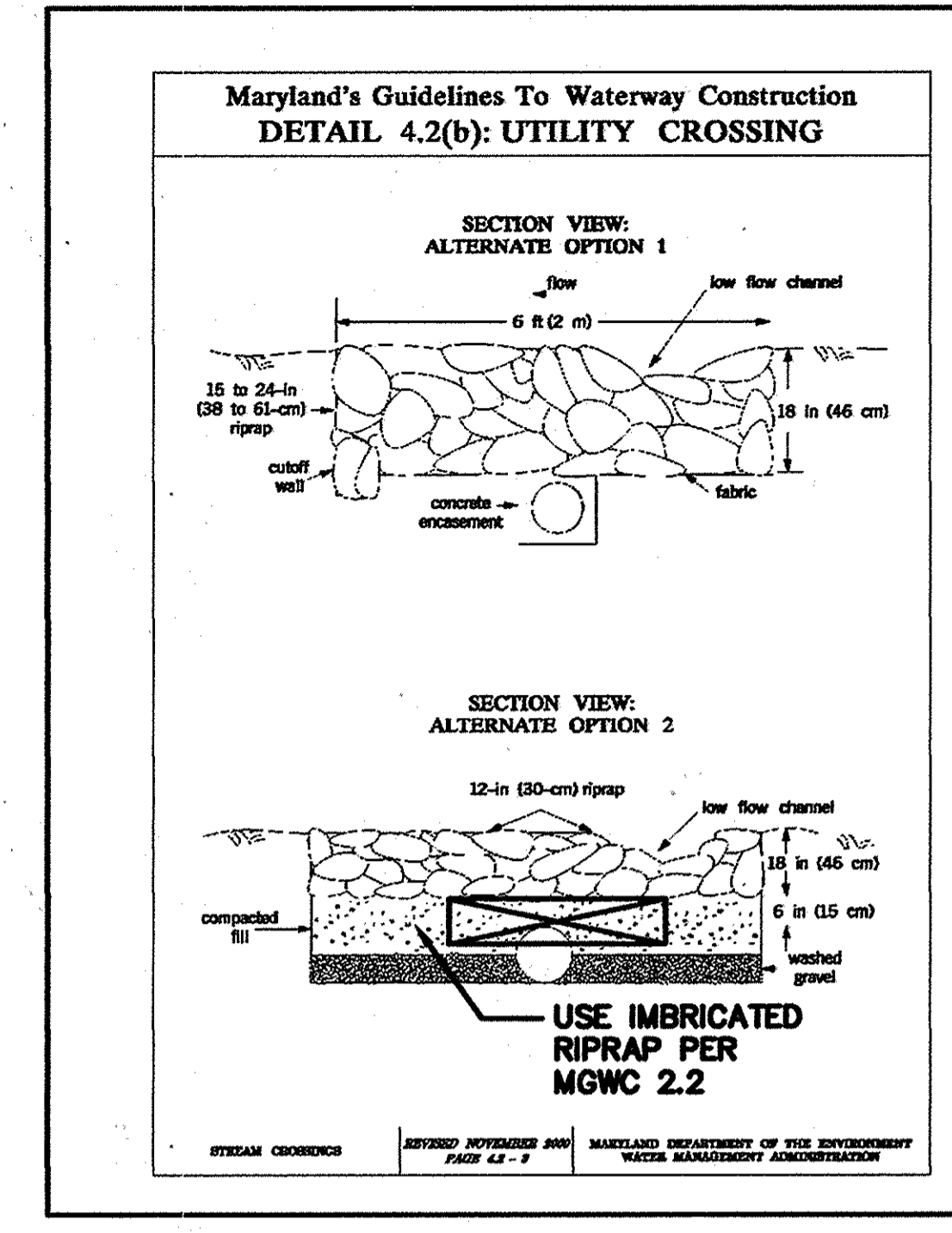
