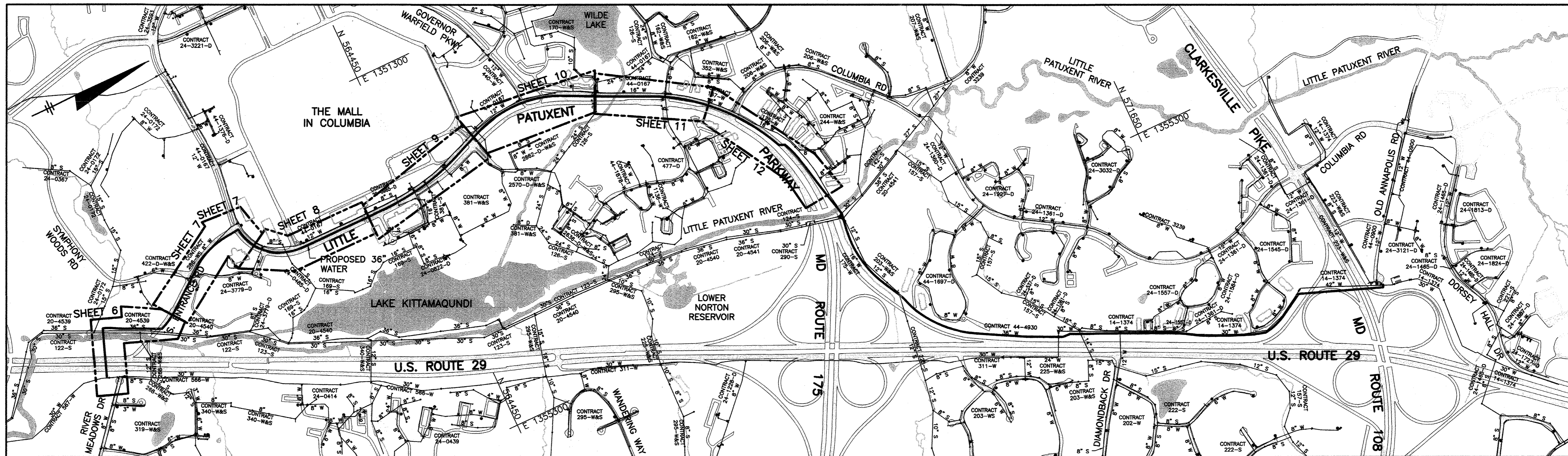


U.S. ROUTE 29 WATER TRANSMISSION MAIN: SOUTH ENTRANCE ROAD TO LITTLE PATUXENT PARKWAY

CAPITAL PROJECT: W-8296
CONTRACT NO.: 44-4776
HOWARD COUNTY, MARYLAND
DEPARTMENT OF PUBLIC WORKS

QUANTITIES					
ITEM	BID AMOUNT	UNIT	AS-BUILT AMOUNT	MATERIAL	SUPPLIER
36" WATER RJ (BY OPEN CUT METHODS)	3,531	L.F.			
36" WATER (BY OPEN CUT METHODS)	5,100	L.F.			
36" WATER RJ (BY TUNNELING METHOD)	469	L.F.			
60" ID CASING PIPE	469	L.F.			
ACCESS/BLOW-OFF MANHOLE ASSEMBLY	2	EA.			
36" RSGV	5	EA.			
AIR RELEASE MANHOLE	4	EA.			
FIRE HYDRANT ASSEMBLY	2	EA.			



WATER AND SEWER CODE
FOR COUNTY USE ONLY:
NO. OF WATER CONNECTIONS: 0
DRAINAGE AREA: LITTLE PATUXENT

VICINITY MAP
SCALE: 1" = 600'

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 *James P. Gere* DATE 01/03/2019

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.
Paul D. ... 10/1/15
Signature of Developer Date

SEDIMENT CONTROL MEASURES FOR THIS CONTRACT WILL BE IMPLEMENTED IN ACCORDANCE WITH SECTION 219 OF THE SPECIFICATIONS AND AS SHOWN ON THE DRAWINGS.

HOWARD SOIL CONSERVATION DISTRICT CERTIFICATION:
THIS PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT (SCD).
Jeff ... 10/1/15
Howard Soil Conservation District EP-16-011 Date

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.
... 18523 9/22/15
Signature of Engineer - Registration Number Date

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND
DIRECTOR OF PUBLIC WORKS: *Randy ...* 10/1/15
CHIEF - BUREAU OF ENGINEERING: *Thomas ...* 9/30/15
CHIEF, UTILITY DESIGN DIVISION: *...* 9/30/15

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. 18523, EXPIRATION DATE 12/08/2015.


DSN. BY:	GLF		
DRN. BY:	RPW	LR 2	RECORD DRAWINGS 11/16
CHK. BY:	RJD	LR 1	RFI-001 07/16
		RJD 1	ADDENDUM NO. 2 11/15
		RJD 0	AS BID 09/15
DATE:	09/15	BY NO.	REVISION DATE

COVER SHEET
600' SCALE MAP NO. 30 BLOCK NO. 36

U.S. ROUTE 29 WATER TRANSMISSION MAIN
SOUTH ENTRANCE ROAD TO LITTLE PATUXENT PARKWAY
CAPITAL PROJECT: W-8296
CONTRACT NO.: 44-4776
ELECTION DISTRICT: 5
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 1 OF 48
FILE NO. 33498-XXX

GENERAL NOTES:

1. THE LOCATIONS, ELEVATIONS OR STATIONING SHOWN FOR THE EXISTING MAINS AND UTILITIES ARE APPROXIMATE. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE EXISTING (INCLUDING LOCATION AND ELEVATION) OF ALL BURIED UTILITIES. NOTE ALSO THAT OTHER BURIED UTILITIES MAY EXIST WITHIN THE WORK AREA THAT ARE NOT SHOWN. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PROJECT EXISTING MAINS AND SERVICES AND MAINTAIN UNINTERRUPTED SERVICE. ANY DAMAGE INCURRED SHALL BE REPAIRED IMMEDIATELY TO THE SATISFACTION OF THE ENGINEER AT THE CONTRACTOR'S EXPENSE.
2. TOPOGRAPHIC FIELD SURVEYS WERE PERFORMED ON JUNE, 2012 BY NXL CONSTRUCTION, INC. PHONE (703) 961-8127.
3. HORIZONTAL AND VERTICAL SURVEY CONTROLS:
THE COORDINATES SHOWN ON THE DRAWINGS ARE BASED ON MARYLAND STATE REFERENCE SYSTEM NAD '83/'91 AS PROJECTED BY HOWARD COUNTY GEODETIC CONTROL STATIONS NO. 30G4 AND NO. 36AA. ALL VERTICAL CONTROLS ARE BASED ON NAVD '88. VERTICAL CONTROLS PROVIDED ON THE DRAWINGS ARE LISTED ON SHEET 3.
4. ALL PIPE ELEVATIONS SHOWN ARE INVERT ELEVATIONS UNLESS OTHERWISE NOTED ON THE PLANS.
5. 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 THE BRACING OF ADDITIONAL POLES OR DAMAGES SHALL BE DELETED FROM THE MONIES OWED THE CONTRACTOR. THE CONTRACTOR SHALL COORDINATE WITH THE UTILITY COMPANIES TO SCHEDULE THE BRACING OF THE POLES.
6. 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.
7. WHERE TEST PITS HAVE BEEN MADE ON EXISTING UTILITIES, THEY ARE NOTED BY THE SYMBOL  AT THE LOCATIONS OF THE TEST PITS. A NOTE OR NOTES CONTAINING THE RESULTS OF THE TEST PIT OR PITS IS INCLUDED ON THE DRAWINGS OR WITHIN THE SPECIFICATIONS. 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.
8. THE CONTRACTOR SHALL NOTIFY THE FOLLOWING UTILITY COMPANIES OR AGENCIES AT LEAST FIVE WORKING DAYS BEFORE STARTING WORK SHOWN ON THESE PLANS:

AT&T.....	1-800-252-1133
BGE (CONTRACTOR SERVICES).....	410-637-8713
BGE (EMERGENCY).....	410-685-0123
BUREAU OF UTILITIES.....	410-313-4900
COLONIAL PIPELINE CO.....	410-795-1390
MISS UTILITY.....	1-800-257-7777
STATE HIGHWAY ADMINISTRATION.....	410-531-8533
VERIZON.....	1-800-743-0033
9. TREES AND SHRUBS ARE TO BE PROTECTED FROM DAMAGE TO THE MAXIMUM EXTENT. TREES AND SHRUBS LOCATED WITHIN THE TEMPORARY CONSTRUCTION STRIP ARE NOT TO BE REMOVED OR DAMAGED BY THE CONTRACTOR.
10. THE CONTRACTOR SHALL REMOVE TREES, STUMPS AND ROOTS ALONG THE LINE OF EXCAVATION. PAYMENT FOR SUCH REMOVAL SHALL BE INCLUDED IN THE UNIT PRICE BID FOR CONSTRUCTION OF THE MAIN.
11. THE CONTRACTOR SHALL NOTIFY THE BUREAU OF HIGHWAYS, HOWARD COUNTY, AT (410) 313-7450 AT LEAST FIVE WORKING DAYS BEFORE OPEN CUTTING OR BORING/JACKING OF ANY COUNTY ROAD FOR LAYING WATER/SEWER MAINS OR HOUSE CONNECTIONS. THE APPROVAL OF THESE DRAWINGS WILL CONSTITUTE COMPLIANCE WITH DPW REQUIREMENTS PER SECTION 18.114(A) OF THE HOWARD COUNTY CODE.
12. 36-INCH WATER MAIN DESIGN CRITERIA:
 - a. THIS PROJECT MAY BE BID USING ONE OF THE FOLLOWING PIPE MATERIALS FOR THE PROPOSED 36-INCH WATER MAIN (PCCP, BWCCP, OR TAPE COATED DIP).
 - b. RESTRAINED JOINTS ARE TO BE USED ON THE 36" MAIN PER THE LIMITS SHOWN ON THE DESIGN PLANS.
 - c. ALL FITTINGS ON THE 36" MAIN SHALL BE RESTRAINED JOINT UNLESS OTHERWISE NOTED. ALL FITTINGS ON SMALLER MAINS SHALL BE RESTRAINED OR BUTTRESSED/ANCHORED WITH CONCRETE IN ACCORDANCE WITH THE STANDARD DETAILS UNLESS OTHERWISE PROVIDED FOR ON THE DRAWINGS.
 - d. LAYOUT SHOWN ON THE CONTRACT DRAWINGS IS BASED ON PCCP. IF DIFFERENT PIPE MATERIAL IS SELECTED, THE LAY SCHEDULE SHALL BE CAD BASED ABLE TO TIE INTO CONTRACT DRAWINGS TO ENABLE ENGINEER TO REVIEW THE IMPACT OF ALIGNMENT CHANGES. CAD DRAWINGS TO BE ON MARYLAND STATE PLANE COORDINATES MATCHING THE CONTRACT DRAWINGS.
13. TOPS OF ALL WATER MAINS SHALL HAVE A MINIMUM OF 3'-6" OF COVER UNLESS OTHERWISE NOTED.
14. VALVES ADJACENT TO TEES SHALL BE STRAPPED TO TEES.
15. FIRE HYDRANTS SHALL BE SET TO THE BURY LINE ELEVATIONS SHOWN ON THE DRAWINGS. ALL FIRE HYDRANTS SHALL BE INSTALLED IN ACCORDANCE WITH THE STANDARD DETAILS. THE SOIL AROUND THE FIRE HYDRANT SHALL BE COMPACTED IN ACCORDANCE WITH SECTION 1000 AND SECTION 1005 OF THE STANDARD SPECIFICATIONS.
16. THE CONTRACTOR SHALL NOT OPERATE ANY WATER MAIN VALVES ON THE EXISTING WATER SYSTEM.
17. 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. THE LOCATIONS FOR ISOLATION, ALONG WITH A PROPOSED SEQUENCE OF CONSTRUCTION, ARE CONTAINED HEREIN, HOWEVER, A DETAILED PLAN FOR SHUTDOWN OF EXISTING WATER MAINS SHALL BE SUBMITTED BY THE CONTRACTOR FOR APPROVAL BY THE COUNTY.
18. THE CONTRACTOR SHALL LOCATE ANY WATER AND OR SEWER CONNECTIONS, AND TAKE ALL NECESSARY PRECAUTIONS TO PROTECT THESE EXISTING CONNECTIONS. ANY DAMAGE INCURRED SHALL BE REPAIRED IMMEDIATELY TO THE SATISFACTION OF THE OWNER AND IT'S ENGINEER AT THE CONTRACTOR'S EXPENSE.
19. EXISTING STORM DRAINS DISTURBED BY THE CONSTRUCTION SHALL BE REPLACED IN KIND AT THE SAME LINE AND GRADE AS THE EXISTING STORM DRAINS.
20. ANY TREES, OUTSIDE OF EXISTING EASEMENTS, DISTURBED BY CONSTRUCTION SHALL BE REPLACED IN KIND. (3" CALIPER MINIMUM.)
21. THE CONTRACTOR MUST FOLLOW ALL CONDITIONS AND REQUIREMENTS AS SET FORTH IN THE REQUIRED PERMITS FOR THIS PROJECT AND PROVIDED IN THE PROJECT SPECIFICATIONS.
22. WHERE THE PROPOSED MAIN PARALLELS EXISTING MAINS, THE APPROXIMATE ELEVATION OF THE EXISTING MAIN IS SHOWN IN THE PROFILES. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PROTECT THE EXISTING MAIN AS WELL AS ANY EXISTING THRUST RESTRAINT.

23. ANY SECTIONS OF THE EXISTING WATER MAINS REMOVED AS PART OF THIS PROJECT SHALL BE DISPOSED OF IN ACCORDANCE WITH APPLICABLE FEDERAL, STATE, AND LOCAL REGULATIONS. ALL TRANSPORT AND DISPOSAL COSTS SHALL BE AT THE CONTRACTOR'S EXPENSE.
24. CONTRACTOR SHALL NOT EXCEED 80% OF MANUFACTURER'S PUBLISHED ALLOWABLE MAXIMUM JOINT DEFLECTION FOR PIPING SPECIFIED.
25. EXCEPT AS INDICATED ON THE PLANS ALL MAINS SHALL BE RATED FOR A WORKING PRESSURE OF 120-PSI WITH AN ADDITIONAL SURGE ALLOWANCE OF 80-PSI AND A FACTOR OF SAFETY OF 1.30, AND THE HOWARD COUNTY DESIGN MANUAL VOLUME IV - STANDARD SPECIFICATIONS AND DETAILS FOR CONSTRUCTION AND ALL SUBSEQUENT AMENDMENTS THERETO.
26. ALL CONNECTIONS TO EXISTING WATER MAINS SHALL BE FULLY RESTRAINED.
27. THE CONTRACTOR SHALL PROVIDE SURVEY CONSTRUCTION STAKEOUT FOR ALL NECESSARY LINES, GRADES AND ELEVATIONS OF THE PROPOSED FACILITIES.
28. IN ACCORDANCE WITH THE 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 NEW WATER MAIN PIPING AT THE CROSSING TO MAXIMIZE THE DISTANCE OF ANY WATER MAIN JOINT FROM THE CROSSING.
29. NO WATER SHALL BE DISCHARGED FROM THE EXISTING WATER MAIN TO THE ENVIRONMENT WITHOUT FIRST DECHLORINATING. THE CONTRACTOR SHALL SUBMIT IT'S PROPOSED DECHLORINATION PROCESS DESIGN, DETAILS OF ALL PROCESS COMPONENTS, AND THE PROPOSED LOCATION ON-SITE. ALL PROCESS DESIGN AND LAYOUT DOCUMENTS SHALL BE STAMPED AND SIGNED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF MARYLAND AND SUBMITTED TO THE OWNER AND IT'S ENGINEER FOR REVIEW AND APPROVAL.
30. TRACER WIRE AND CONTINUITY TEST STATIONS SHALL BE INSTALLED ALONG THE LENGTH OF ALL NEW PIPE INSTALLED, REGARDLESS OF MATERIAL. CONTINUITY TEST STATIONS SHALL BE LOCATED ADJACENT TO EACH FIRE HYDRANT.

INDEX OF DRAWINGS	
DRAWING NO.	TITLE
1	COVER SHEET
2	GENERAL NOTES AND INDEX OF DRAWINGS
3	SCHEDULES, TABLES, LEGEND AND ABBREVIATIONS
4	HYDRAULIC PROFILE
5	KEY MAP, RESTORATION SCHEDULE
6	PLAN AND PROFILE STA. 0+00 TO STA. 13+00
7	PLAN AND PROFILE STA. 13+00 TO STA. 27+00
8	PLAN AND PROFILE STA. 27+00 TO STA. 40+00
9	PLAN AND PROFILE STA. 40+00 TO STA. 54+00
10	PLAN AND PROFILE STA. 54+00 TO STA. 68+00
11	PLAN AND PROFILE STA. 68+00 TO STA. 80+00
12	PLAN AND PROFILE STA. 80+00 TO STA. 94+00
13	CONNECTION DETAILS STA. 0+00 AND STA. 26+73.90
14	MISCELLANEOUS DETAILS
15	TYPICAL ACCESS, AIR VALVE, BLOW-OFF, AND MONITORING MANHOLE DETAILS
16	SOIL EROSION AND SEDIMENT CONTROL PLAN STA. 0+00 TO STA. 16+00
17	SOIL EROSION AND SEDIMENT CONTROL PLAN STA. 16+00 TO STA. 39+00
18	SOIL EROSION AND SEDIMENT CONTROL PLAN STA. 39+00 TO STA. 62+00
19	SOIL EROSION AND SEDIMENT CONTROL PLAN STA. 62+00 TO STA. 84+00
20	SOIL EROSION AND SEDIMENT CONTROL PLAN STA. 84+00 TO STA. 91+00
21	SOIL EROSION AND SEDIMENT CONTROL PLAN NOTES AND DETAILS - 1
22	SOIL EROSION AND SEDIMENT CONTROL PLAN NOTES AND DETAILS - 2
23	SOIL EROSION AND SEDIMENT CONTROL PLAN NOTES AND DETAILS - 3
24	GEOTECHNICAL INSTRUMENTATION PLAN
25	GEOTECHNICAL INSTRUMENTATION MONITORING DETAILS
26	CONSTRUCTION SHAFTS DESIGN CRITERIA
27	TUNNEL SECTIONS AND DETAILS
28	GEOLOGICAL PROFILE STA. 0+24.50 TO STA. 4+93.50
29	CATHODIC PROTECTION LAYOUT 1
30	CATHODIC PROTECTION DETAILS 1
31	CATHODIC PROTECTION DETAILS 2
32	CATHODIC PROTECTION DETAILS 3
33	MAINTENANCE OF TRAFFIC PLAN - 1
34	MAINTENANCE OF TRAFFIC PLAN - 2
35	MAINTENANCE OF TRAFFIC PLAN - 3
36	MAINTENANCE OF TRAFFIC PLAN - 4
37	MAINTENANCE OF TRAFFIC PLAN - 5
38	MAINTENANCE OF TRAFFIC PLAN - 6
39	MAINTENANCE OF TRAFFIC PLAN - 7
40	MAINTENANCE OF TRAFFIC PLAN - 8
41	MAINTENANCE OF TRAFFIC PLAN - 9
42	MAINTENANCE OF TRAFFIC PLAN - 10
43	TRAFFIC SIGNAL LITTLE PATUXENT PKWY AT SOUTH ENTRANCE ROAD
44	TRAFFIC SIGNAL LITTLE PATUXENT PKWY AT ROUSE ENTRANCE/MALL ENTRANCE
45	TRAFFIC SIGNAL LITTLE PATUXENT PKWY AT STERRETT PLACE
46	TRAFFIC SIGNAL LITTLE PATUXENT PKWY AT GOVERNOR WARFIELD PKWY
47	TRAFFIC SIGNAL LITTLE PATUXENT PKWY AT VANTAGE POINT ROAD
48	TRAFFIC SIGNAL LITTLE PATUXENT PKWY AT COLUMBIA ROAD


RECORD DRAWINGS

DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND

<i>[Signature]</i> DIRECTOR OF PUBLIC WORKS DATE: 10/1/15	<i>[Signature]</i> CHIEF - BUREAU OF ENGINEERING DATE: 9/30/15
<i>[Signature]</i> CHIEF BUREAU OF UTILITIES DATE: 10/1/15	<i>[Signature]</i> CHIEF, UTILITY DESIGN DIVISION DATE: 9/30/15

G 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. 18523, EXPIRATION DATE 12/08/2015



DSN. BY:	GLF			
DRN. BY:	RPW			
CHK. BY:	RJD	LR 2	RECORD DRAWINGS	11/18
		RJD 1	ADDENDUM NO. 2	11/15
		RJD 0	AS BID	09/15
DATE:	09/15	BY	NO.	REVISION

GENERAL NOTES AND INDEX OF DRAWINGS

600' SCALE MAP NO. 30 BLOCK NO. 36

U.S. ROUTE 29 WATER TRANSMISSION MAIN
 SOUTH ENTRANCE ROAD TO LITTLE PATUXENT PARKWAY

CAPITAL PROJECT: W-8296
 CONTRACT NO.: 44-4776
 ELECTION DISTRICT: 5
 HOWARD COUNTY, MARYLAND

I:\HOWARD-CO.2343\45854.RT-29-RT-108-WA\DCS\DWG\SPUT-SETS\SHEETS\45854-001.DWG

SOIL BORINGS			
BORING NUMBER	EASTING	NORTHING	DESCRIPTION
B-1	1353010.63	560751.11	BEGIN CASING TUNNEL
B-2	1352900.74	560801.79	CASING TUNNEL IN ROADWAY MEDIAN
B-3	1352787.30	560843.33	CASING TUNNEL
B-4	1352549.97	560919.08	90° BEND
B-5	1352813.63	561480.86	45° BEND
B-6	1352607.47	561810.50	MINIMUM DISTANCE BETWEEN BORINGS
B-7	1352254.87	562643.52	MINIMUM DISTANCE BETWEEN BORINGS
B-8	1352670.74	563210.15	MINIMUM DISTANCE BETWEEN BORINGS
B-9	1352663.69	564239.99	MINIMUM DISTANCE BETWEEN BORINGS
B-10	1352559.12	564844.01	MINIMUM DISTANCE BETWEEN BORINGS
B-11	1352346.21	565404.36	MINIMUM DISTANCE BETWEEN BORINGS
B-12	1352283.39	566005.30	MINIMUM DISTANCE BETWEEN BORINGS
B-13	1352602.82	566781.49	90° BEND
B-14	1352513.47	566826.40	90° BEND
B-15	1352584.65	566973.60	90° BEND
B-16	1352956.06	567443.06	MINIMUM DISTANCE BETWEEN BORINGS
B-17	1353377.67	567906.37	MINIMUM DISTANCE BETWEEN BORINGS
B-18	1353834.42	568234.95	45° BEND
B-19	1354302.70	568366.46	MINIMUM DISTANCE BETWEEN BORINGS

36" DIA. WATER MAIN COORDINATE TABLE			
STATION	ITEM	NORTHING	EASTING
0+11.87	36"x30" REDUCER	560748.70	1353016.60
0+24.50	START 60° CASING PIPE	560756.52	1352995.26
4+93.50	END 60° CASING PIPE	560914.39	1352564.39
5+00.00	BLOW-OFF MANHOLE	560921.15	1352545.94
5+07.51	36" 90-DEGREE HB	560924.93	1352537.32
5+27.45	36" RSGV	560944.60	1352543.90
11+45.06	36" 45-DEGREE HB	561480.86	1352813.63
24+79.38	VALVE & ACCESS MH	562638.00	1352206.87
24+89.00	36" 90-DEGREE HB	562646.82	1352206.49
26+73.90	12" OUTLET	562701.68	1352301.22
26+83.00	36" RSGV	562706.00	1352389.23
27+41.90	AIR RELEASE MANHOLE	562736.08	1352439.38
42+60.00	BLOW-OFF MANHOLE	564181.16	1352662.88
54+25.00	AIR RELEASE MANHOLE	565295.27	1352379.81
68+20.00	BLOW-OFF MANHOLE	566627.28	1352528.50
83+45.00	AIR RELEASE MANHOLE	567902.88	1353360.03
88+89.78	36" 45-DEGREE HB	568175.97	1353811.42
89+53.10	36" 45-DEGREE HB	568234.95	1353834.42
91+00.00	36" CAP	568294.81	1353968.56

SURVEY CONTROL DATA				
#	NORTHING	EASTING	ELEVATION	DESCRIPTION
907	568353.1856	1354123.0573	336.68	IRON ROD AND CAP
908	567815.3084	1353270.8939	360.27	S.H.A. MONUMENT #3064
909	567071.1007	1352699.8549	328.05	IRON ROD AND CAP
910	566173.7467	1352293.6290	332.57	IRON ROD AND CAP
911	565386.5368	1352381.2317	358.32	IRON ROD AND CAP
912	564782.8481	1352649.5253	349.64	IRON ROD AND CAP
913	564049.7655	1352625.3200	333.85	IRON ROD AND CAP
914	563180.9789	1352722.1319	350.53	IRON ROD AND CAP
915	562541.0934	1352230.5224	355.51	IRON ROD AND CAP
916	562027.2950	1352350.1827	329.51	IRON ROD AND CAP
917	561433.3759	1352892.8913	298.06	IRON ROD AND CAP
918	561101.7565	1352965.4960	304.05	IRON ROD AND CAP
919	560719.6178	1352783.5048	303.82	IRON ROD AND CAP