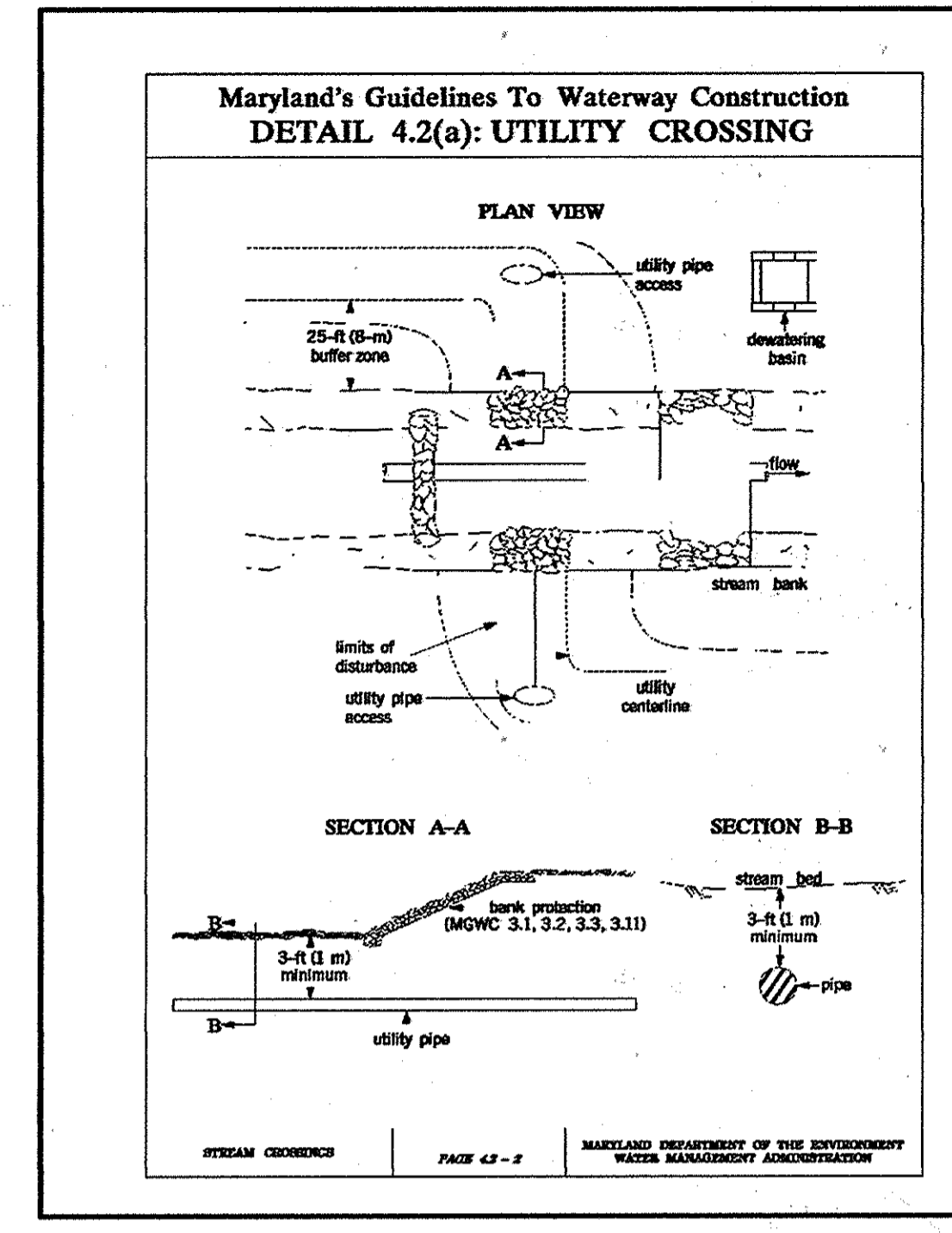
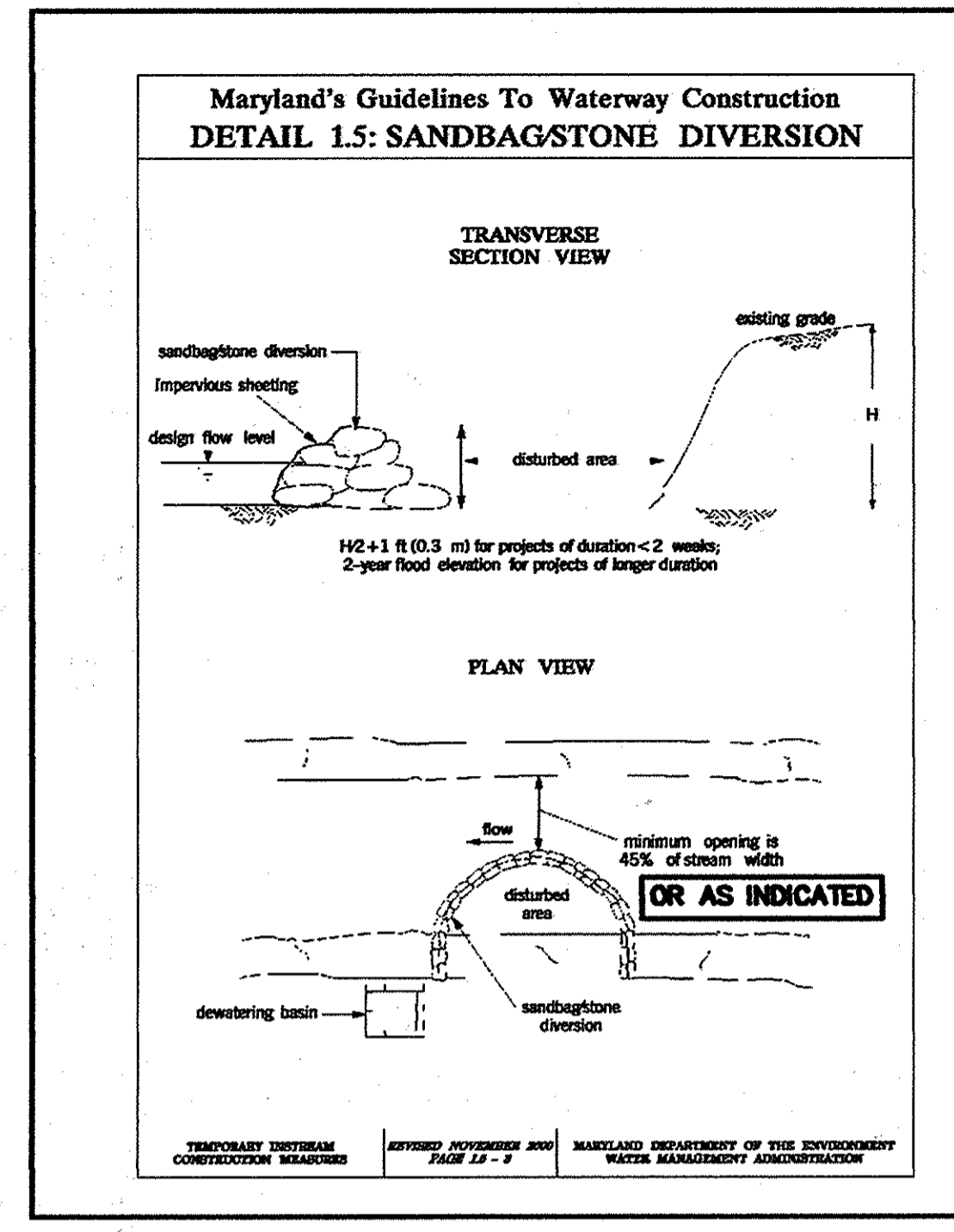