36" DIA. WATER MAIN COORDINATE TABLE			
STATION	ITEM	NORTHING	EASTING
0+11.87	36"x30" REDUCER	560748.70	1353016.60
0+24.50	START 60° CASING PIPE	560753.05	1353004.73
4+93.50	END 60° CASING PIPE	560914.39	1352564.39
5+22.59	36" 90-DEGREE HB	560924.93	1352537.32
5+63.00	BLOW-OFF MANHOLE	560982.93	1352550.82
5+90.46	36" RSGV	560988.17	1352561.73
11+40.06	36" 45-DEGREE HB	561476.32	1352811.54
24+86.56	36" 90-DEGREE HB	562647.08	1352206.23
26+00.00	ARV MANHOLE	562672.40	1352318.79
26+70.83	12" OUTLET	562701.68	1352381.22
26+79.93	36" RSGV	562706.00	1352389.23
27+41.90	AIR RELEASE MANHOLE	562736.03	1352442.23
42+29.90	36" RSGV	564154.11	1352663.66
42+76.60	6" OUTLET	564194.73	1352662.39
54+21.90	AIR RELEASE MANHOLE	565302.14	1352376.95
68+20.00	6" OUTLET	566629.97	1352529.80
71+41.90	ACCESS MANHOLE	566923.41	1352662.18
72+00.00	36" RSGV	566976.10	1352666.68
82+61.90	AIR RELEASE MANHOLE	567841.09	1353286.36
88+87.13	36" 45-DEGREE HB	568175.97	1353811.42
89+50.46	36" 45-DEGREE HB	568234.95	1353834.42
90+56.84	36" RSGV	568278.34	1353931.54
90+97.36	36" CAP	568294.81	1353968.56

TEST STATION COORDINATE TABLE			
TEST STATION	STATION	NORTHING	EASTING
1	0+00	560744.62	1353027.73
2	0+22	560752.19	1353007.07
3	4+94	560914.56	1352563.71
4	11+50	561485.54	1352812.05
5	17+00	561936.62	1352501.63
6	24+72	562630.53	1352207.66
7	31+50	563071.82	1352652.79
8	38+00	563721.17	1352664.37
9	44+50	564370.64	1352649.51
10	51+00	565001.55	1352500.35
11	57+50	565610.92	1352278.16
12	64+00	566248.60	1352346.92
13	70+50	566835.48	1352626.23
14	76+00	567330.41	1352865.67
15	78+50	567538.34	1353004.18
16	79+00	567577.86	1353034.81
17	85+50	568013.82	1353513.27

LEGEND
(PLAN AND PROFILE SHEETS)

	SIDEWALK		MAIL BOX
	PAVEMENT (EDGE)		VENT
	GRAVEL (EDGE)		STORM DRAIN MH
	CONCRETE (EDGE)		HEADWALL/ENDWALL
	BUILDING		DROP INLET GRATE
	CENTERLINE		DROP INLET
	SHA THRU HIGHWAY RIGHT-OF-WAY		ROAD SIGN
	PROPERTY LINE/RIGHT-OF-WAY		TELE. JUNC. BOX
	GUARDRAIL		UTILITY POLE
	FENCE (WOOD)		LIGHT POLE
	FENCE (IRON, RAIL)		GUY WIRE
	FENCE (CHAINLINK)		GROUND LIGHT
	UNDG ELECTRIC LINE		ELEC. TRANSFORMER
	UNDG TELEPHONE LINE		ELEC. MH
	UNDG CABLE LINE		ELEC. JUNC. BOX
	UNDG FIBER OPTIC LINE		SPOT ELEVATION
	OVERHEAD UTILITIES		CABLE BOX
	SANITARY SEWER		SAN. SEW. MH
	STORM DRAIN		CLEAN OUT
	WATER MAIN		WATER VALVE
	PROPOSED WATER		RSG VALVE
	GAS		WATER METER
	DITCH		WATER MAIN VALVE VAULT
	STREAM		IRRIGATION VALVE
	WOODLINE		FIRE HYDRANT
	BUSH		GAS VENT PIPE
	RIP-RAP DITCH		GAS VALVE
	MILL AND OVERLAY		GAS PUMP
	BORING LOCATION		GAS LINE MARKER
	TEST PIT LOCATION		IRON PIPE FOUND
	BM #		REBAR AND CAP
	REBAR		TRAVERSE STATION
	FLY STATION		POINT OF CONNECTION
	ABANDON IN PLACE EX. WM		CORROSION PROTECTION AND CONTINUITY TESTING STATION

ABBREVIATIONS:

APPROX.	APPROXIMATE	R/W	RIGHT OF WAY
ARV MH	AIR RELEASE MANHOLE	RAD OR R	RADIUS
BE	BURY ELEVATION	RD	ROAD CONC. PIPE
BFV	BUTTERFLY VALVE	REIN.	REINFORCED
BGE	BALTIMORE GAS & ELECTRIC	REQD	REQUIRED
BL	BURY LENGTH	RJ	RESTRAINED JOINT
BLDG.	BUILDING	ROW	RIGHT-OF-WAY
BOT	BOTTOM	RSGV	RESILIENT SEAT GATE VALVE
C&G	CURB AND GUTTER	RSWV	RESILIENT WEDGE GATE VALVE
CMP	CORRUGATED METAL PIPE	S	SEWER
CONC.	CONCRETE	SAN	SANITARY
CONSTR.	CONSTRUCTION	SB	SOIL BORING
CONTR.	CONTRACT	SD	STORM DRAIN
DEFL.	DEFLECTION	SHA	STATE HIGHWAY ADMINISTRATION
DEG.	DEGREE	SHC	SEWER HOUSE CONNECTION
DET OR DTL	DETAIL	SHT	SHEET
DIP	DUCTILE IRON PIPE	S.S.	STAINLESS STEEL
DR	DRIVE	STA	STATION
E OR ELEC	ELECTRIC	STD	STANDARD
EA	EACH	TB RENO	TO BE RENOVATED (FUTURE)
ESMT	EASEMENT	TBR	TO BE REMOVED (FUTURE)
EX	EXISTING	TELE	TELEPHONE
FH	FIRE HYDRANT	TEMP	TEMPORARY
FLG	FLANGE	TP	TEST PIT
FMV	FLOW METER VAULT	TRANS	TRANSFORMER
G	GAS	UNF	UTILITY NOT FOUND
GCS	GEODETC CONTROL SYSTEM	VB	VERTICAL BEND
GV	GATE VALVE	VCR	VERTICAL CURVE RADIUS
HB	HORIZONTAL BEND	VERT OR VT	VERTICAL
HC	HOWARD COUNTY	W	WATER
HCR	HORIZONTAL CURVE RADIUS	W/	WITH
HDP	HORIZONTAL DEFLECTION POINT	WHC	WATER HOUSE CONNECTION
HDPE	HIGH DENSITY POLYETHYLENE	WM	WATER MAIN
HORIZ OR HOR	HORIZONTAL		
INV	INVERT	LANDSCAPING	
JOINT	JOINT	APP	APPLE
LF	LINEAR FOOT	BPE	BRADFORD PEAR
LOD	LIMIT OF DISTURBANCE	CHE	CHERRY
MAC	MACADAM	DEC	DECIDUOUS
MBR	MINIMUM BENDING RADIUS	DOG	DOGWOOD
MD	MARYLAND	HEM	HEMLOCK
MH	MANHOLE	HIC	HICKORY
MIN	MINIMUM	HOL	HOLLY
NIC	NOT IN CONTRACT	LOC	LOCUST
NO	NUMBER	MAG	MAGNOLIA
PC	POINT OF CURVE	MAP	MAPLE
PCCP	PRESTRESSED CONCRETE CYLINDER PIPE	MUL	MULBERRY
PED	PEDESTAL	PIN	PINE
PO	POST OFFICE OR PUSH ON	POP	POPLAR
PROP	PROPOSED	SPR	SPRYCE
PT	POINT OR POINT OF TANGENCY	SYC	SYCAMORE
PVC	PVC PIPE OR POINT OF VERTICAL CURVATURE	WAL	WALNUT
PVD	POINT OF VERTICAL DEFLECTION	WIL	WILLOW
PVI	POINT OF VERTICAL INTERSECTION		
PVMT	PAVEMENT		
PVT	POINT OF VERTICAL TANGENCY		

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Director of Public Works: *[Signature]* 10/1/15
 Chief - Bureau of Utilities: *[Signature]* 9/30/15

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

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Professional Engineer: *[Signature]* 9/30/15

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DRN. BY:	RPW		
CHK. BY:	RJD		
DATE:	09/15		
LR	2	RECORD DRAWINGS	11/18
RJD	1	RFI-001	07/16
RJD	0	AS BID	09/15
BY	NO.	REVISION	DATE

SCHEDULES, TABLES, LEGEND AND ABBREVIATIONS

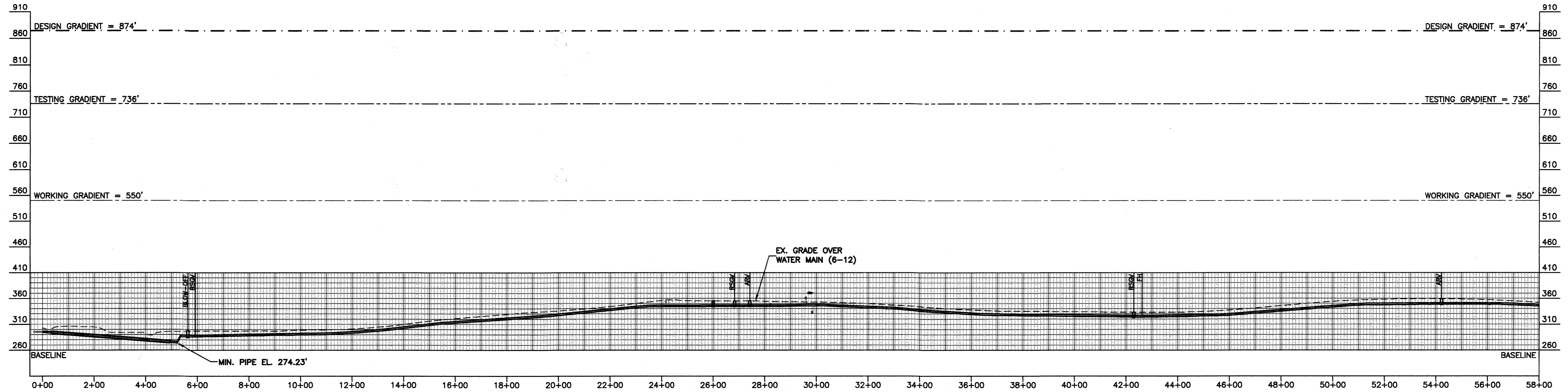
600' SCALE MAP NO. 30 BLOCK NO. 36

U.S. ROUTE 29 WATER TRANSMISSION MAIN
SOUTH ENTRANCE ROAD TO LITTLE PATUXENT PARKWAY

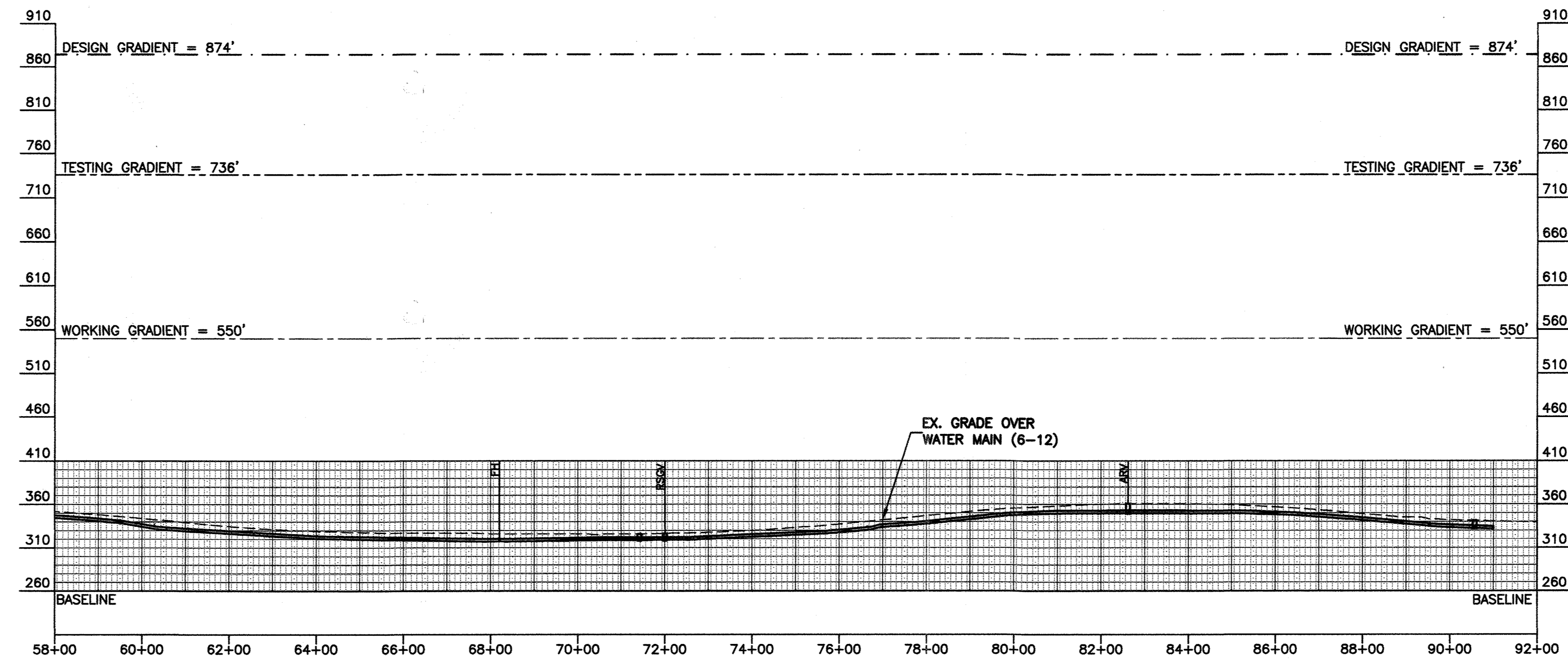
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 CONTRACT NO.: 44-4776
 ELECTION DISTRICT: 5
 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 3 OF 48
RECORD DRAWINGS
FILE NO. 33498-XXX

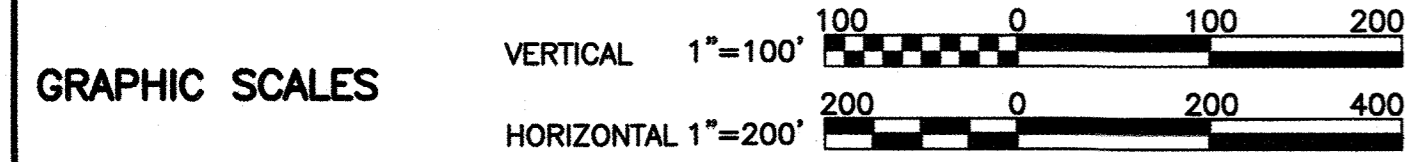
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HYDRAULIC PROFILE
 HORIZ. SCALE: 1"=200'
 VERT. SCALE: 1"=100'



HYDRAULIC PROFILE
 HORIZ. SCALE: 1"=200'
 VERT. SCALE: 1"=100'

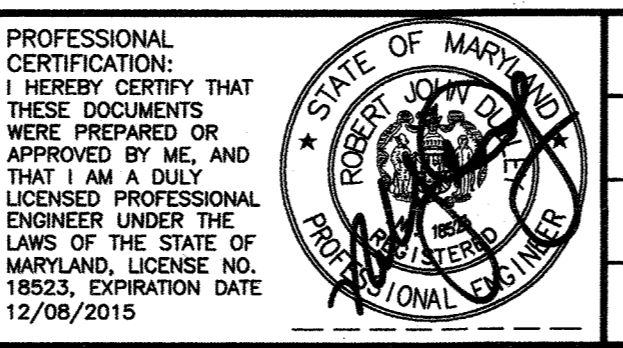


RECORD DRAWINGS

DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND

Director of Public Works: [Signature] 9/15/15
 Chief - Bureau of Engineering: [Signature] 9/15/15
 Chief - Bureau of Utilities: [Signature] 9/15/15
 Chief, Utility Design Division: [Signature] 9/15/15

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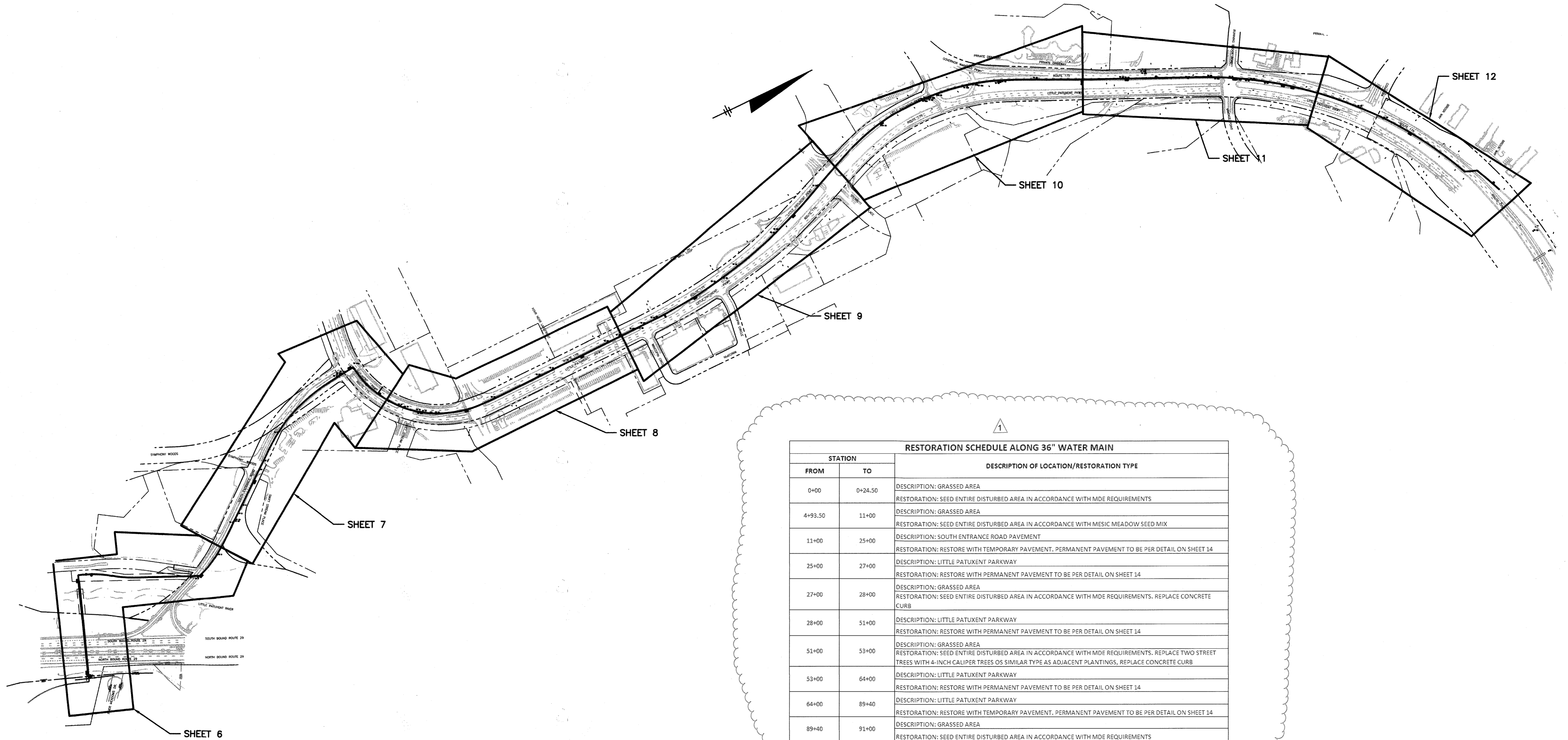
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DRN. BY:	RPW		
CHK. BY:	RJD	LR 1	11/18
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HYDRAULIC PROFILE	
600' SCALE MAP NO. 30	BLOCK NO. 36

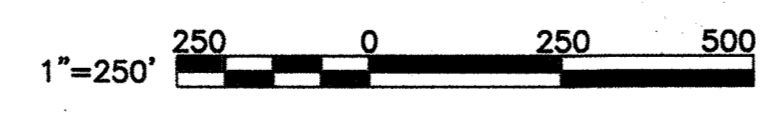
U.S. ROUTE 29 WATER TRANSMISSION MAIN
 SOUTH ENTRANCE ROAD TO LITTLE PATUXENT PARKWAY

CAPITAL PROJECT: W-8296
 CONTRACT NO.: 44-4776
 ELECTION DISTRICT: 5
 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
 SHEET 4 OF 48
 FILE NO. 33498-XXXF



RESTORATION SCHEDULE ALONG 36" WATER MAIN		
STATION		DESCRIPTION OF LOCATION/RESTORATION TYPE
FROM	TO	
0+00	0+24.50	DESCRIPTION: GRASSED AREA RESTORATION: SEED ENTIRE DISTURBED AREA IN ACCORDANCE WITH MDE REQUIREMENTS
4+93.50	11+00	DESCRIPTION: GRASSED AREA RESTORATION: SEED ENTIRE DISTURBED AREA IN ACCORDANCE WITH MESIC MEADOW SEED MIX
11+00	25+00	DESCRIPTION: SOUTH ENTRANCE ROAD PAVEMENT RESTORATION: RESTORE WITH TEMPORARY PAVEMENT. PERMANENT PAVEMENT TO BE PER DETAIL ON SHEET 14
25+00	27+00	DESCRIPTION: LITTLE PATUXENT PARKWAY RESTORATION: RESTORE WITH PERMANENT PAVEMENT TO BE PER DETAIL ON SHEET 14
27+00	28+00	DESCRIPTION: GRASSED AREA RESTORATION: SEED ENTIRE DISTURBED AREA IN ACCORDANCE WITH MDE REQUIREMENTS. REPLACE CONCRETE CURB
28+00	51+00	DESCRIPTION: LITTLE PATUXENT PARKWAY RESTORATION: RESTORE WITH PERMANENT PAVEMENT TO BE PER DETAIL ON SHEET 14
51+00	53+00	DESCRIPTION: GRASSED AREA RESTORATION: SEED ENTIRE DISTURBED AREA IN ACCORDANCE WITH MDE REQUIREMENTS. REPLACE TWO STREET TREES WITH 4-INCH CALIPER TREES OS SIMILAR TYPE AS ADJACENT PLANTINGS, REPLACE CONCRETE CURB
53+00	64+00	DESCRIPTION: LITTLE PATUXENT PARKWAY RESTORATION: RESTORE WITH PERMANENT PAVEMENT TO BE PER DETAIL ON SHEET 14
64+00	89+40	DESCRIPTION: LITTLE PATUXENT PARKWAY RESTORATION: RESTORE WITH TEMPORARY PAVEMENT. PERMANENT PAVEMENT TO BE PER DETAIL ON SHEET 14
89+40	91+00	DESCRIPTION: GRASSED AREA RESTORATION: SEED ENTIRE DISTURBED AREA IN ACCORDANCE WITH MDE REQUIREMENTS



RECORD DRAWINGS

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Director of Public Works: *[Signature]* 10/1/15
 Chief - Bureau of Engineering: *[Signature]* 9/30/15
 Chief, Bureau of Utilities: *[Signature]* 9/30/15

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SUITE 500
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PHONE: 301-731-5622

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[Professional Seal]