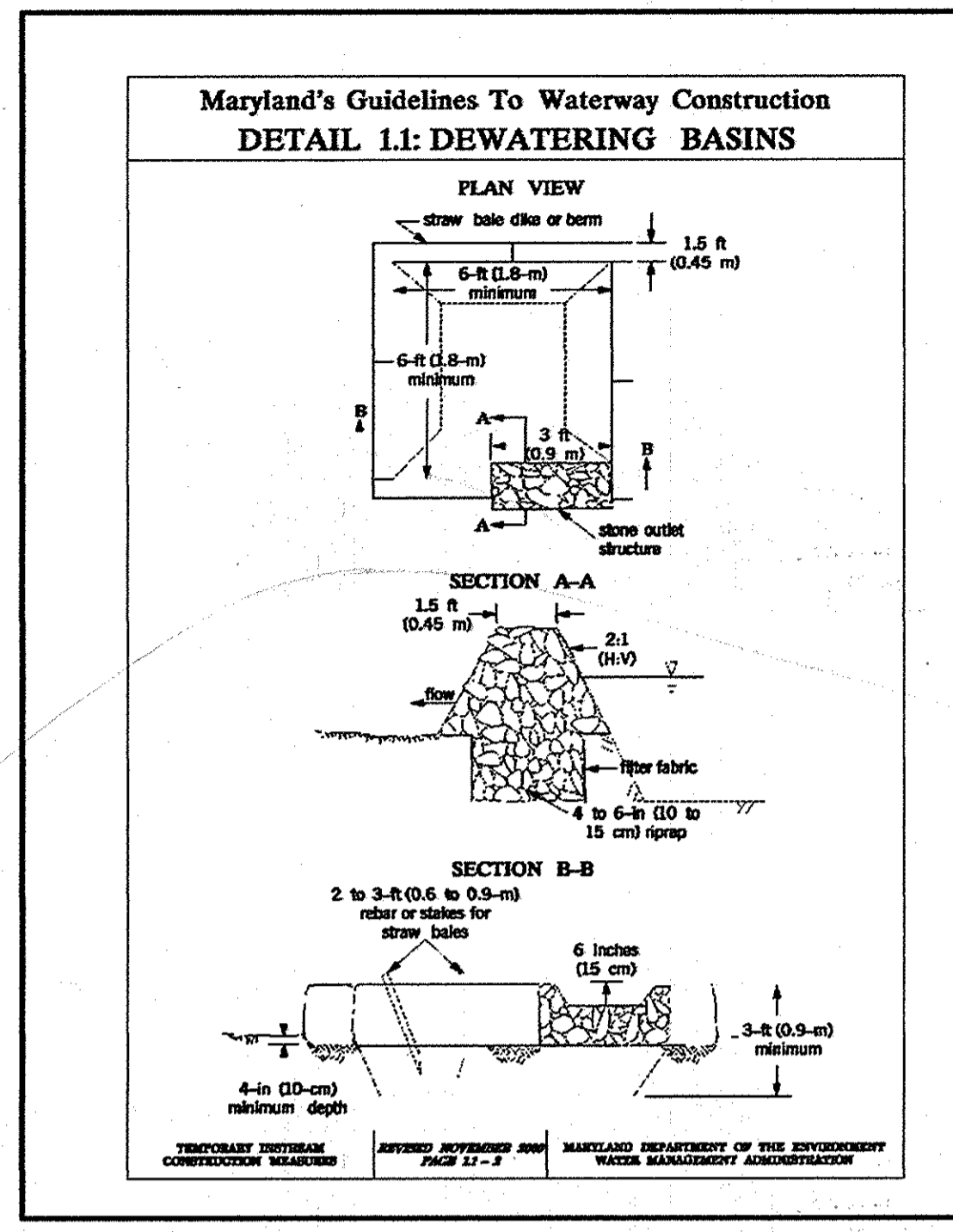
AS-BUILT 6/2014