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CHK. BY:	RJD		
DATE:	09/15		
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RJD	0	AS BID	09/15
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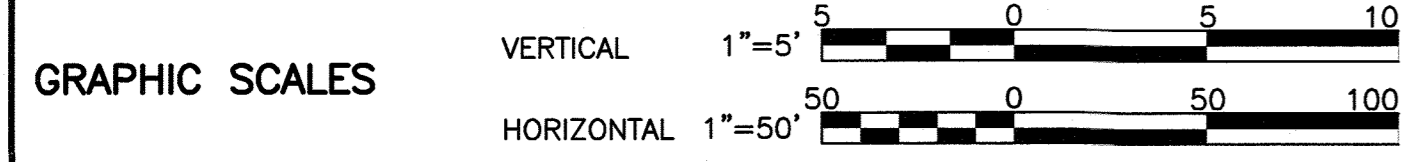
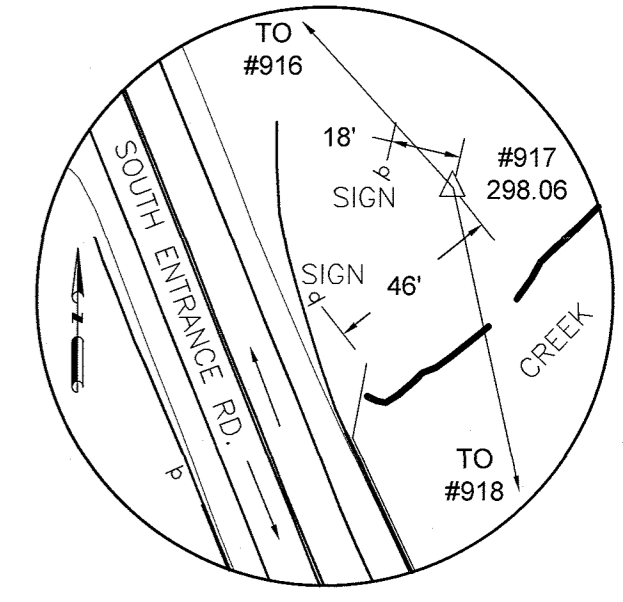
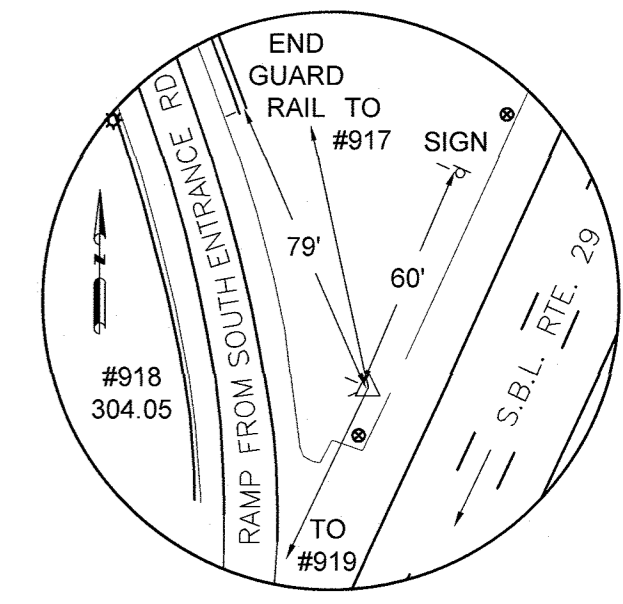
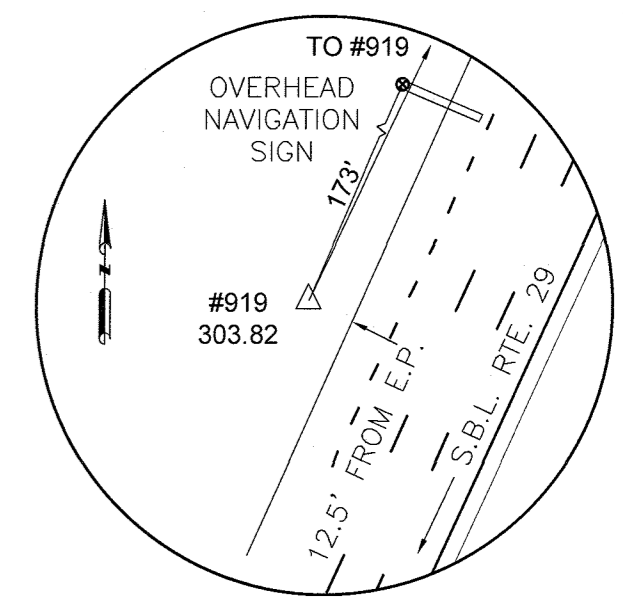
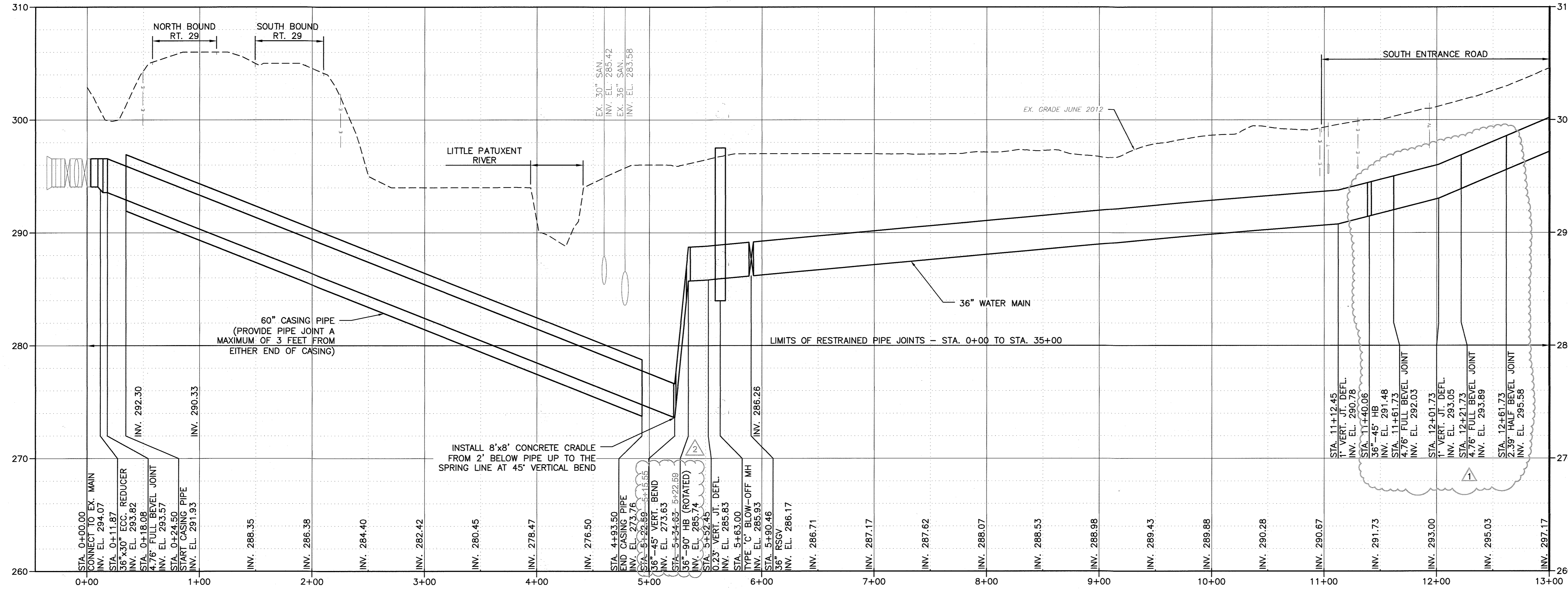
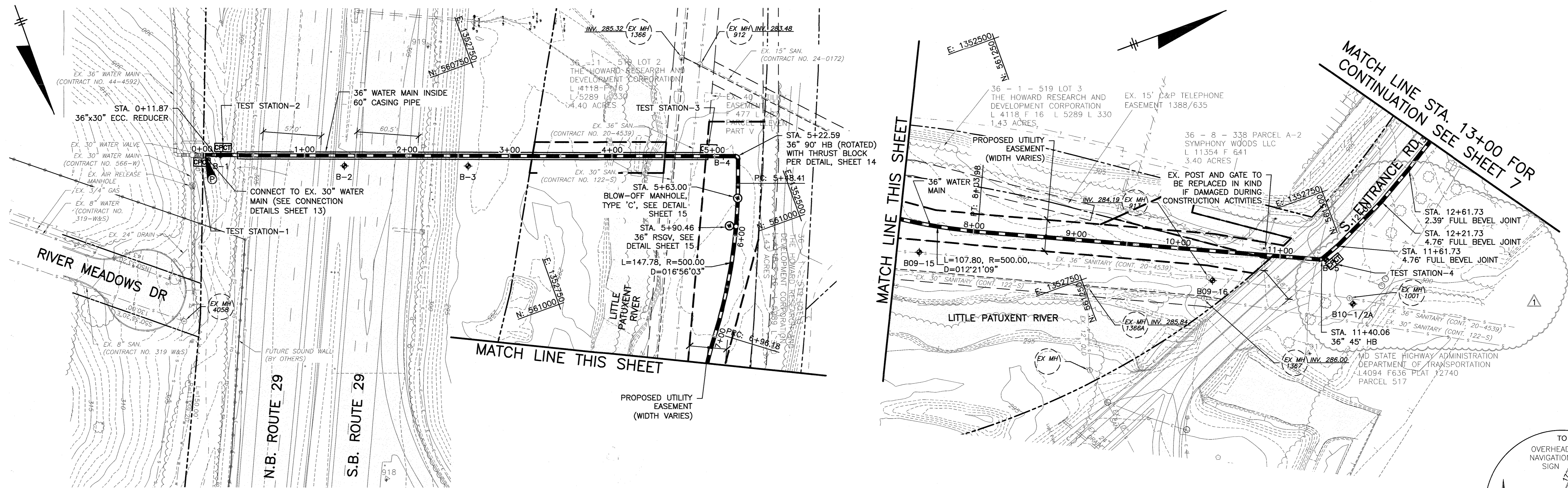
KEY MAP

600' SCALE MAP NO. 30 BLOCK NO. 36

U.S. ROUTE 29 WATER TRANSMISSION MAIN
SOUTH ENTRANCE ROAD TO LITTLE PATUXENT PARKWAY

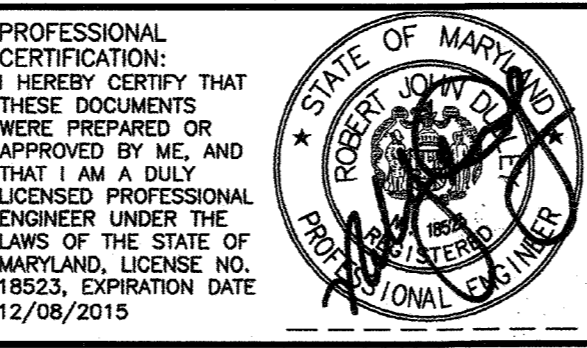
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 CONTRACT NO.: 44-4776
 ELECTION DISTRICT: 5
 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
 SHEET 5 OF 48
 FILE NO. 33498-XXF



DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND
 Director of Public Works: [Signature] 10/1/15
 Chief - Bureau of Engineering: Thomas B. Butler 9/30/15
 Chief - Bureau of Utilities: [Signature] 10/1/15
 Chief, Utility Design Division: [Signature] 9/30/15

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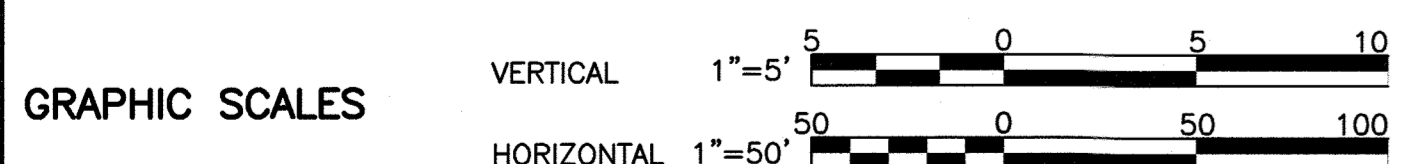
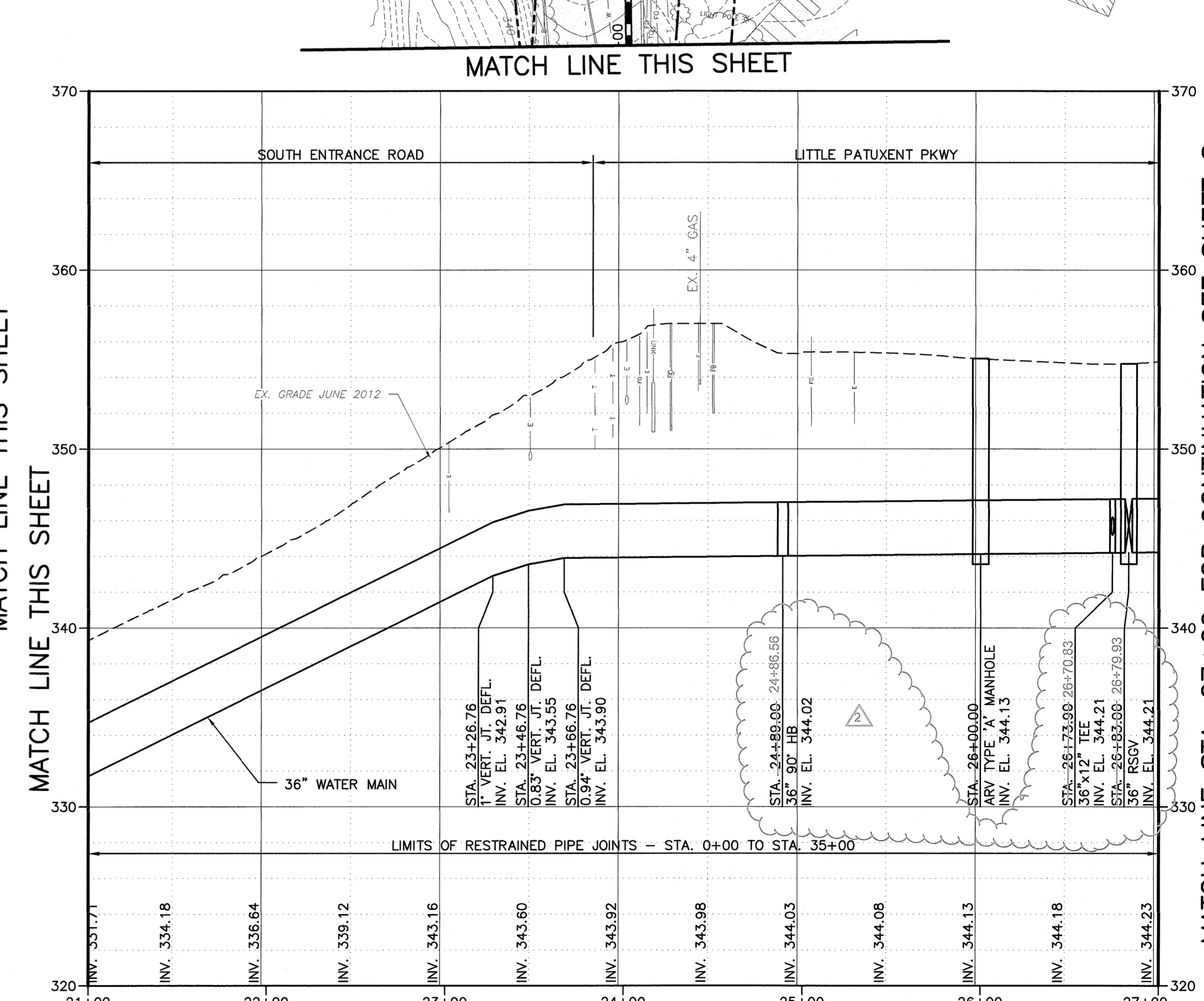
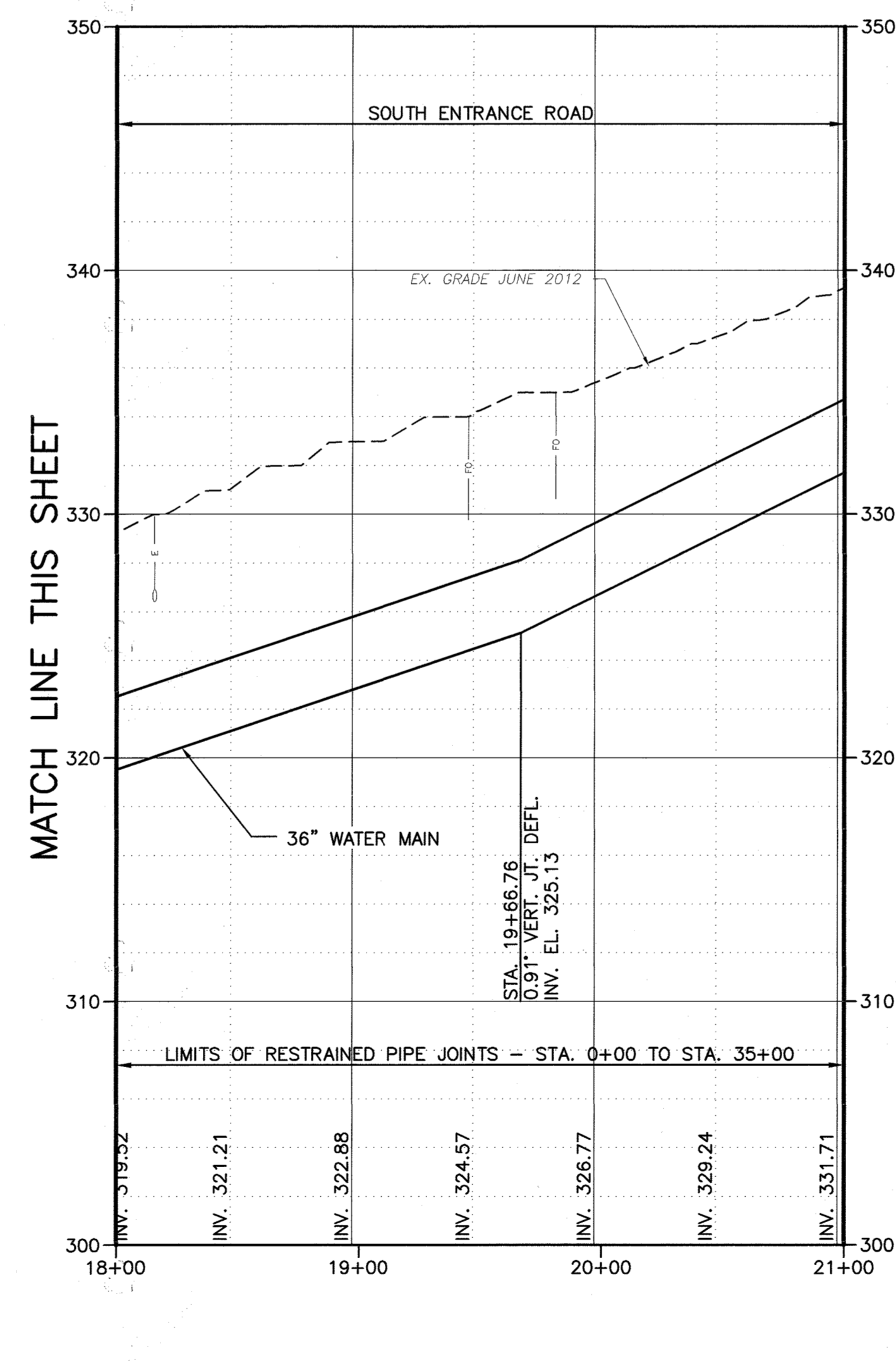
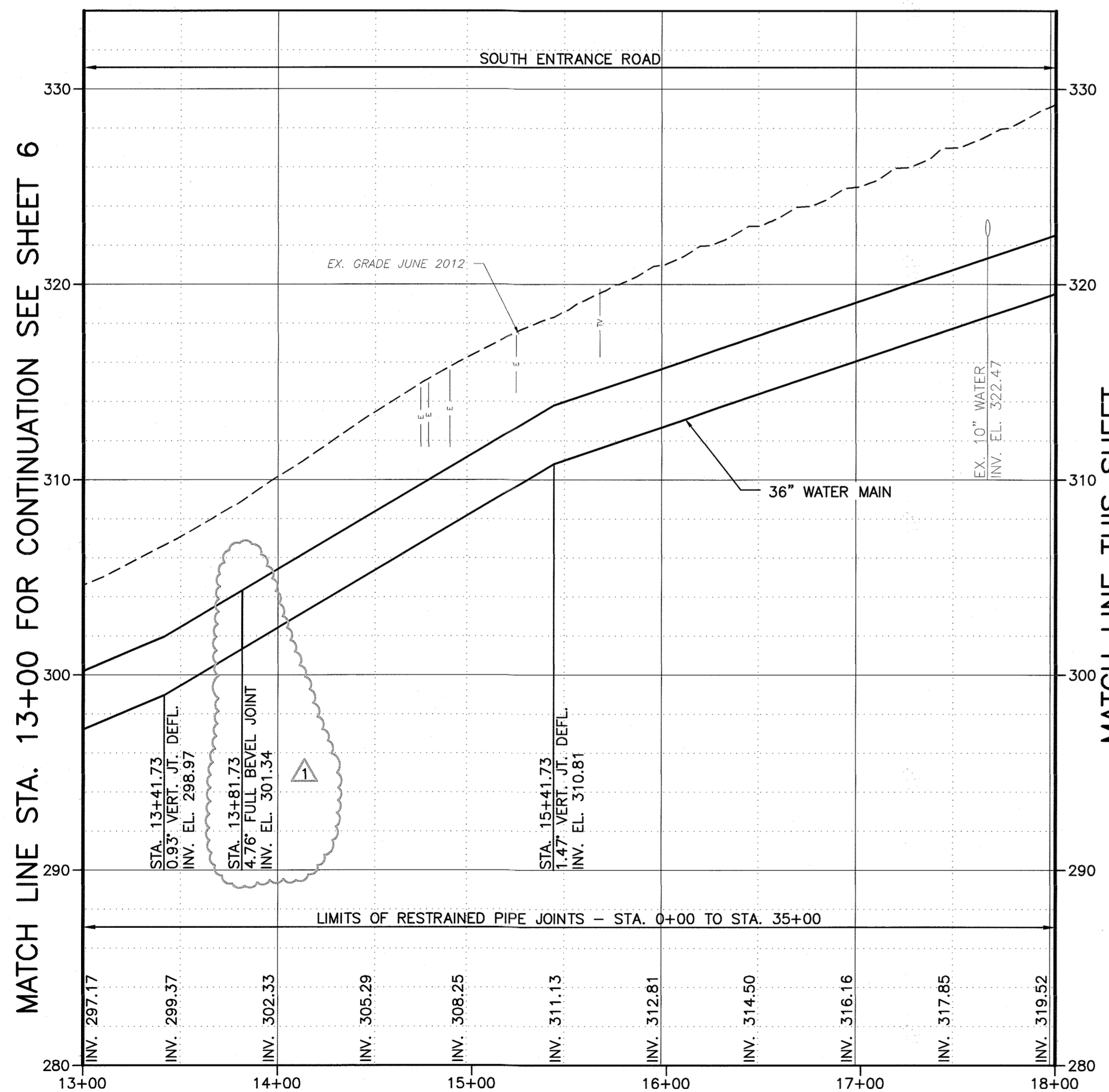
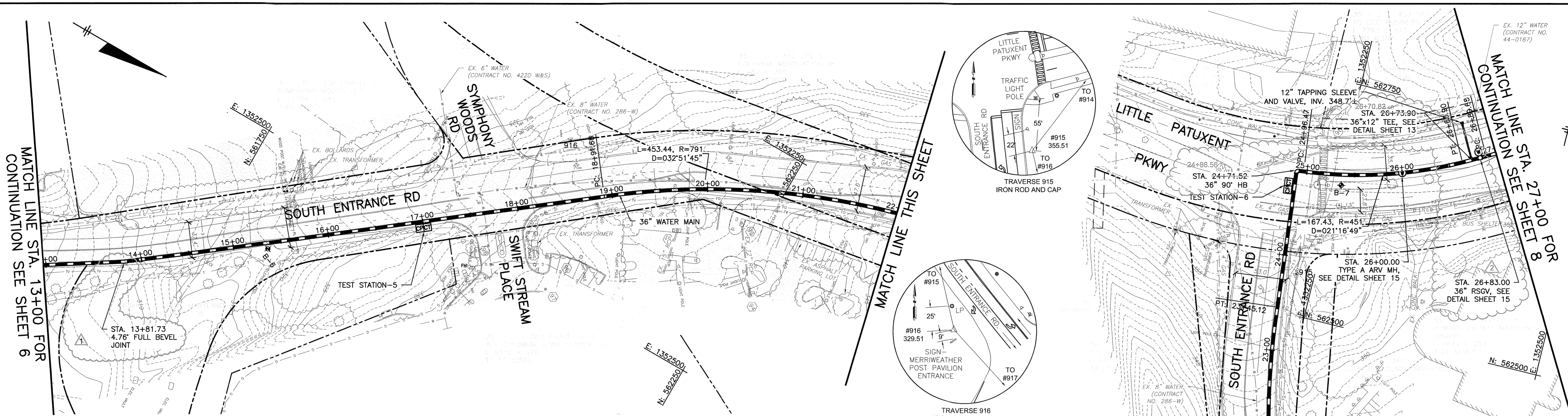


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DRN. BY:	RPW	LR	3	11/18
CHK. BY:	RJD	LR	2	07/18
DATE:	09/15	RJD	1	11/15
		RJD	0	09/15
		BY	NO.	DATE

RECORD DRAWINGS
 RFI-001
 ADDENDUM NO. 2
 AS BID
 PLAN AND PROFILE
 STA. 0+00 TO 13+00

U.S. ROUTE 29 WATER TRANSMISSION MAIN
 SOUTH ENTRANCE ROAD TO LITTLE PATUXENT PARKWAY
 CAPITAL PROJECT: W-8296
 CONTRACT NO.: 44-4776
 ELECTION DISTRICT: 5
 HOWARD COUNTY, MARYLAND

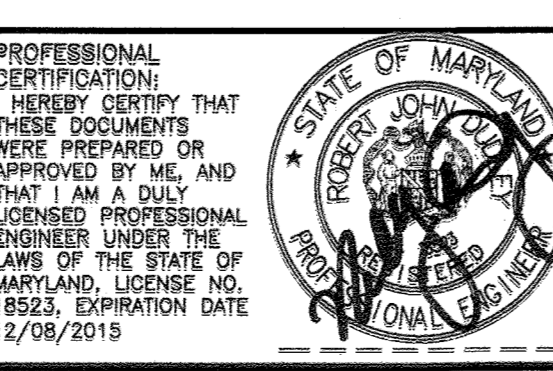
SCALE AS SHOWN
 SHEET 6 OF 48
 FILE NO. 33498-XXX



DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND

Director of Public Works: *Randy G. ...*
 Chief - Bureau of Engineering: *Thomas B. ...*
 Chief, Bureau of Utilities: *John K. ...*
 Chief, Utility Design Division: *...*

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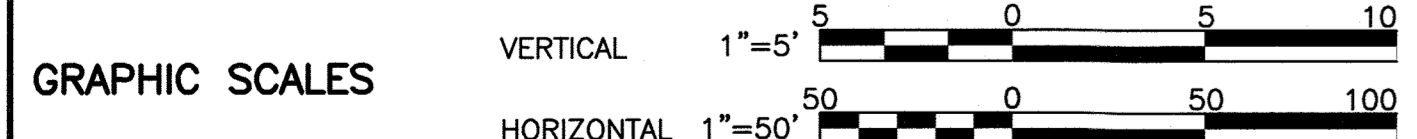
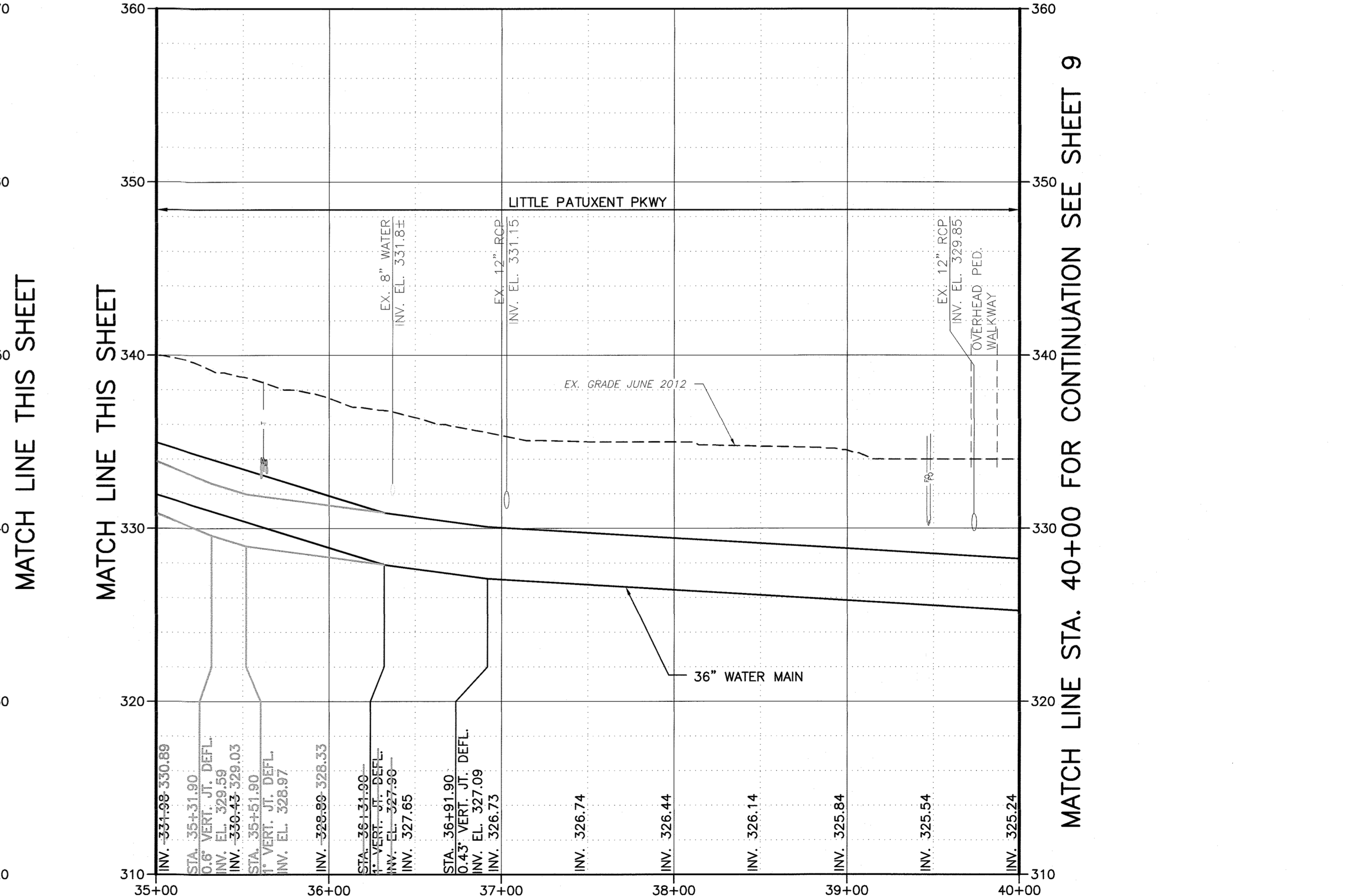
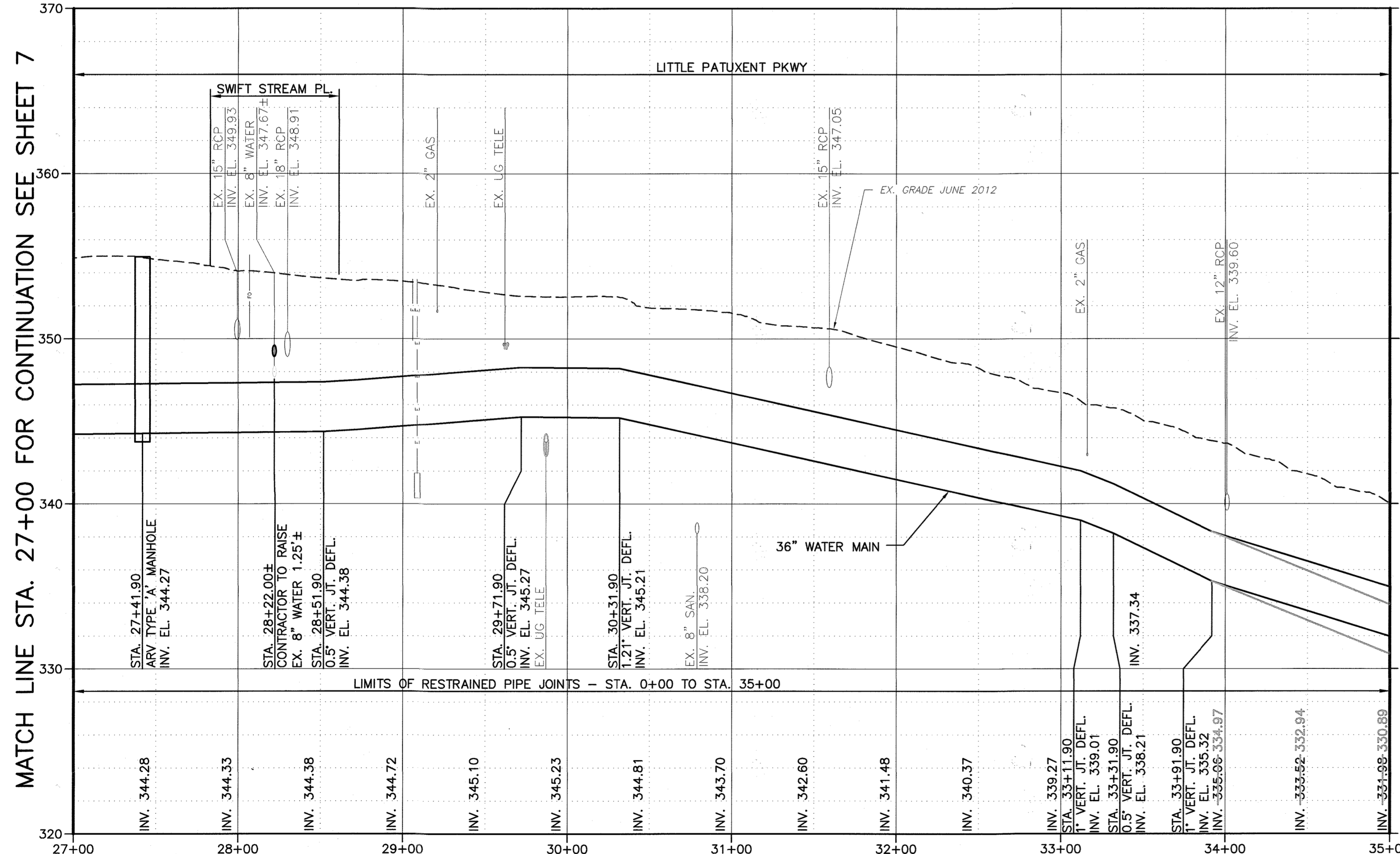
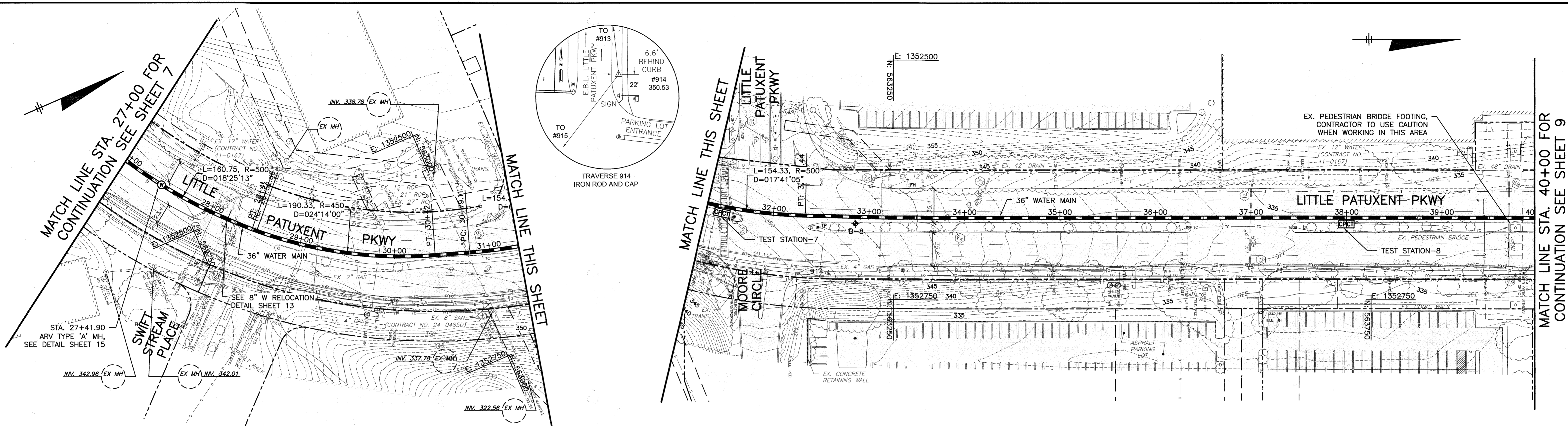
PLAN AND PROFILE
 STA. 13+00 TO 27+00

600' SCALE MAP NO. 30 BLOCK NO. 36

U.S. ROUTE 29 WATER TRANSMISSION MAIN
 SOUTH ENTRANCE ROAD TO LITTLE PATUXENT PARKWAY

CAPITAL PROJECT: W-8296
 CONTRACT NO.: 44-4776
 ELECTION DISTRICT: 5
 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
 SHEET 7 OF 48



DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND
 Director of Public Works: [Signature]
 Chief - Bureau of Engineering: Thomas B. Butler 9/30/15
 Chief - Bureau of Utilities: [Signature] 9/23/15

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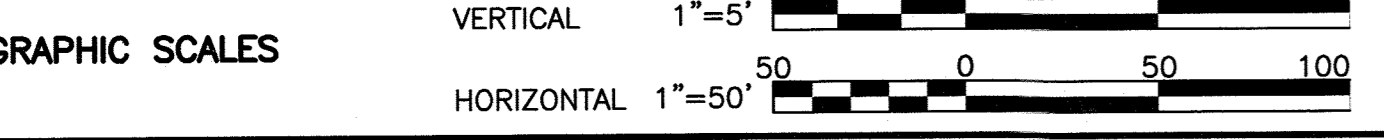
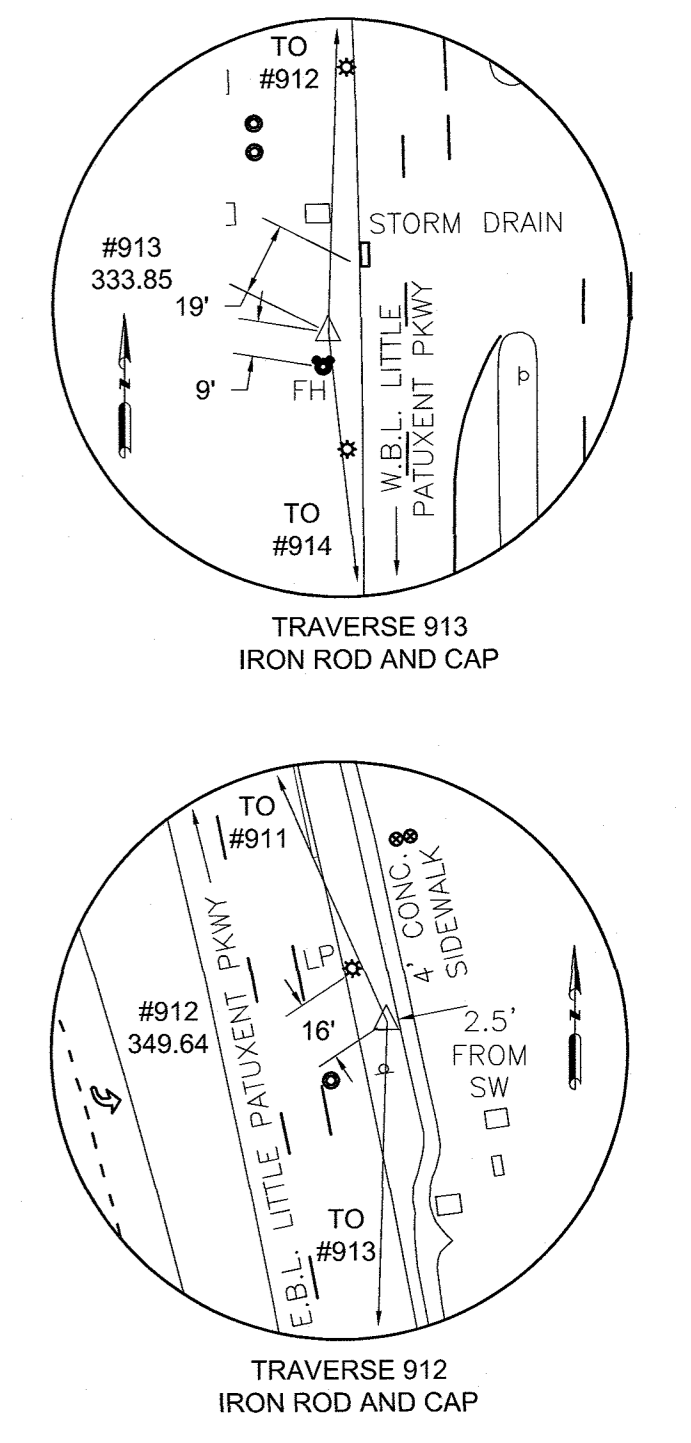
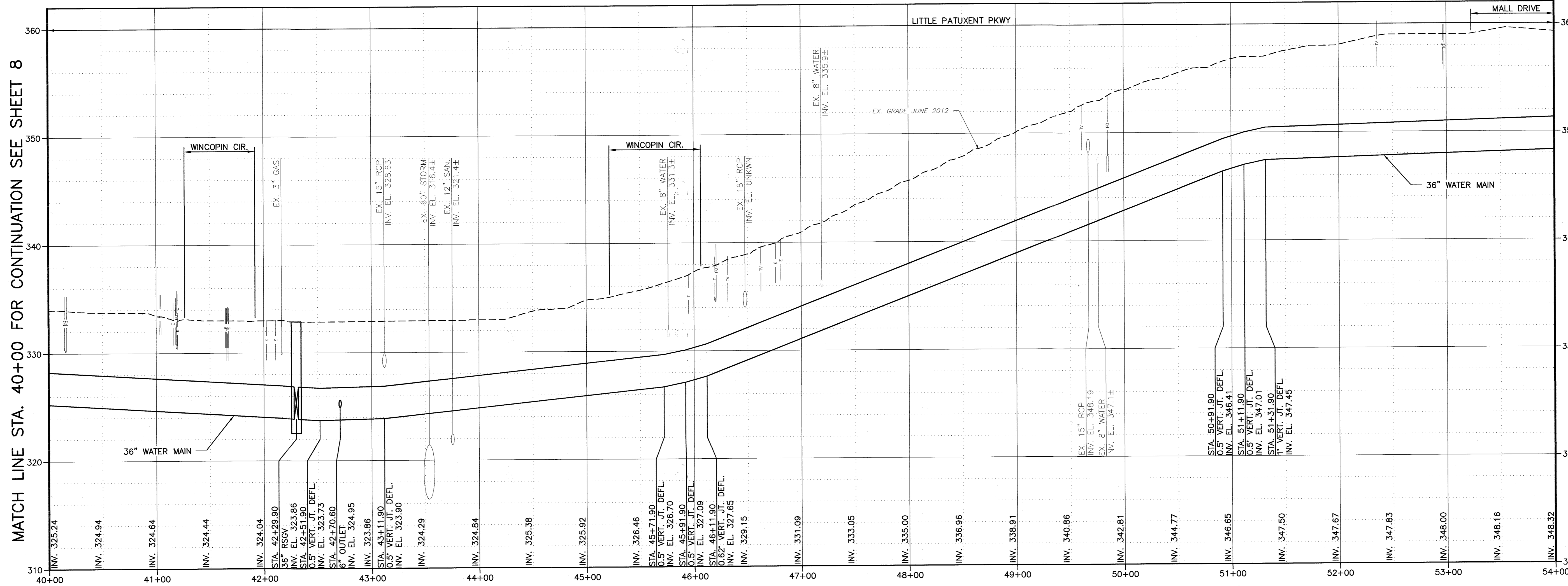
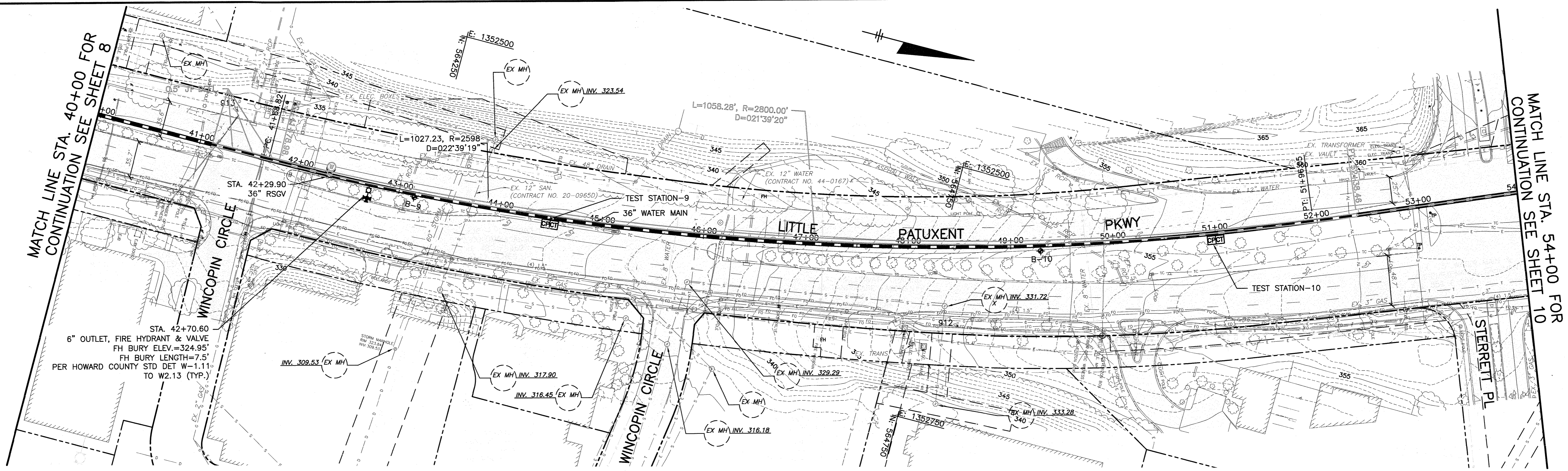
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DATE:	09/15

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RJD	0	AS BID	09/15
BY	NO.	REVISION	DATE

U.S. ROUTE 29 WATER TRANSMISSION MAIN
 SOUTH ENTRANCE ROAD TO LITTLE PATUXENT PARKWAY
 CAPITAL PROJECT: W-8296
 CONTRACT NO.: 44-4776
 ELECTION DISTRICT: 5
 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
 SHEET 8 OF 48
 FILE NO. 33498-XXX

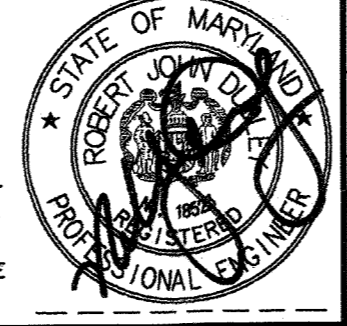


DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS: [Signature] DATE: 10/1/15
 CHIEF OF BUREAU OF UTILITIES: [Signature] DATE: 10/1/15
 CHIEF - BUREAU OF ENGINEERING: [Signature] DATE: 9/13/15
 CHIEF, UTILITY DESIGN DIVISION: [Signature] DATE: 9/13/15

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

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DRN. BY:	RPW	LR 2	RECORD DRAWINGS 11/18
CHK. BY:	RJD	LR 1	DR-3
DATE:	09/15	RJD 0	AS BID 09/15
		BY NO.	REVISION