**KINDLER ROAD - EDEN BROOK DRIVE
WATER MAIN CONNECTION**
CAPITAL PROJECT: W-8297
CONTRACT NO.: 44-4675
ELECTION DISTRICT: 6
HOWARD COUNTY, MARYLAND

SCALE
AS
SHOWN

SHEET
19 OF 20

**STREAM DIVERSION
PLANS**



MGWC 2.2: IMBRICATED RIPRAP

Riprap engineering techniques for bank stabilization

DESCRIPTION
Imbricated riprap is used to protect and stabilize embankment soils from the erosive forces of flowing water and piping forces resulting from groundwater seepage. A well-engineered imbricated riprap revetment should consist of the following:

- a filter layer of gravel or cloth designed to prevent soil movement into or through the riprap layer while allowing water to drain from the embankment, and
- a stone wall of appropriate size and positioning to resist the shearing forces of channelized water and the lateral earth pressures of the embankment bank.

EFFECTIVE LINES & LIMITATIONS
When properly designed and installed, imbricated riprap revetments resist lateral earth pressures to some extent and can be an effective method of bank armoring where soil conditions, water turbulence and velocity, expected vegetative cover, and groundwater conditions are such that the soil may erode under the design flow conditions and limited maintenance or periodic property.

Filter cloth should only be utilized when the back material is a cohesive material such as sand or gravel.

MATERIAL SPECIFICATIONS
Materials for imbricated riprap construction and installation should meet the following requirements:

- Filter: Synthetic filter fabric may be used occasionally based on the FEMA Standards and Specifications for Soil Erosion and Sediment Control. However, geotextiles, however, geotextiles with a minimum thickness of 6 mils (15 cm) should be used with a gradation as found in Table 2.2.

Percent Less Than	U.S. Standard Stone Size
100	2 1/2 in (63 mm)
85-100	1 in (25 mm)
60-100	1/2 in (13 mm)
35-70	No. 10
20-50	No. 40
10-20	No. 200

- The riprap: The maximum diameter or weight of stones for toe riprap should be based upon the bankfull stream channel velocity as detailed in the MGWC 2.1: Riprap and Figure 2.1.
- Imbricated stone: Imbricated riprap should be angular and blocky in shape such that they are stackable and should be sufficiently large to resist displacement by both the design storm event and the non-design lateral earth stresses. Therefore, the length of the longest axis of each stone should be the greater of 1/3 the height of the proposed wall and the size necessary to resist the design stream flow according to MGWC 2.1: Riprap. A typical maximum size length is 24 inches (61 cm).

SOIL PROTECTION AND STABILIZATION TECHNIQUES
PAGE 22-1
MARYLAND DEPARTMENT OF THE ENVIRONMENT
WATER MANAGEMENT ADMINISTRATION