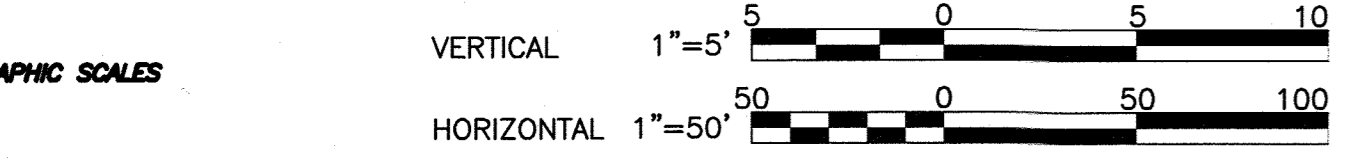
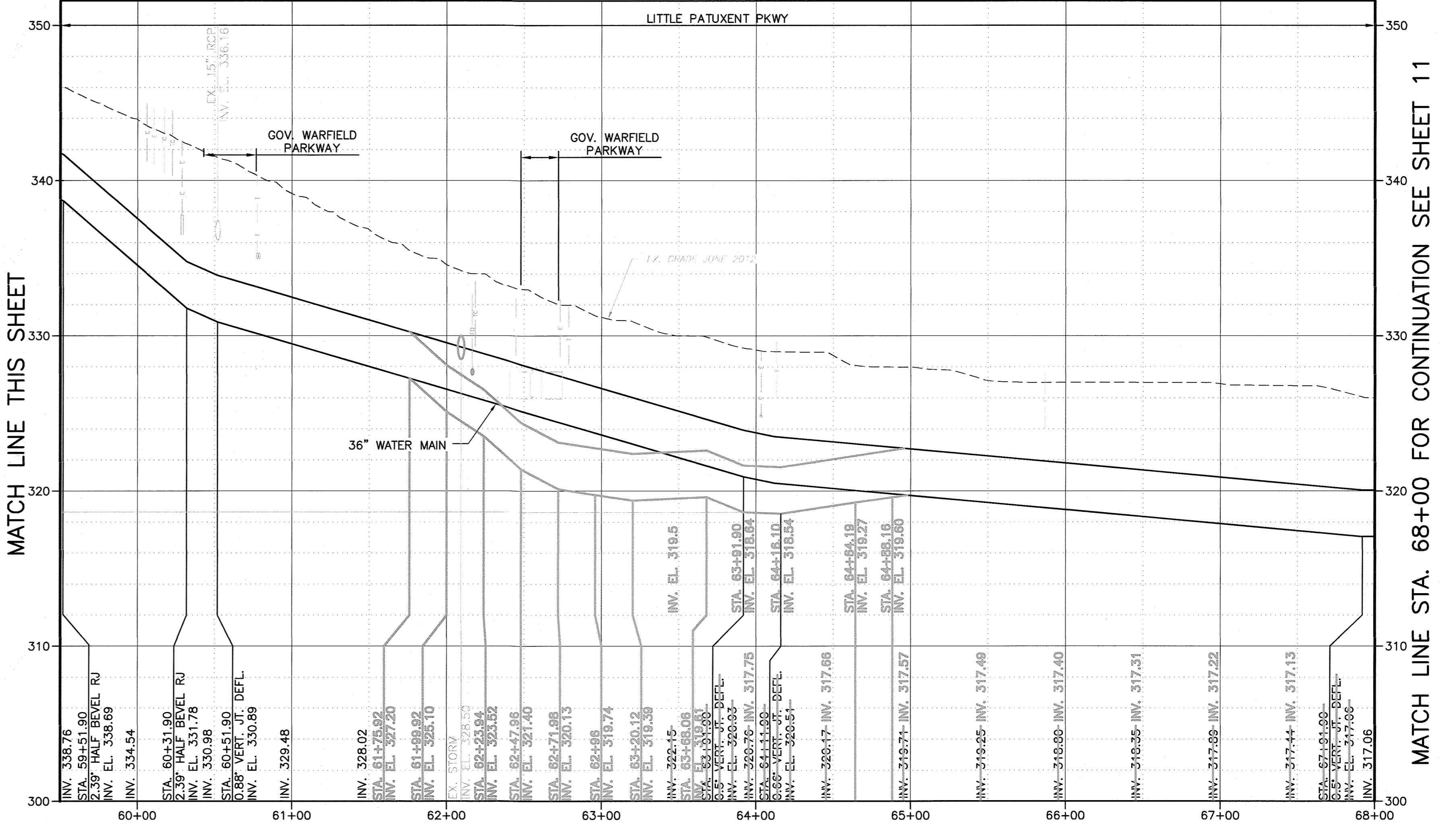
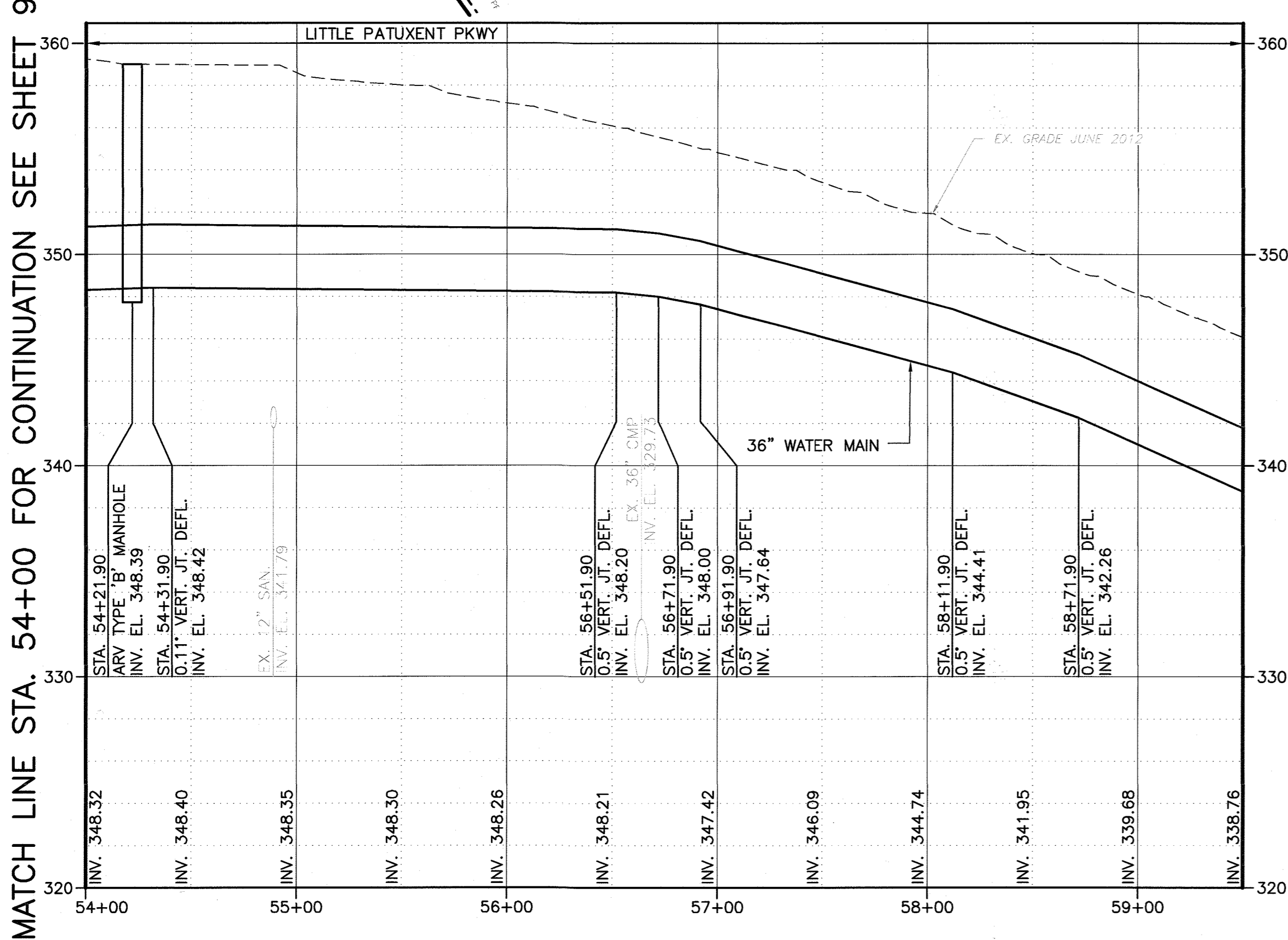
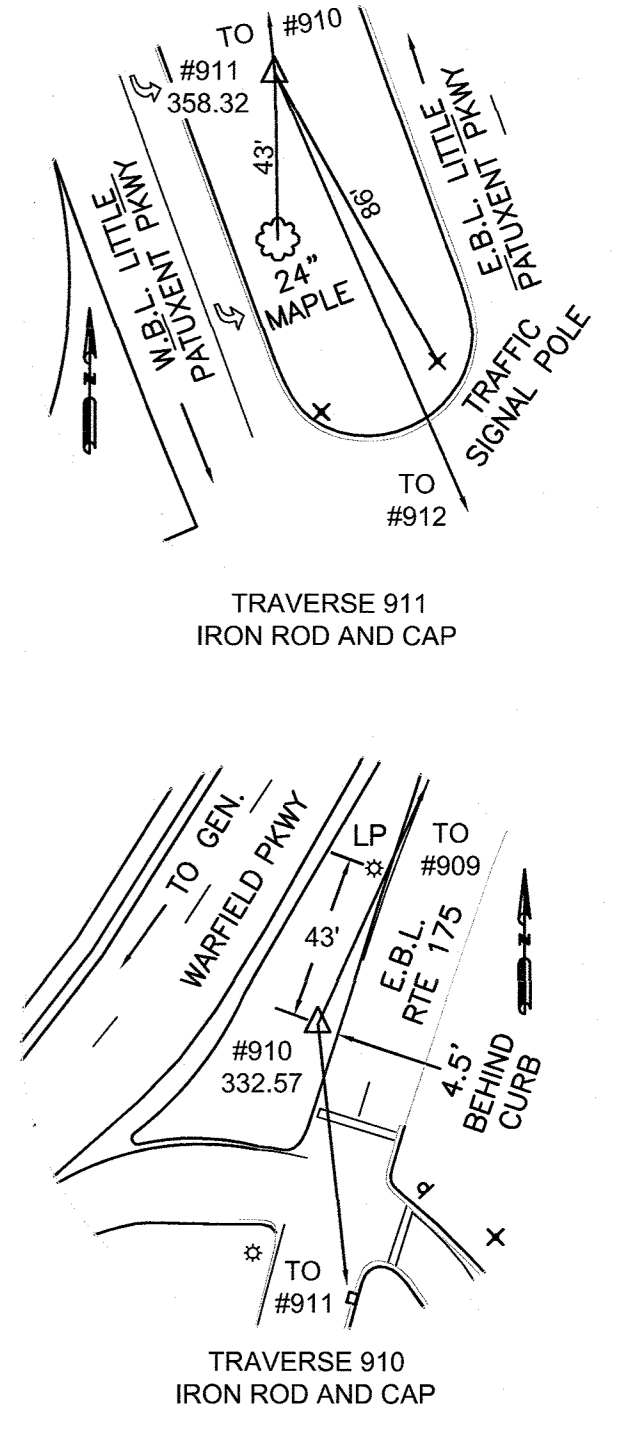
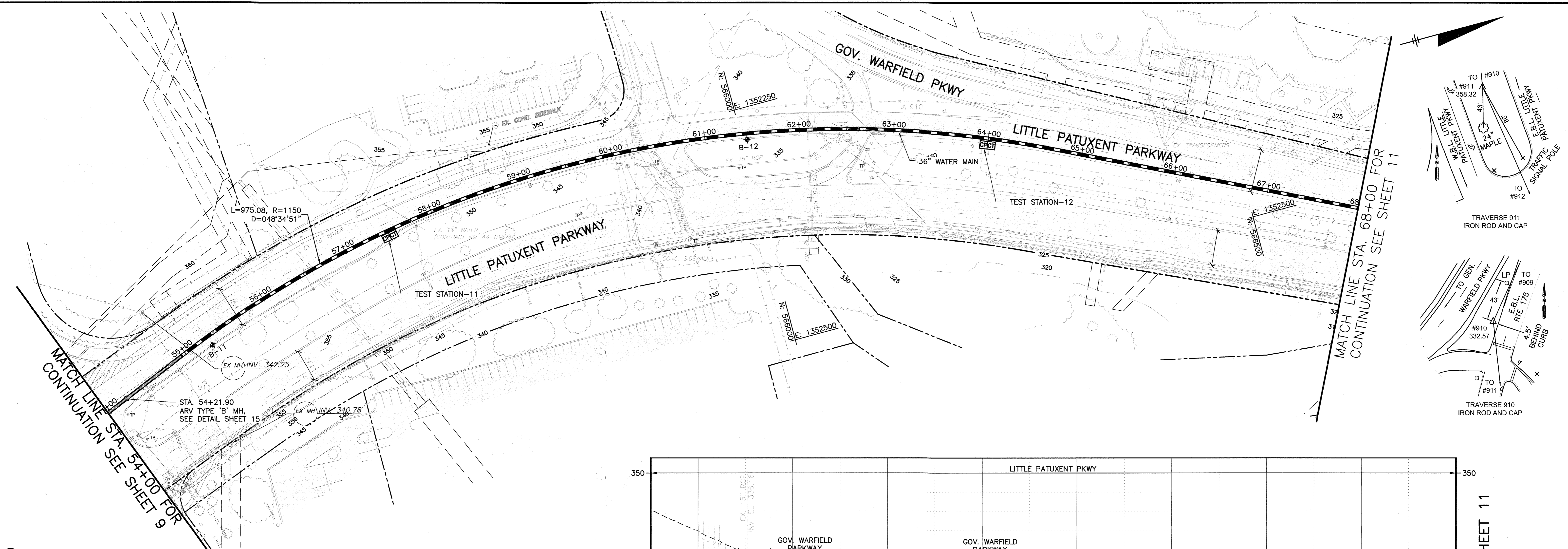
PLAN AND PROFILE
STA. 40+00 TO STA. 54+00

600' SCALE MAP NO. 30 BLOCK NO. 36

U.S. ROUTE 29 WATER TRANSMISSION MAIN
SOUTH ENTRANCE ROAD TO LITTLE PATUXENT PARKWAY

CAPITAL PROJECT: W-8296
 CONTRACT NO.: 44-4776
 ELECTION DISTRICT: 5
 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
 SHEET 9 OF 48



DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND
 Director of Public Works: [Signature] 10/1/15
 Chief - Bureau of Engineering: [Signature] 9/30/15
 Chief - Bureau of Utilities: [Signature] 9/30/15
 Chief, Utility Design Division: [Signature] PSD

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DRN. BY:	RPW
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DATE:	09/15

LR	2	RECORD DRAWINGS	11/18
LR	1	DR-5	04/17
RJD	0	AS BID	09/15
BY	NO.	REVISION	DATE

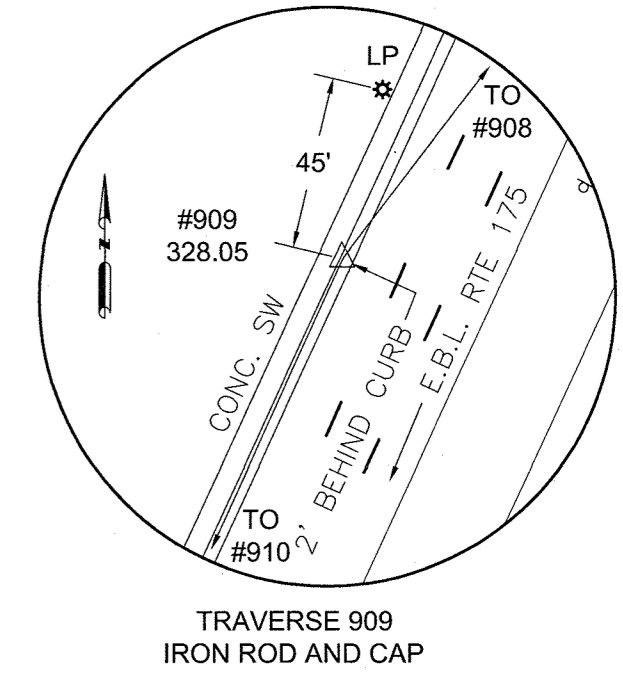
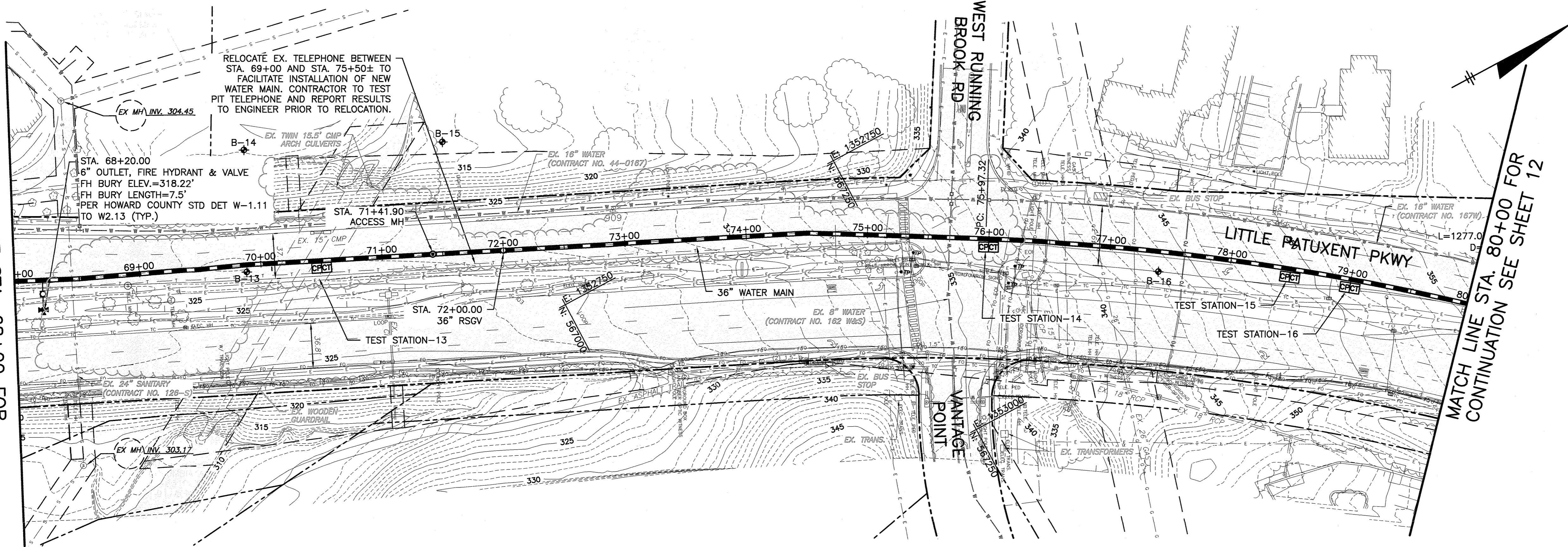
PLAN AND PROFILE
 STA. 54+00 TO STA. 68+00
 600' SCALE MAP NO. 30 BLOCK NO. 36

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 SOUTH ENTRANCE ROAD TO LITTLE PATUXENT PARKWAY
 CAPITAL PROJECT: W-8296
 CONTRACT NO.: 44-4776
 ELECTION DISTRICT: 5
 HOWARD COUNTY, MARYLAND

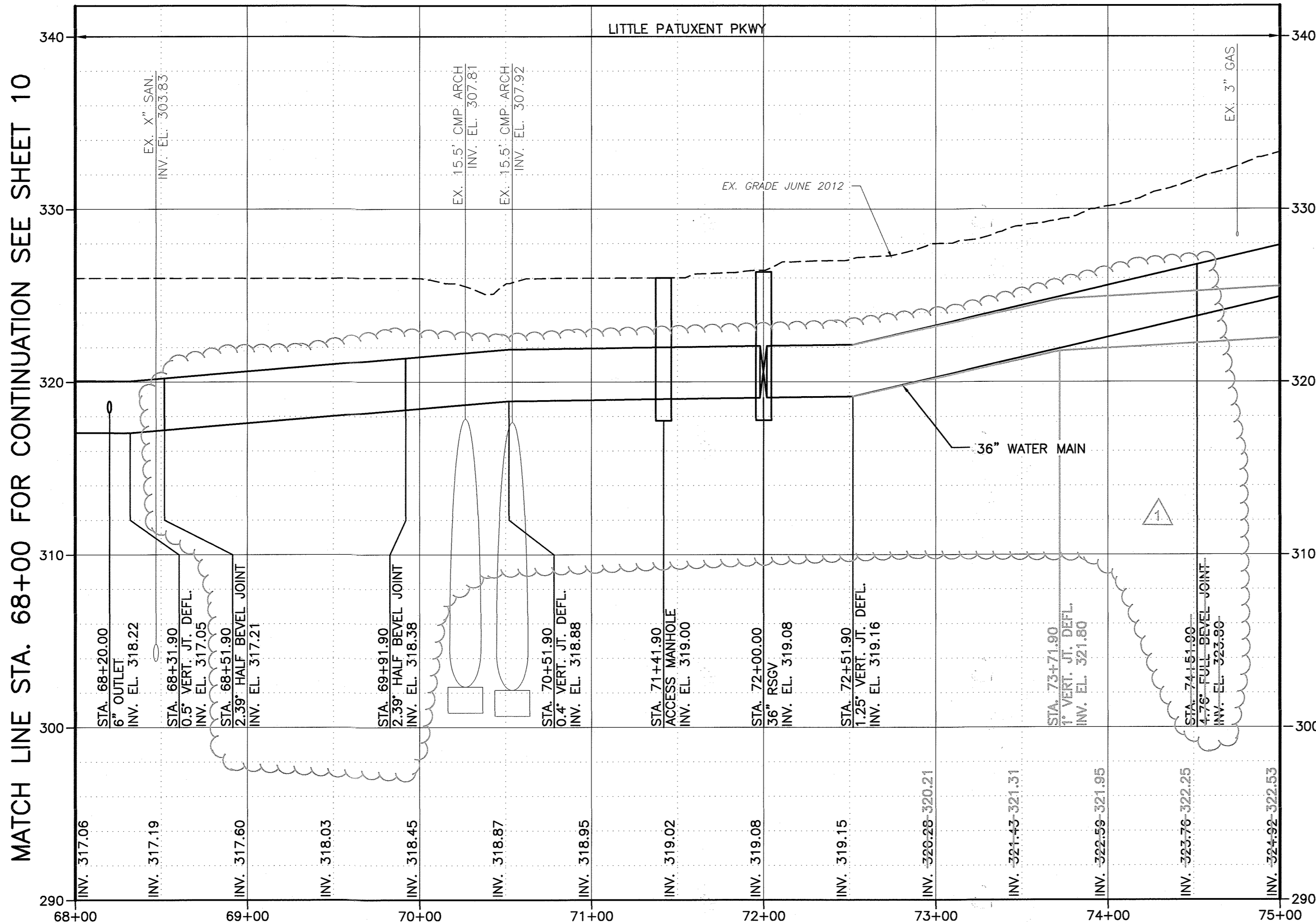
SCALE AS SHOWN
 SHEET 10 OF 48
 FILE NO. 33498-XXX

I:\HOWARD-CO.2343\45854.RT-29-RT-108-WA.DWG\DWG\SPILT-SETS\SHEETS\45854-011.DWG

MATCH LINE STA. 68+00 FOR CONTINUATION SEE SHEET 10

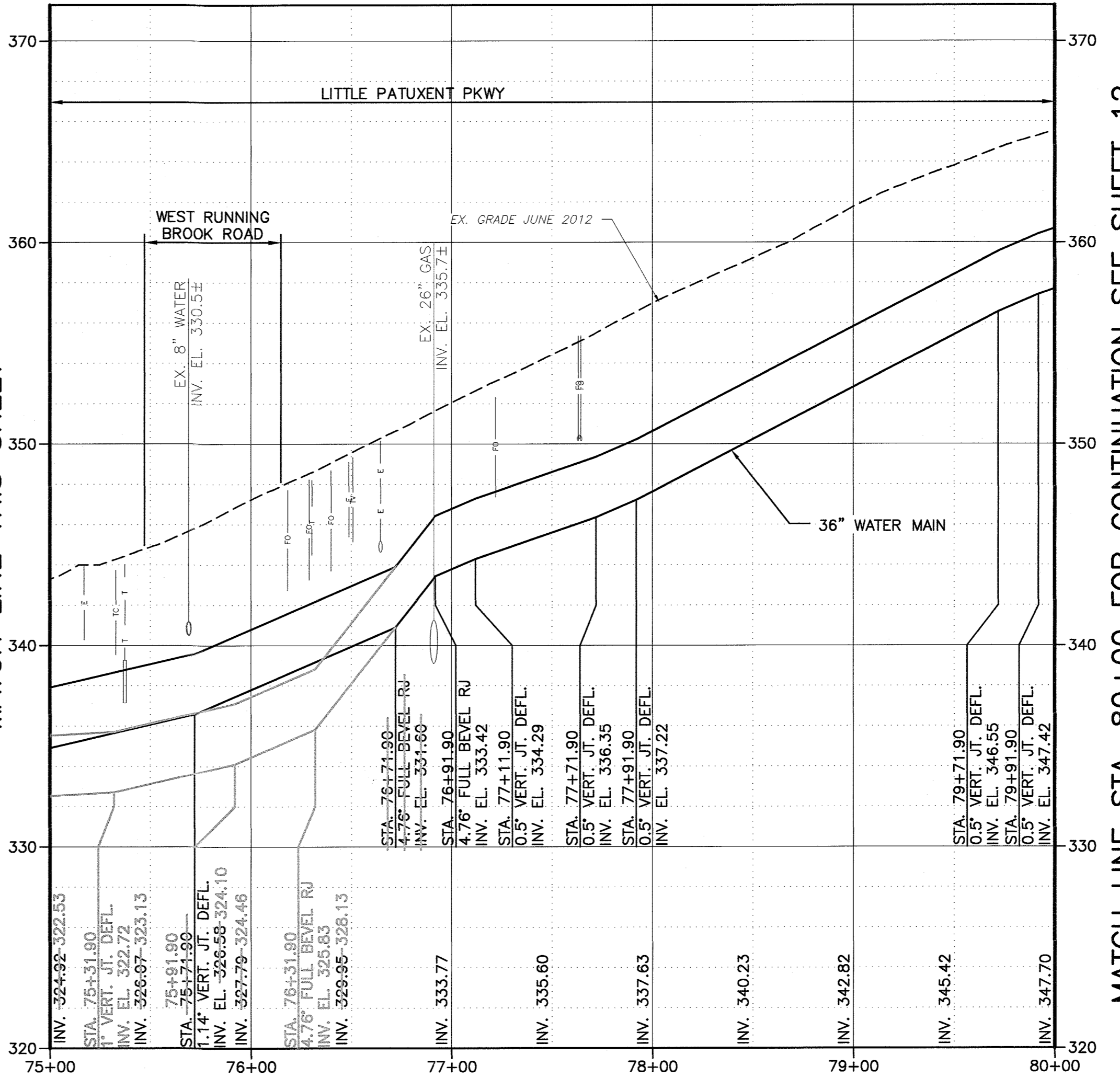


MATCH LINE STA. 68+00 FOR CONTINUATION SEE SHEET 10



MATCH LINE THIS SHEET

MATCH LINE THIS SHEET



MATCH LINE STA. 80+00 FOR CONTINUATION SEE SHEET 12

GRAPHIC SCALES
 VERTICAL 1"=5'
 HORIZONTAL 1"=50'

DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND
 Director of Public Works: [Signature] 10/15/15
 Chief - Bureau of Engineering: [Signature] 9/30/15
 Chief, Utility Design Division: [Signature] 9/30/15

GOBRIEN & 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. 1853, EXPIRATION DATE 12/08/2015

DSN. BY: GLF
 DRN. BY: RPW
 CHK. BY: RJD
 DATE: 09/15

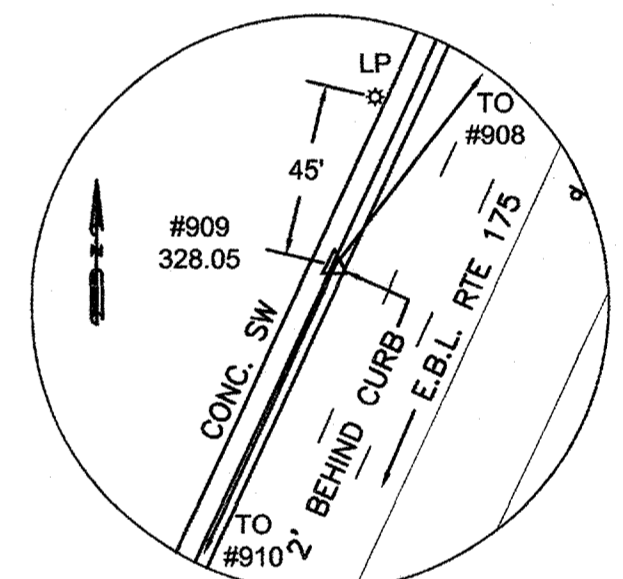
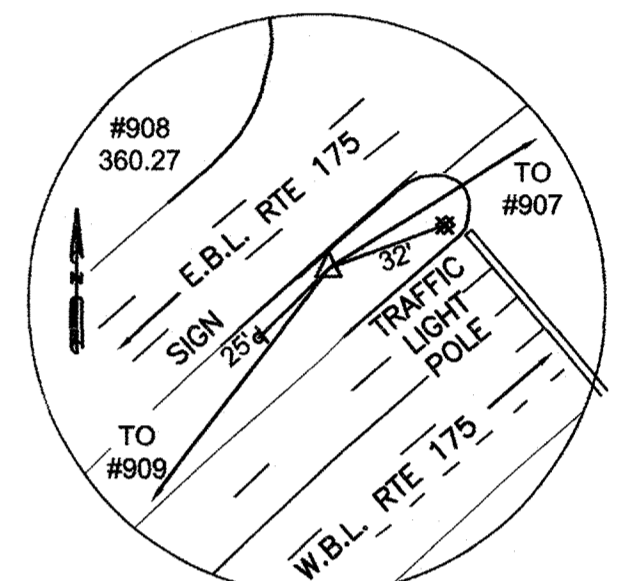
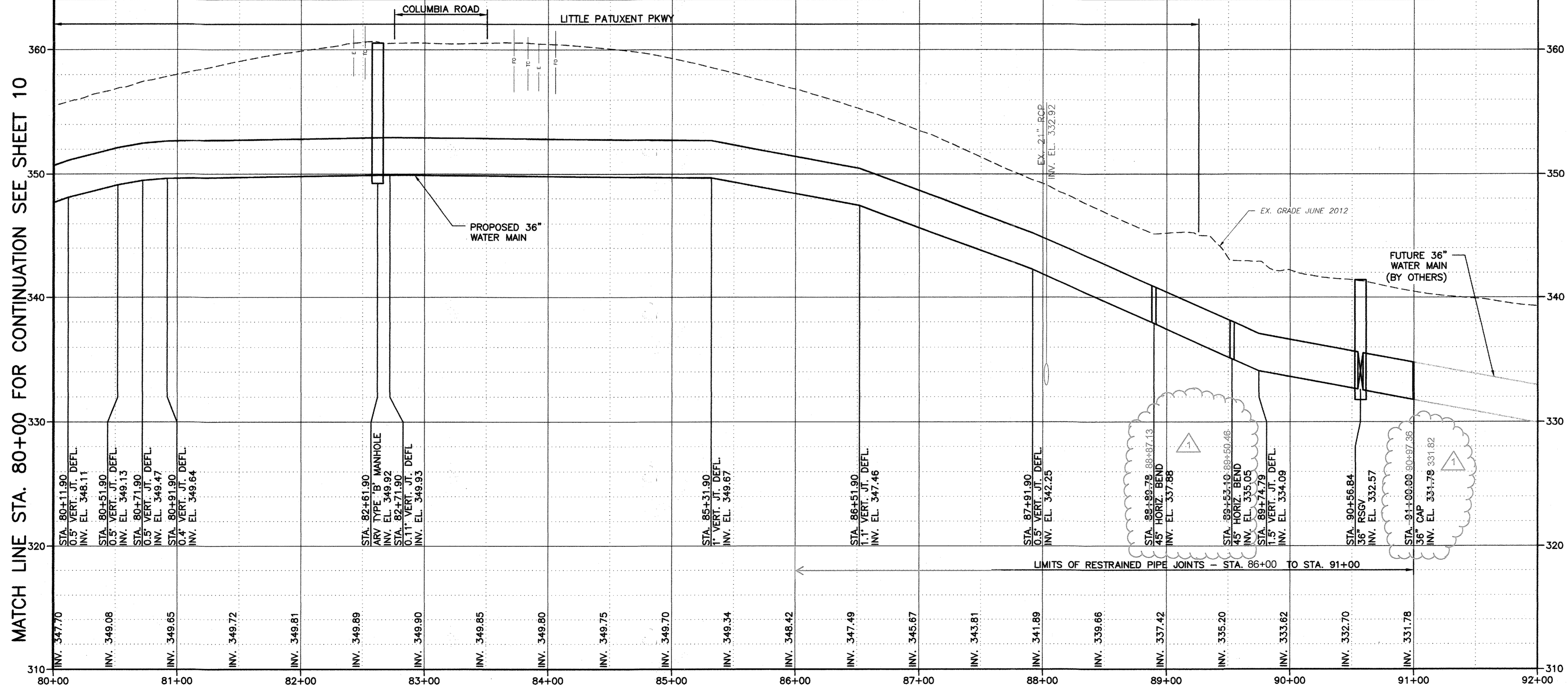
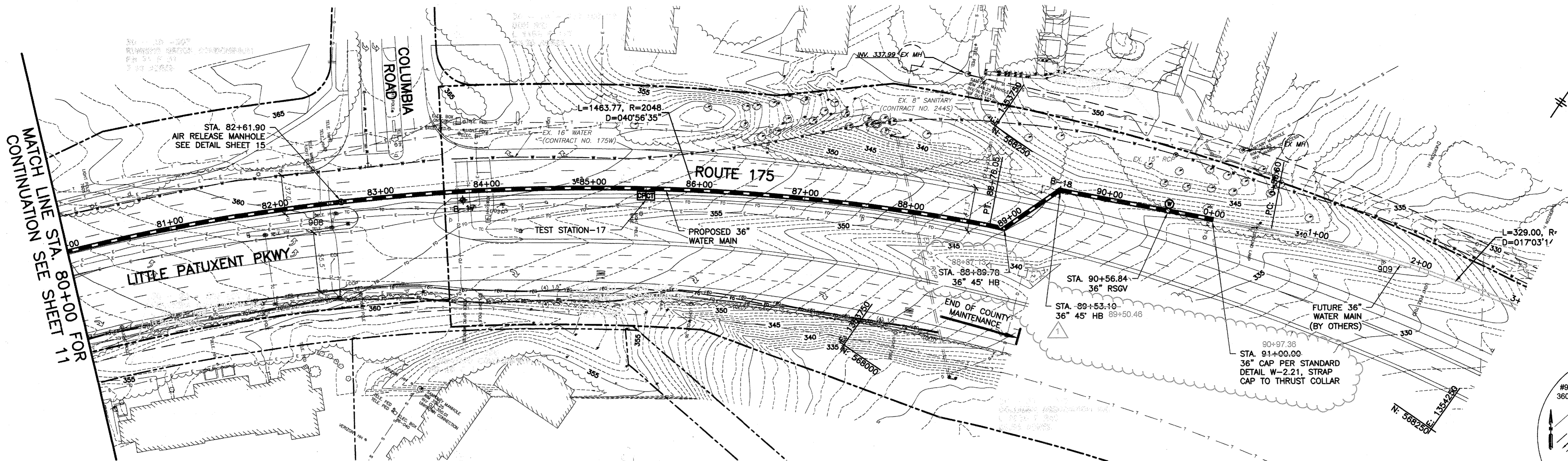
LR	2	RECORD DRAWINGS	11/18
LR	1	DR-4	11/17
RJD	0	AS BID	09/15
BY	NO.	REVISION	DATE

PLAN AND PROFILE
 STA. 68+00 TO STA. 80+00
 600' SCALE MAP NO. 30 BLOCK NO. 36

U.S. ROUTE 29 WATER TRANSMISSION MAIN
 SOUTH ENTRANCE ROAD TO LITTLE PATUXENT PARKWAY
 CAPITAL PROJECT: W-8296
 CONTRACT NO.: 44-4776
 ELECTION DISTRICT: 5
 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
 SHEET 11 OF 48
 FILE NO. 33498-XXXF

RECORD DRAWINGS



MATCH LINE STA. 80+00 FOR CONTINUATION SEE SHEET 10

N. 568'25.00" 138.4230

GRAPHIC SCALES
VERTICAL 1"=5'
HORIZONTAL 1"=50'

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND
DIRECTOR OF PUBLIC WORKS: [Signature] 10/15
CHIEF BUREAU OF ENGINEERING: Thomas E. Butler 9/30/15
CHIEF BUREAU OF UTILITIES: [Signature] 9/30/15
CHIEF, UTILITY DESIGN DIVISION: [Signature] P.S.D.

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

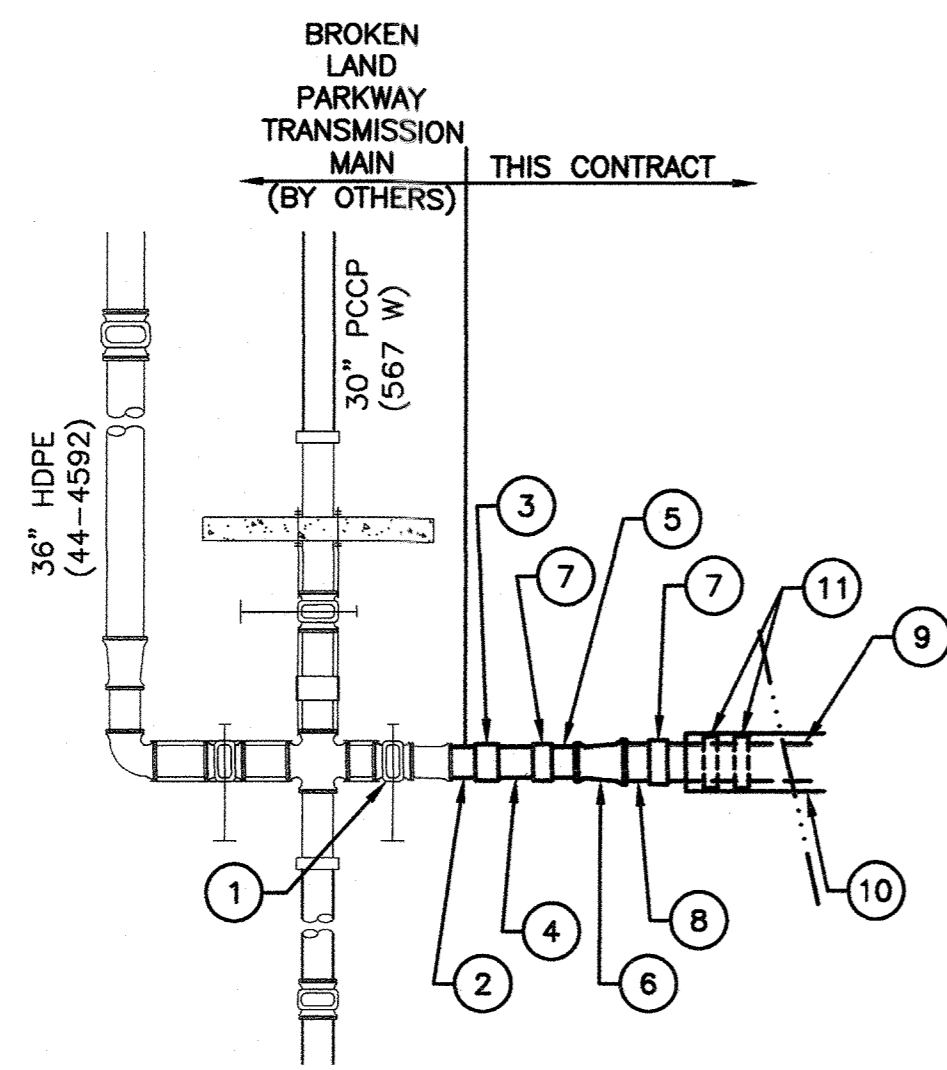
PROFESSIONAL CERTIFICATION:
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 18523, EXPIRATION DATE 12/08/2015

DSN. BY:	GLF	LR	1	RECORD DRAWINGS	11/18
DRN. BY:	RPW	LR	1	RFI-001	07/16
CHK. BY:	RJD	RJD	1	ADDENDUM NO. 2	11/15
DATE:	09/15	RJD	0	AS BID	09/15
		BY	NO.	REVISION	DATE

PLAN AND PROFILE
STA. 80+00 TO STA. 91+00
600' SCALE MAP NO. 30 BLOCK NO. 36

U.S. ROUTE 29 WATER TRANSMISSION MAIN
SOUTH ENTRANCE ROAD TO LITTLE PATUXENT PARKWAY
CAPITAL PROJECT: W-8296
CONTRACT NO.: 44-4776
ELECTION DISTRICT: 5
HOWARD COUNTY, MARYLAND

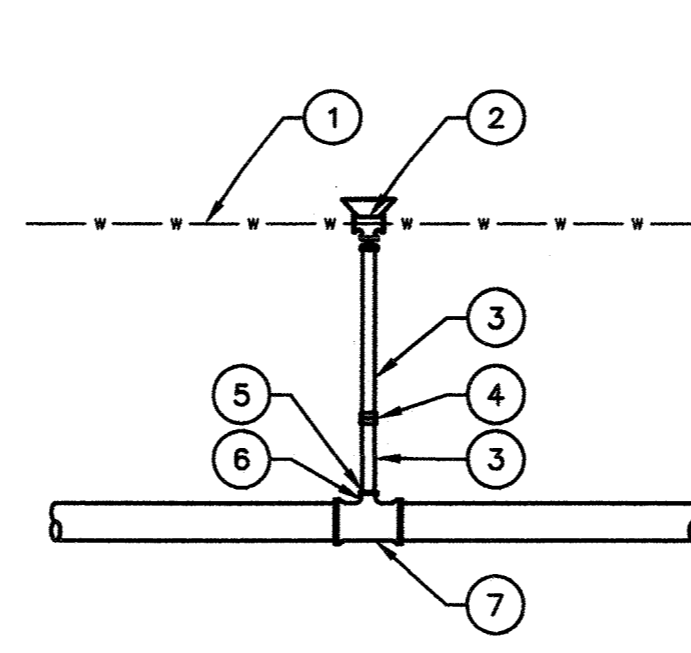
SCALE AS SHOWN
SHEET 12 OF 48
FILE NO. 33498-XXX



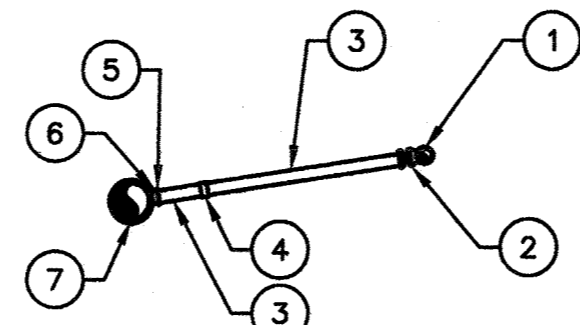
CONNECTION DETAIL STA. 0+00

EXISTING:
① 30" VALVE

- PROPOSED:
- ② 30" DI PE/PE SPOOL PIECE 3.0' LONG CLASS 54
 - ③ 30" DI MJ SOLID SLEEVE, RESTRAINED
 - ④ 30" DI PE/FL SPOOL PIECE 3.0' LONG CLASS 54
 - ⑤ 30" PCCP FL/SR SPOOL PIECE
 - ⑥ 36"x30" PCCP SR ECCENTRIC REDUCER
 - ⑦ 36" SR/WELDED BL OR SP ADAPTER PROVIDED BY PCCP MANUFACTURER, FIELD WELD BL OR SP END OF ADAPTER TO PCCP JOINT AS REQUIRED TO OBTAIN CORRECT ALIGNMENT
 - ⑧ 36" PCCP BL OR SP/SR SPOOL PIECE
 - ⑨ 36" PCCP SR WM PIPE
 - ⑩ 60" STEEL WELDED CASING PIPE
 - ⑪ SPACERS (TWO)



PLAN



ELEVATION

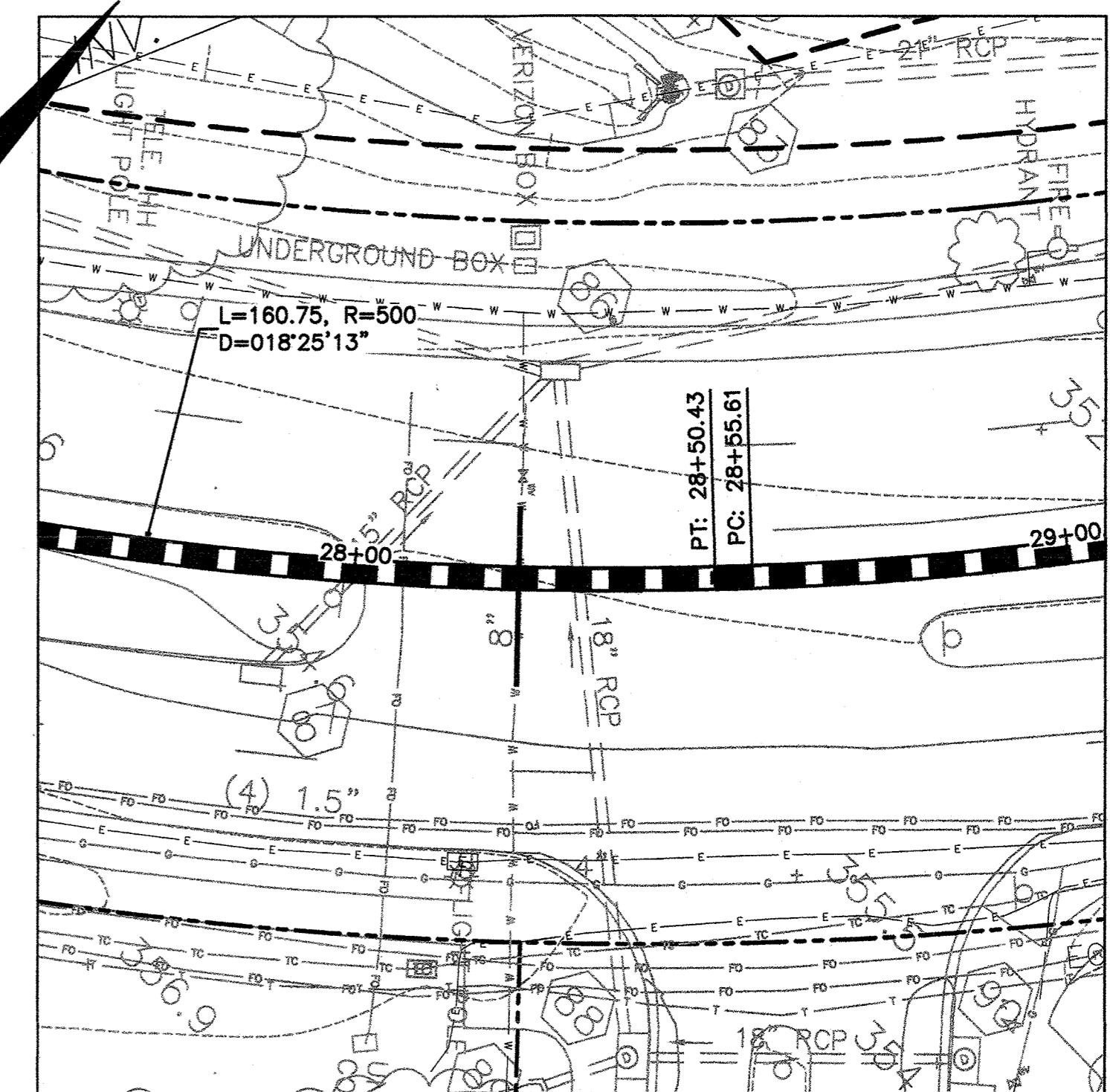
CONNECTION DETAIL STA. 26+73.90

EXISTING:
① 12" CI WM PIPE

- PROPOSED:
- ② 12" SS TAPPING SLEEVE AND VALVE
 - ③ 12" DI WM PIPE, CLASS 54 (WITH CATHODIC PROTECTION)
 - ④ 12" DI MJ RJ SOLID SLEEVE (AS NECESSARY TO MAKE CONNECTION)
 - ⑤ 12" PCCP SR/FL ADAPTER
 - ⑥ 36"x12" DI MJ RJ TEE
 - ⑦ 36" PCCP WM PIPE

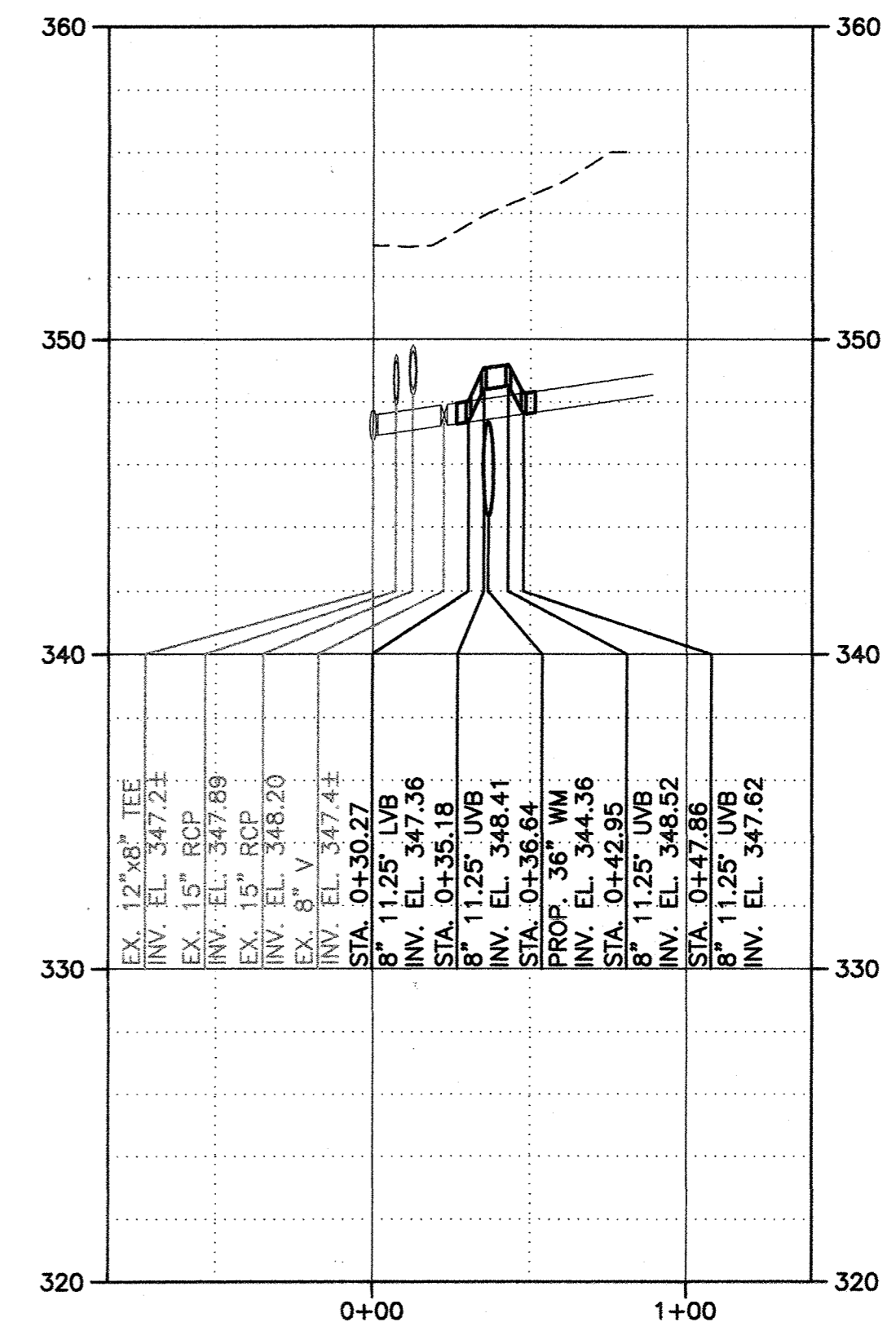
NOTE:

1. INSTALL BENDS, DEFLECT PIPE JOINTS, AND/OR ROTATE TS&V CONNECTION AS NECESSARY TO FACILITATE CONNECTION TO EXISTING 12" WM.