MGWC 2.2: IMBRICATED RIPRAP

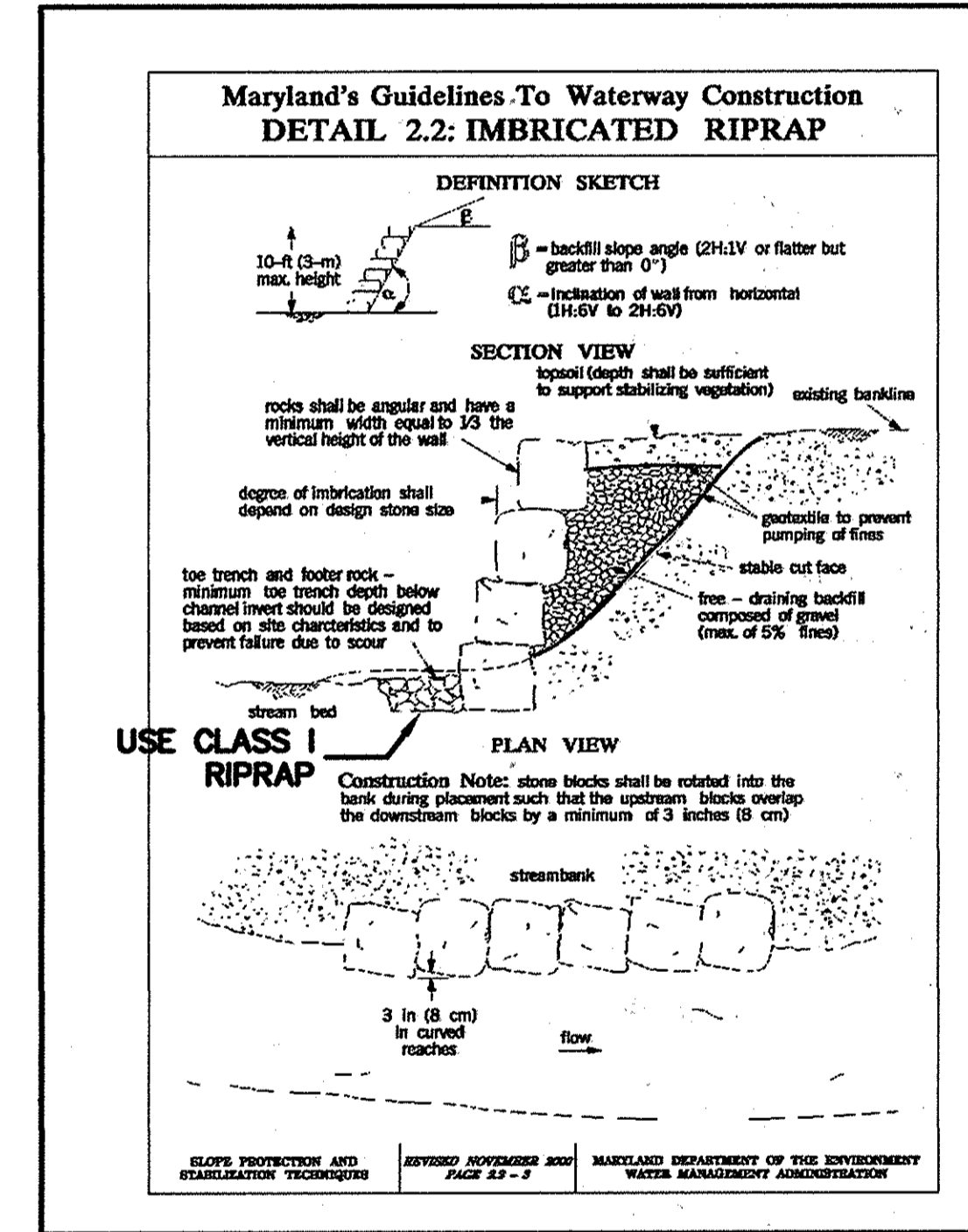
Riprap engineering techniques for bank stabilization

INSTALLATION GUIDELINES
All erosion and sediment control devices, including dewatering basins, should be implemented as the first order of business according to a plan approved by the WMA or local authority. The recommended construction procedure for imbricated riprap is as follows (refer to Detail 2.2):

- The stream should be diverted according to a WMA recommended procedure (see Section 7, Temporary Structure Construction Measures, Maryland's Guidelines to Waterway Construction), and the construction area should be dewatered.
- All construction should be made in reasonably close conformity with the existing stream slope and bed. The slope of the cut face should be in the range of 1H:1V to 2H:1V. Loose material at the toe of the embankment should be removed and a stable foundation is created, usually within 1 to 3 feet (0.3 to 0.9 meters) of the surface. The surface should be smooth, firm, and free from protruding objects or voids that would affect the proper functioning of the filter layer of fabric.
- A graded granular filter or filter fabric should be placed on the face of the cut slope to prevent the migration of fine materials through the revetment. If filter fabric is used, it should be carefully and loosely placed on the prepared slope and secured. Additional steps should be taken to ensure that the filter fabric is not torn or damaged; it should be repaired or replaced.
- The rock layers should be staked with staggered joints so that each stone rests firmly on two stones in the row below. Additionally, smaller stones should be used to fill voids so that each rock rests solidly on the previous and layer with minimal opportunity for movement. Upon completion of the first layer of stone, the toe mesh should be filled with Class III riprap placed according to MGWC 2.1: Riprap or additional imbricated stone. Two footer stones should be used where high potential for channel incision exists. The height of the imbricated revetment is dictated by the size of the stone used, and the height should not exceed 1 times the length of the longest axis and should not be greater than 10 feet (3 meters).
- Placement of the granular backfill should occur concurrently with the stone placement. The backfill slope angle should be 2H:1V or flatter but should be greater than 1H:1V to facilitate drainage. Once all of the backfill is in place, it should be covered with a filter layer and a layer of riprap sufficient to support a native vegetative cover.
- The disturbed sections of the channel, including the slopes and stream bed, should be stabilized with methods approved by the WMA.