8" W RELOCATION PLAN (STA. 28+22)

SCALE: HORIZ. 1"=20' 20' 0 20'



8" W RELOCATION PROFILE (STA. 28+22)

SCALE: HORIZ. 1"=50' VERT. 1"=5' 50' 0 50'

RECORD DRAWINGS

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Director of Public Works: *Mark Wells* 10/1/15
Date: 10/1/15

Chief - Bureau of Engineering: *Thomas S. Sullivan* 9/30/15
Date: 9/30/15

Chief, Utility Design Division: *[Signature]* 9/30/15
Date: 9/30/15

O'Brien & Gere

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

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[Professional Seal]

DSN. BY:	GLF		
DRN. BY:	RPW		
CHK. BY:	RJD		
DATE:	09/15		
LR	1	RECORD DRAWINGS	11/18
RJD	0	AS BID	09/15
BY	NO.	REVISION	DATE

CONNECTION DETAILS
STA. 0+00 AND STA. 24+72

600' SCALE MAP NO. 30 BLOCK NO. 36

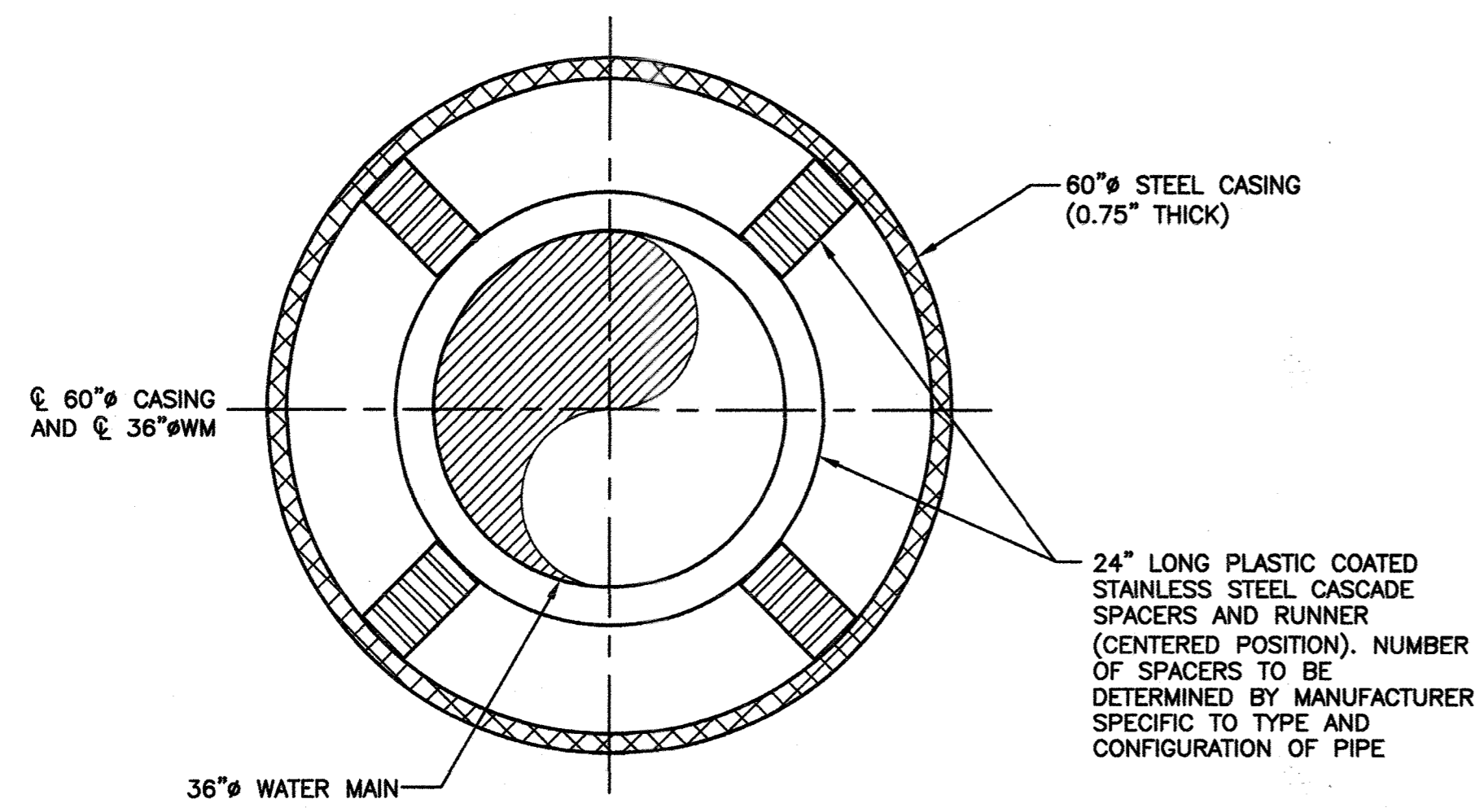
U.S. ROUTE 29 WATER TRANSMISSION MAIN
SOUTH ENTRANCE ROAD TO LITTLE PATUXENT PARKWAY

CAPITAL PROJECT: W-8296
CONTRACT NO.: 44-4776
ELECTION DISTRICT: 5
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

SHEET 13 OF 48

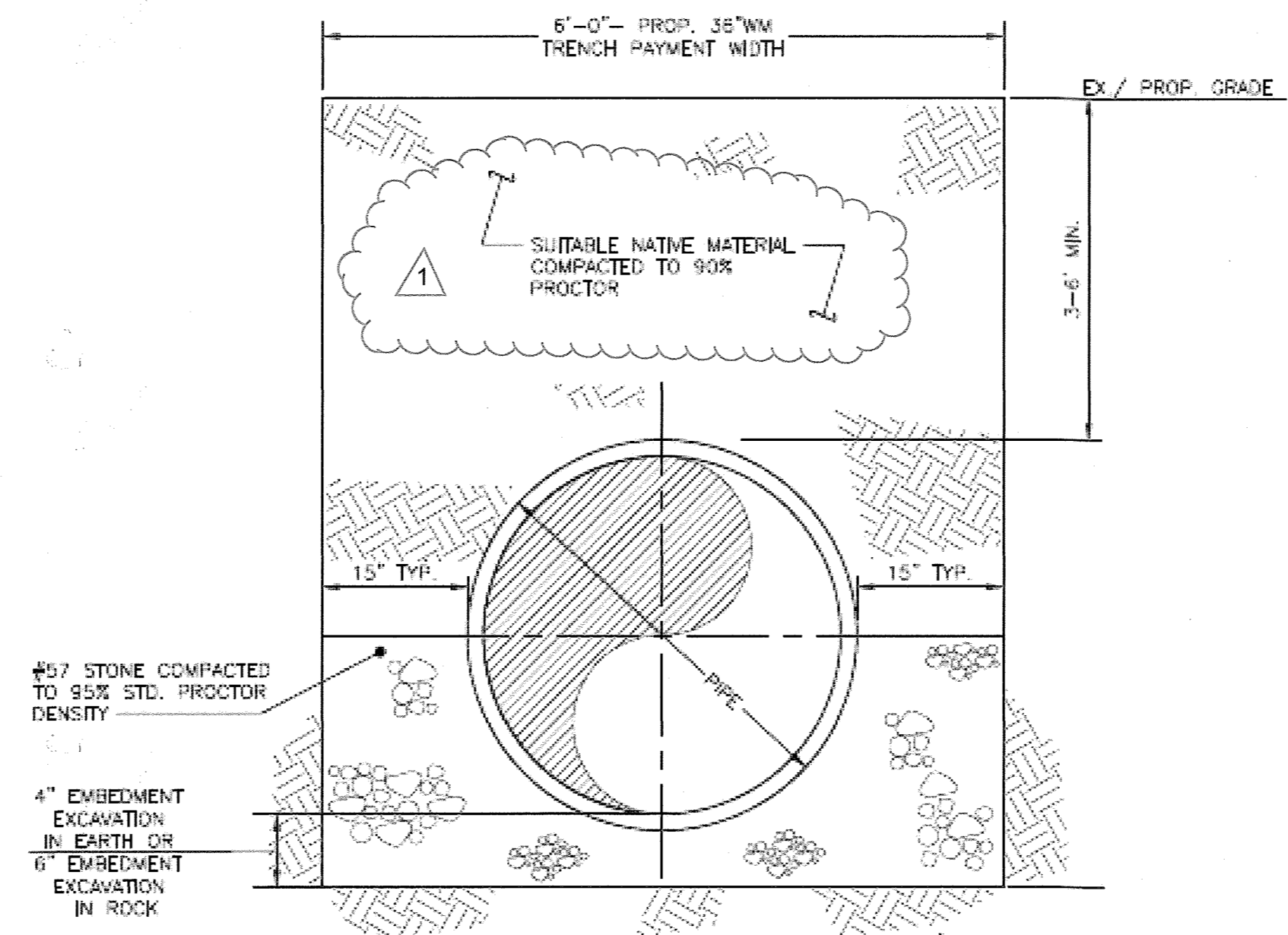
FILE NO. 33498-XXXF



60" CASING UNDER ROADWAY
N.T.S.

DETAIL NOTES:

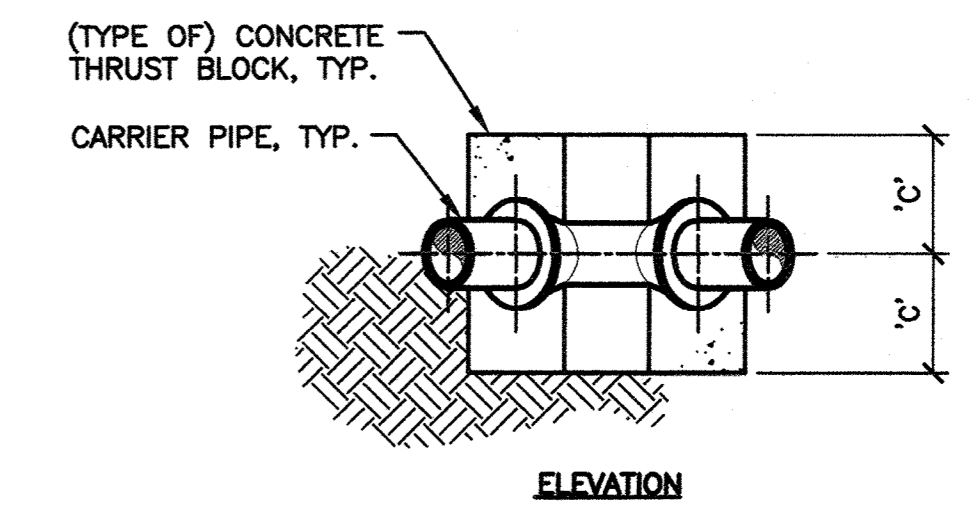
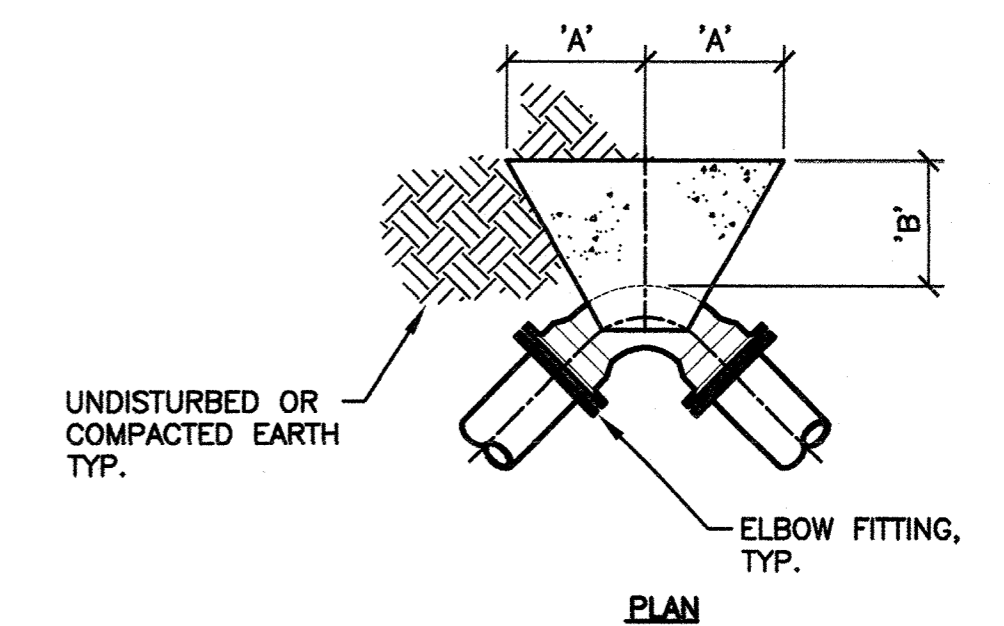
- CASING TO BE SEALED ON BOTH ENDS WITH DUAL BRICK AND MORTAR COURSE.
- PROVIDE FLEXIBLE RESTRAINED PIPE JOINT 3- FEET BEYOND EACH END OF CASING PIPE.
- SPACERS SHALL BE CASCADE MODEL CCS-ER WITH A MIN. 14GA T-304 SS SHELL AND ULTRA HIGH MOLECULAR WEIGHT POLYETHYLENE PLASTIC COATED RUNNERS OR APPROVED EQUAL.
- CASING SPACERS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.



TYPICAL PIPE TRENCH DETAIL (UNPAVED AREA)
N.T.S.

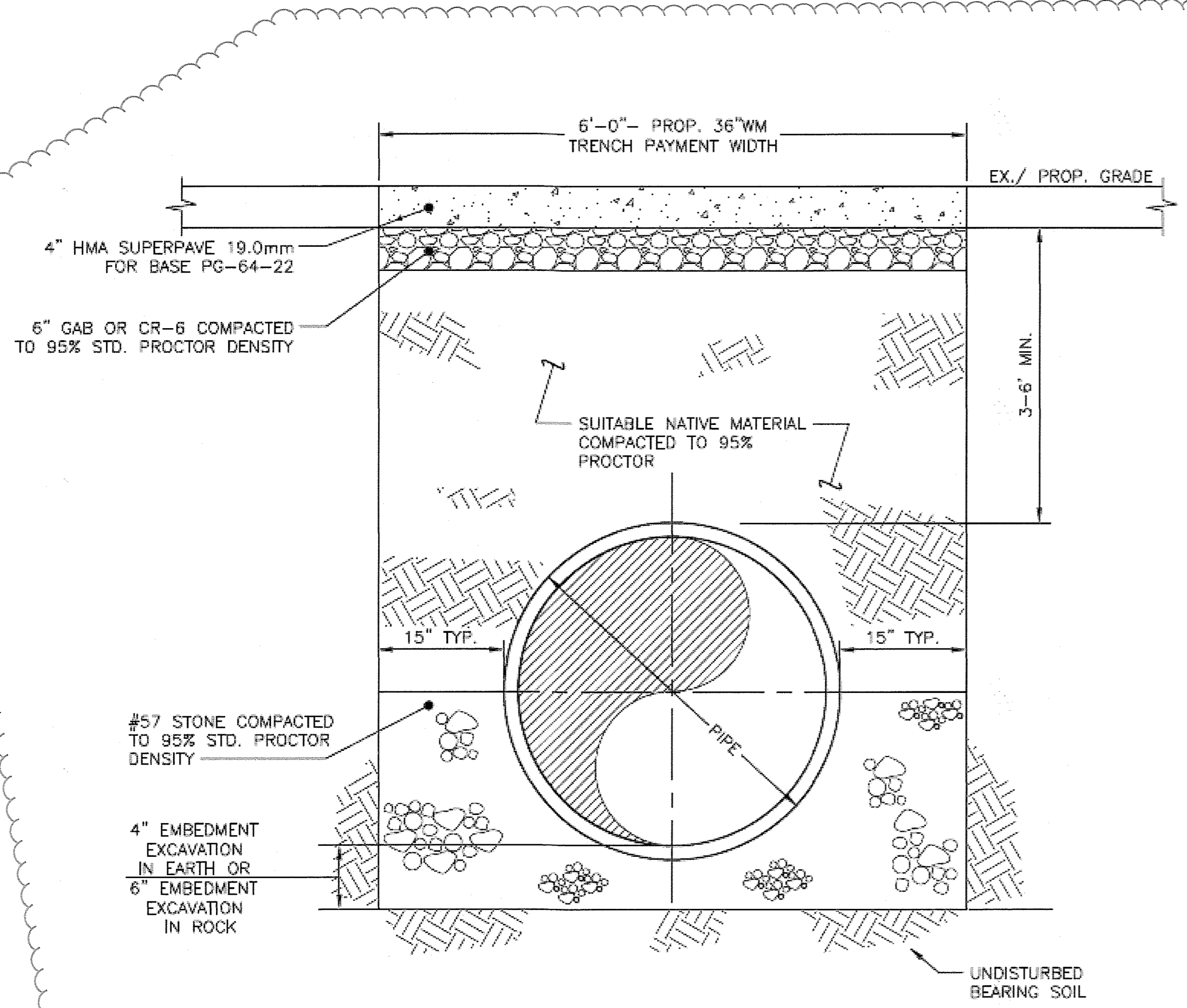
DETAIL NOTES:

- WITHIN ROAD RIGHT-OF-WAY, TRENCH SHALL BE COMPACTED TO 95% STD. PROCTOR DENSITY, 8" LAYERS MAXIMUM.
- OUTSIDE OF ROAD RIGHT-OF-WAY, MATERIAL ABOVE TOP OF PIPE SHALL BE COMPACTED TO 90% IN 12" LAYERS.

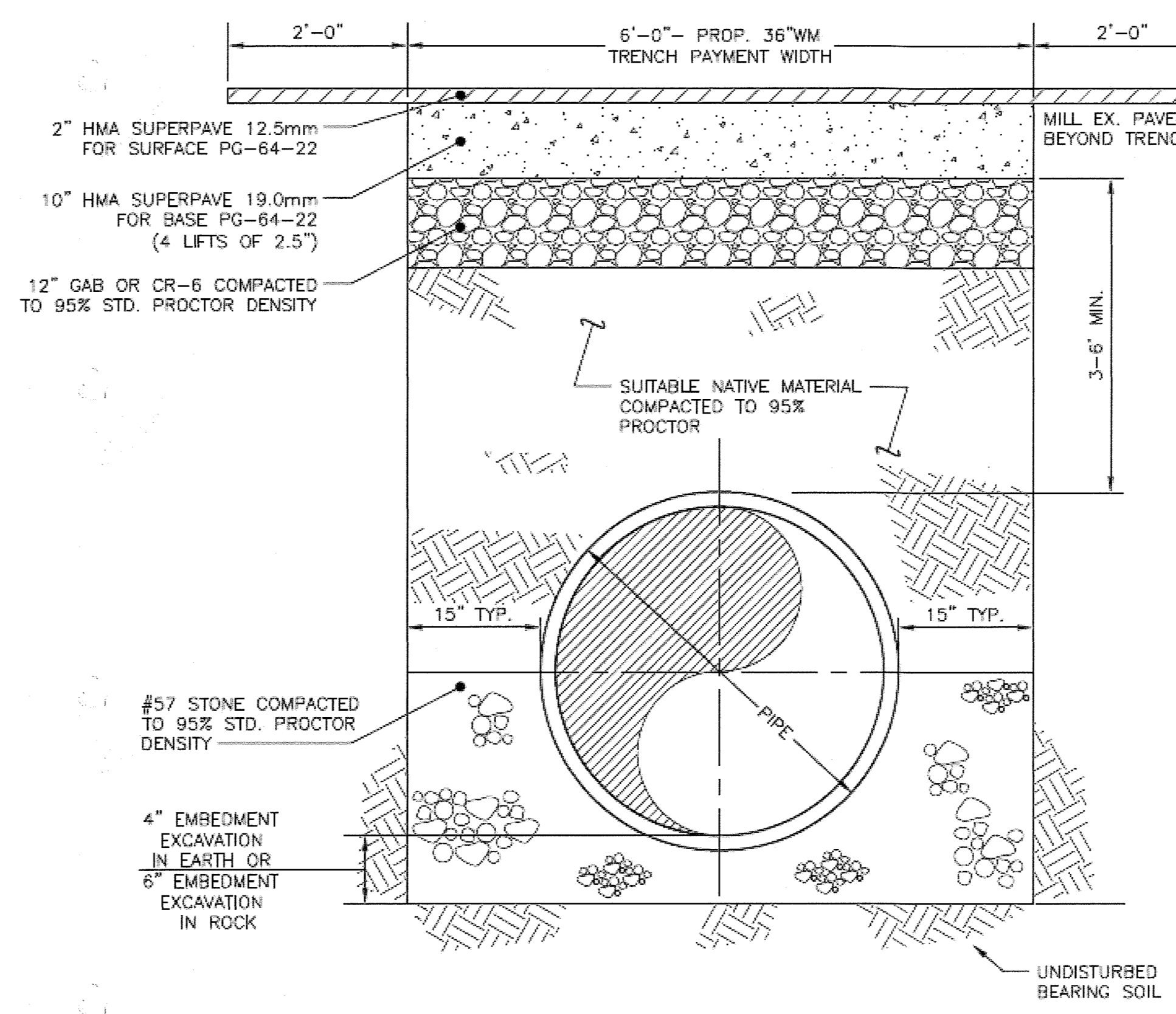


PIPE SIZE	90° ELBOW			45° ELBOW		
	'A'	'B'	'C'	'A'	'B'	'C'
36"	18"	8"	9"	10"	5"	9"

THRUST BLOCK FOR BENDS
NOT TO SCALE



TEMPORARY PAVEMENT PATCH DETAIL
N.T.S.



TYPICAL PIPE TRENCH DETAIL (PAVED AREA)
N.T.S.

NOTES:

- WHEREVER A TRENCH CROSSES A CONCRETE ROADWAY THAT HAS JOINT INSTALLATIONS THE ENTIRE SLAB BETWEEN THE EDGE OF THE TRENCH AND THE NEAREST JOINT SHALL BE REMOVED IF THE DISTANCE IS LESS THAN 10 FEET.
- CLEAN AND WET EDGES OF CUT AND SUBGRADE BEFORE PLACING CONCRETE.
- AGGREGATE SUB-BASE WIDTH SHALL BE 6 FT MINIMUM OR ACTUAL TRENCH WIDTH, WHICH EVER IS GREATER.
- HOT MIX ASPHALT PAVEMENT PATCH THICKNESS SHALL BE EQUAL TO THE EXISTING PAVING SECTION OR AS APPROVED BY DPW. THE MINIMUM PAVING PATCH SHALL CONSIST OF 2" HMA SURFACE COURSE OVER 10" HMA BASE COURSE. GRADED AGGREGATE BASE (GAB) SHALL BE PLACED AND COMPACTED IN 6" MAXIMUM COMPACTED THICKNESS LAYERS.
- CLEAN EXPOSED VERTICAL SURFACE OF ADJACENT PAVEMENT AND PLACE TACK COAT ON ALL VERTICAL SURFACES PRIOR TO PLACING HMA.
- IF THE REMAINING EXISTING PAVEMENT IS LESS THAN 4' WIDE, THE RESIDUAL PAVEMENT SHALL BE REMOVED IN ITS ENTIRETY AND REPLACED.
- CONCRETE REPLACEMENT SHALL BE 10" MINIMUM MIX NO. 6.
- SAW CUT FULL DEPTH ALL JOINTS OF EXISTING CONCRETE, BITUMINOUS, AND BASE PAVEMENTS.
- REINFORCEMENT OF CONCRETE PAVING SHALL BE ACCOMPLISHED BY DOWELING. DOWELS SHALL BE CENTERED IN PAVEMENT THICKNESS. NEW REINFORCING SHALL BE TIED TO DOWELS.
- TOTAL REPAIR WIDTH SHALL BE EQUAL TO THE LANE WIDTH IN ACCORDANCE WITH THE SPECIFICATIONS.