Note: The use of rock revetment (MGWC 2.3: Rock Revetment) should be considered to dissipate excessive toe velocities.

SOIL PROTECTION AND STABILIZATION TECHNIQUES
PAGE 22-2
MARYLAND DEPARTMENT OF THE ENVIRONMENT
WATER MANAGEMENT ADMINISTRATION



MGWC 2.1: RIPRAP

Class	Size	% Total Weight - Given Size
I	150 lb (68 kg) 2 ft (1 m)	100 10 max
II	700 lb (320 kg) 20 in (51 cm)	100 10 max
III	3000 lb (1360 kg) 30 in (76 cm)	100 10 max

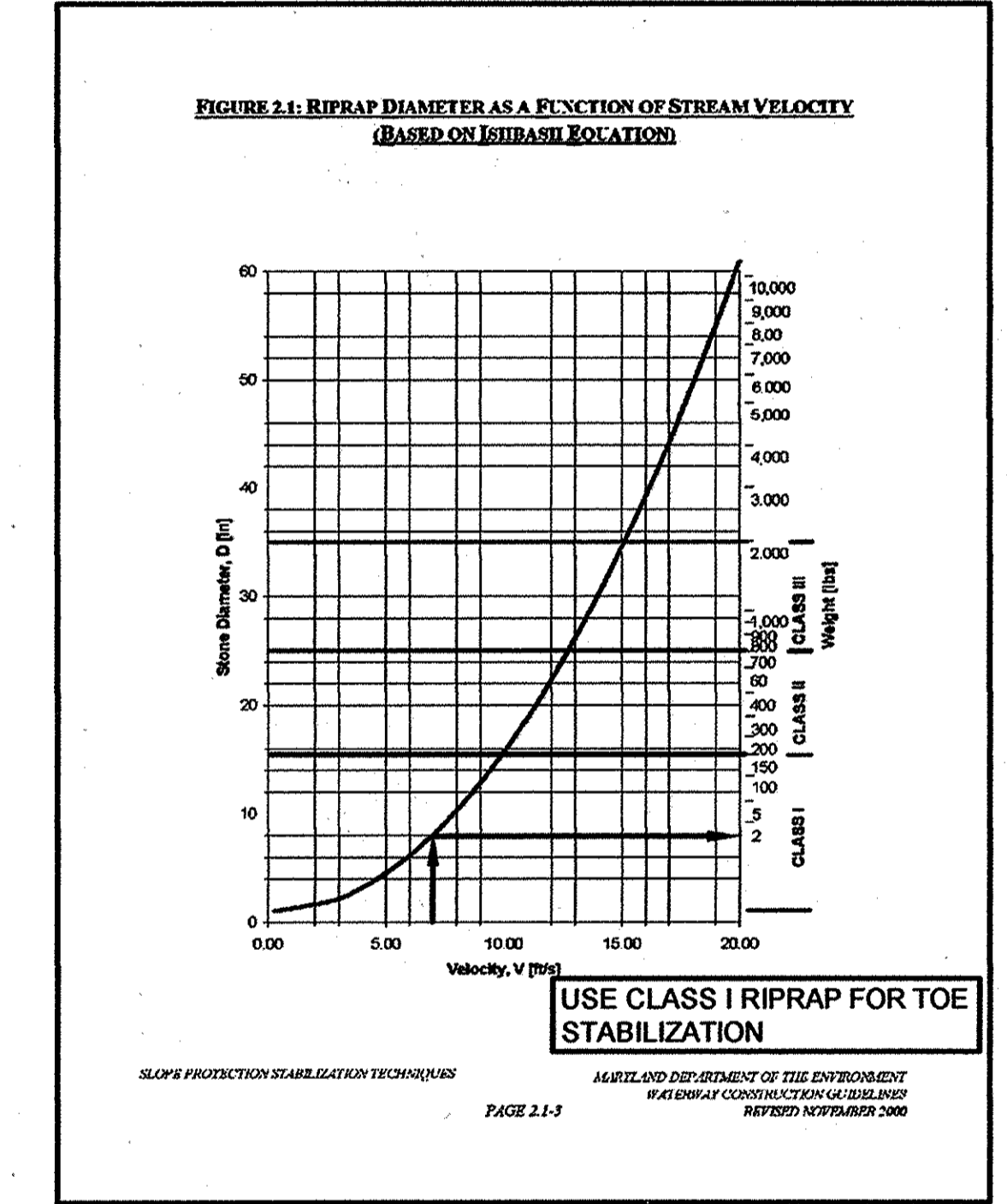
Uniform grade riprap should incorporate angular rock to prevent interlocking.

INSTALLATION GUIDELINES
All erosion and sediment control devices, including dewatering basins, should be implemented as the first order of business according to a plan approved by the WMA or local authority. Once a slope stabilization project is initiated, preparation and placement of the riprap should immediately follow the initial disturbance to minimize the chance for further slope degradation. The recommended construction procedure for riprap is as follows (beginning with initial slope preparations (refer to Detail 2.1)):

- The contractor should install all erosion and sediment control devices as the first order of business.
- Disturbance should be made in reasonably close conformity with the existing stream slope and bed.
- All fill in the subgrade should be compacted to a density approximating that of the surrounding undisturbed material.
- Revetment must be made to enclose the riprap as the stream bed so as to provide protection against undermining. If this cannot be accomplished by means of a toe mesh, an alternative method of protection must receive prior written approval from the WMA or local authority.
- The filter layer or blanket should be placed immediately after slope preparation.
 - The stone for granular filter should be spread in a uniform layer to the specified depth. Where more than one layer is employed, they should be spread such that there is minimal mixing.
 - When cloth filters are used, special care should be taken not to damage the fabric during riprap placement.
- Riprap placement should begin with the toe. The larger stones, as specified by the design gradation, should be placed in the toe and along the perimeter of the slope and channel protection. The riprap should be placed with suitable equipment in such a manner as to produce a reasonably graded mass of stones with even top height. The placing of stones that cause extreme segregation is not allowed. Where appropriate, a low flow channel should be constructed through the riprap.
- Any excavation voids existing along the edge of the completed slope and channel protection should be backfilled and compacted.
- All disturbed areas should be permanently stabilized in accordance with an approved sediment and erosion control plan.

Note: The use of rock revetment (MGWC 2.3: Rock Revetment) should be considered to redirect high-velocity flow at the toe.

SOIL PROTECTION AND STABILIZATION TECHNIQUES
PAGE 21-2
MARYLAND DEPARTMENT OF THE ENVIRONMENT
WATER MANAGEMENT ADMINISTRATION



RECORD DRAWINGS
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O'BRIEN & GERE
ENGINEERS, INC.
BY: *[Signature]*

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

[Signature] 10/13/13
DIRECTOR OF PUBLIC WORKS
DATE

[Signature] 9/24/13
CHIEF - BUREAU OF ENGINEERING
DATE

[Signature] 9/24/13
CHIEF, BUREAU OF UTILITIES
DATE

[Signature] 9/24/13
CHIEF, UTILITY DESIGN DIVISION
DATE

O'BRIEN & GERE
4201 MITCHELLVILLE ROAD
SUITE 500
BOWIE, MD 20716
PHONE: 301-731-5622

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12/08/2013

STATE OF MARYLAND
JOHN W. CALDWELL
GOVERNOR

DSN. BY: _____
DRN. BY: _____
CHK. BY: RJD 1 AS-BUILT/RECORD DRAWING 6/14
DATE: AUG, 2013 RJD 0 AS ISSUED FOR BID 09/13
BY NO. _____ REVISION _____

600' SCALE MAP NO. 42 BLOCK NO. 7

STREAM DIVERSION
CONSTRUCTION DETAILS

KINDLER ROAD - EDEN BROOK DRIVE
WATER MAIN CONNECTION

CAPITAL PROJECT: W-8297
CONTRACT NO.: 44-4675
ELECTION DISTRICT: 6
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 20 OF 20

AS-BUILT 6/2014