RECORD DRAWINGS

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Director of Public Works: *[Signature]* 10/1/15
 Chief - Bureau of Engineering: *[Signature]* 9/30/15
 Chief - Bureau of Utilities: *[Signature]* 10/1/15
 Chief - Utility Design Division: *[Signature]* PSD

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

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STATE OF MARYLAND
ROBERT JOEL D. ROBERTSON
PROFESSIONAL ENGINEER

DSN. BY:	GLF				
DRN. BY:	RPW	LR	3	RECORD DRAWINGS	11/18
		LR	2	DR-1	11/18
CHK. BY:	RJD	RJD	1	ADDENDUM NO. 2	11/15
		RJD	0	AS BID	09/15
DATE:	09/15	BY	NO.	REVISION	DATE

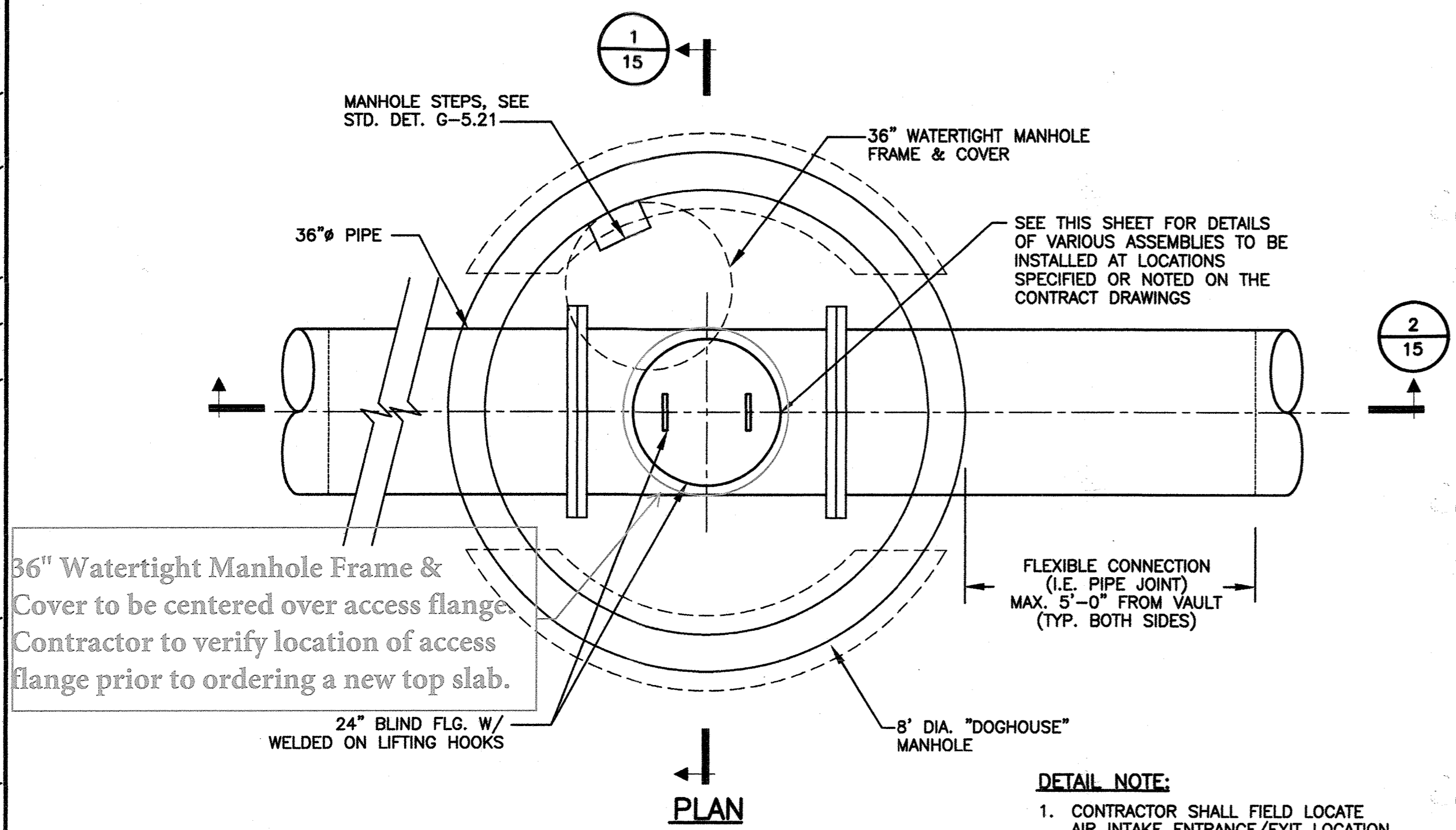
MISCELLANEOUS DETAILS

600' SCALE MAP NO. 30 BLOCK NO. 36

U.S. ROUTE 29 WATER TRANSMISSION MAIN
SOUTH ENTRANCE ROAD TO LITTLE PATUXENT PARKWAY

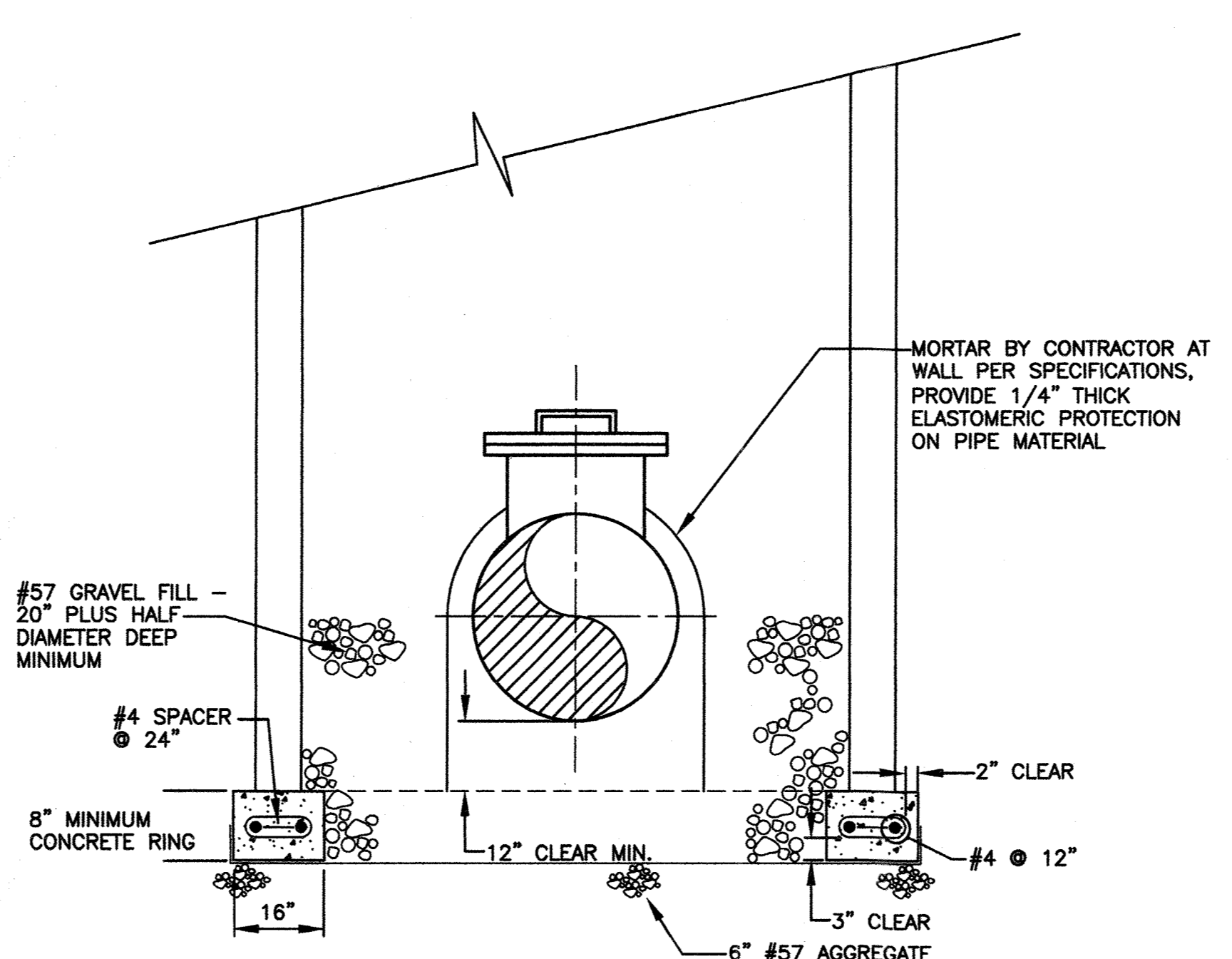
CAPITAL PROJECT: W-8296
 CONTRACT NO.: 44-4776
 ELECTION DISTRICT: 5
 HOWARD COUNTY, MARYLAND

I:\HOWARD-CO-2345\46854-RT-29-RT-108-WA\DWG\SPILT-SETS\SHEETS\46854-001.DWG

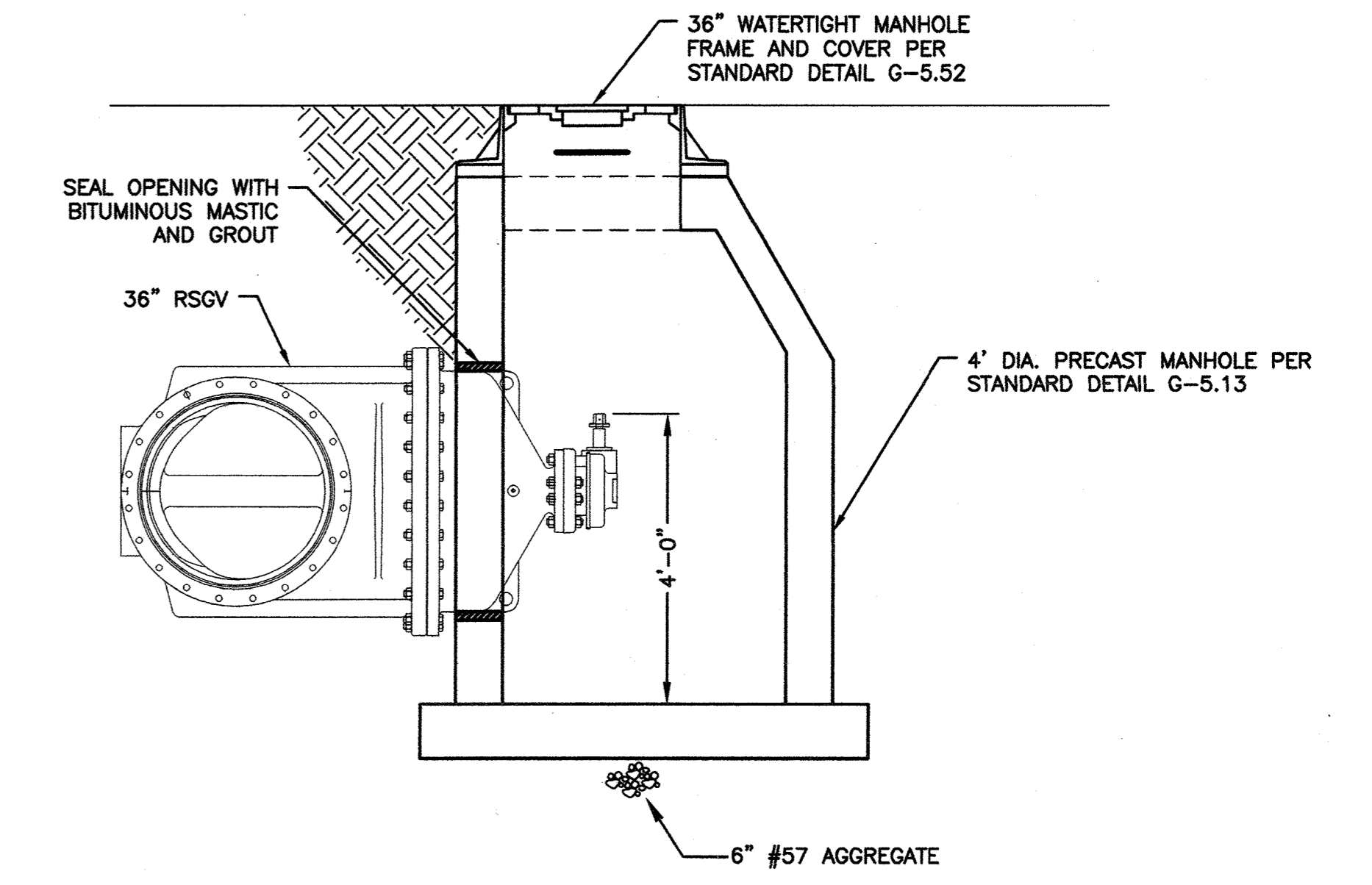


36" Watertight Manhole Frame & Cover to be centered over access flange. Contractor to verify location of access flange prior to ordering a new top slab.

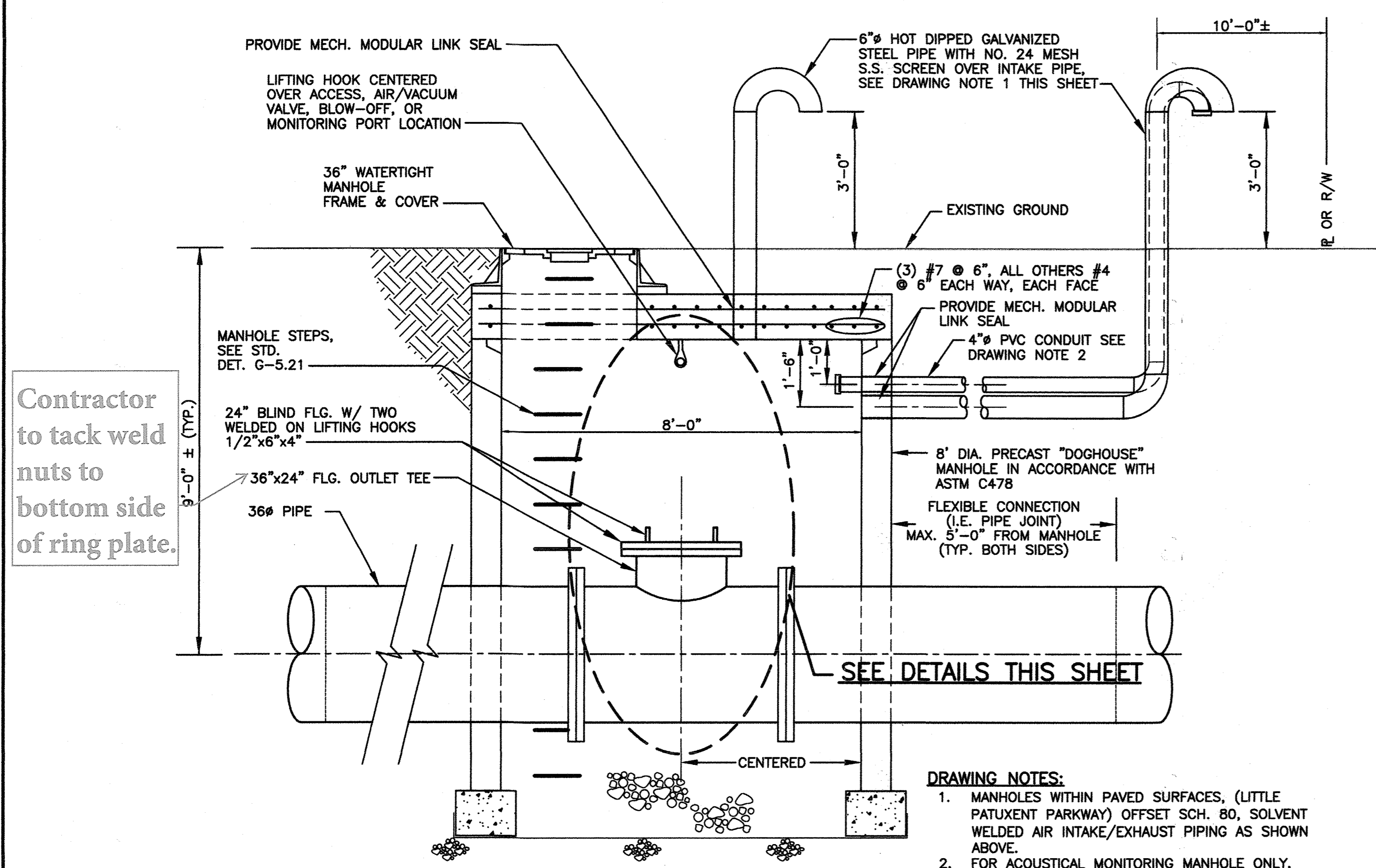
TYPICAL ACCESS MANHOLE - DETAIL
SCALE: 1/2"=1'-0"



SECTION 1
SCALE: 1/2"=1'-0"



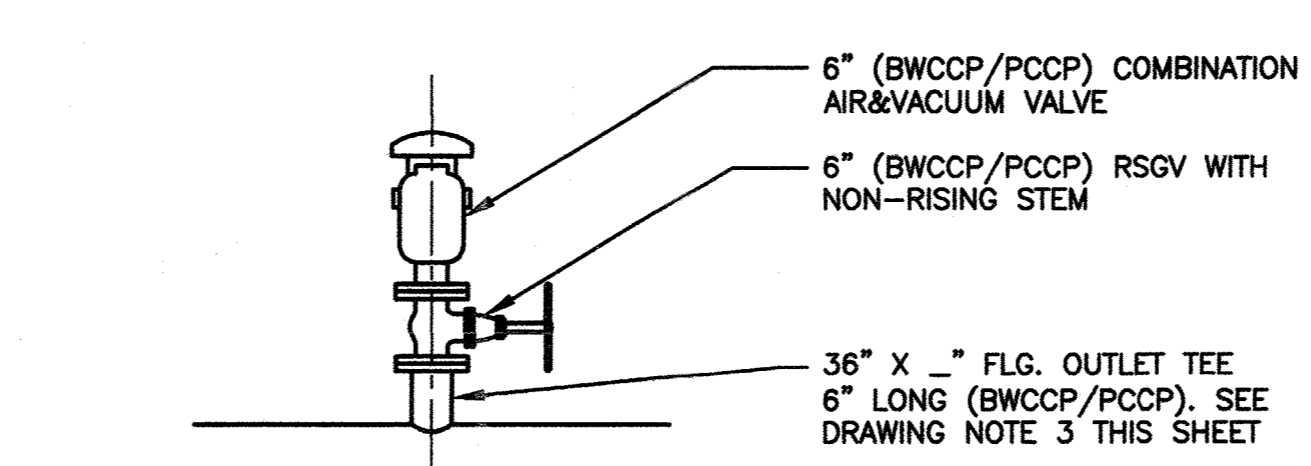
36" RSGV WITH ACTUATOR ACCESS MANHOLE
SCALE: 1/2"=1'-0"



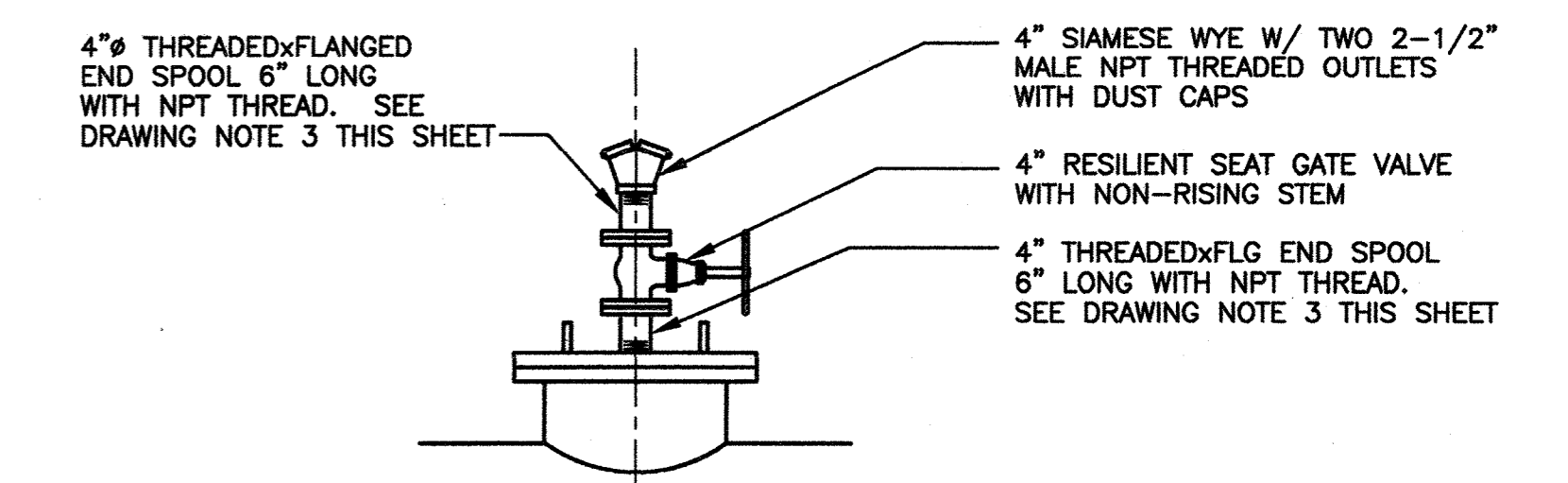
Contractor to tack weld nuts to bottom side of ring plate.

- DRAWING NOTES:**
- MANHOLES WITHIN PAVED SURFACES, (LITTLE PATUXENT PARKWAY) OFFSET SCH. 80, SOLVENT WELDED AIR INTAKE/EXHAUST PIPING AS SHOWN ABOVE.
 - FOR ACOUSTICAL MONITORING MANHOLE ONLY, PROVIDE 4" SCH. 80, SOLVENT WELDED PVC CONDUIT AS SHOWN. PVC CONDUIT SHALL BE PROVIDED WITH 4" THREADED CAPS ON EACH END.
 - COAT EXPOSED STEEL FITTINGS WITH 2 COATS OF ROYSTON R-28 MASTIC, PER MANUFACTURERS RECOMMENDATIONS.

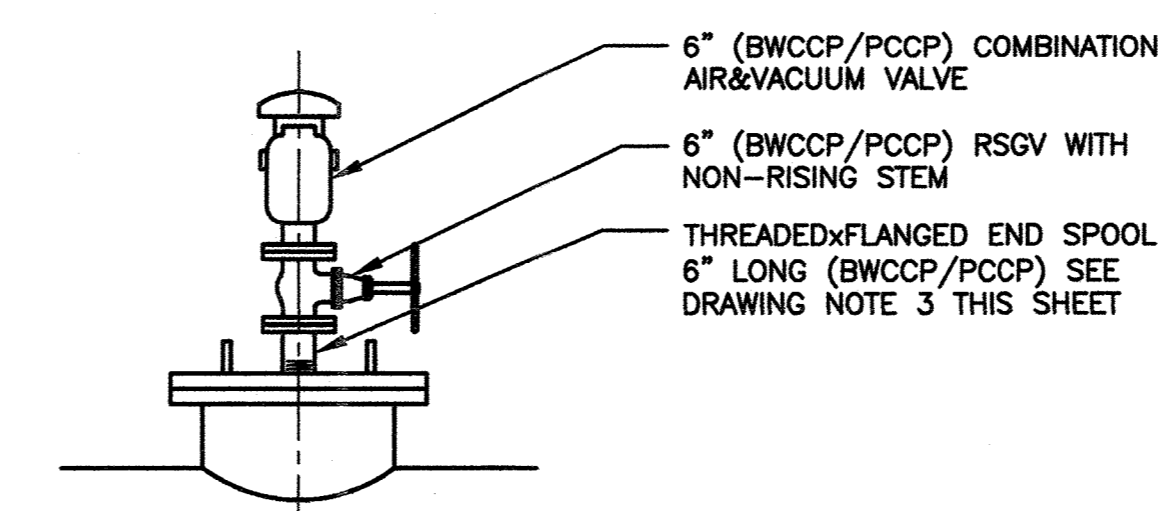
SECTION 2
SCALE: 1/2"=1'-0"



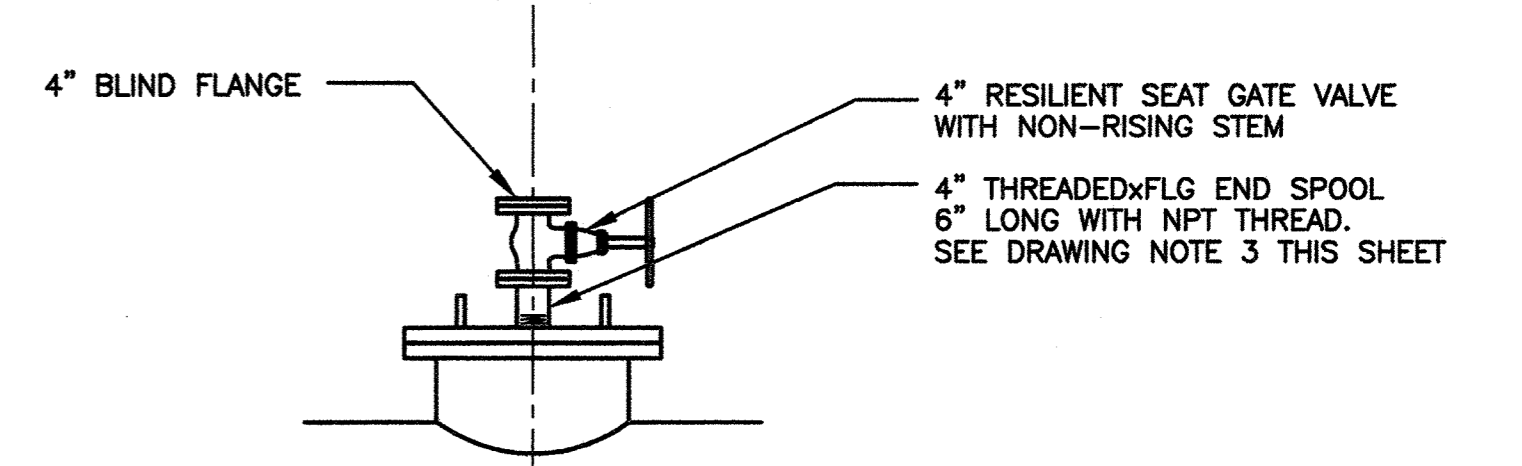
TYPICAL AIR&VACUUM VALVE MANHOLE ASSEMBLY - DETAIL
SCALE: 1/2"=1'-0"



TYPICAL BLOW-OFF/ACCESS MANHOLE ASSEMBLY - DETAIL
SCALE: 1/2"=1'-0"



TYPICAL AIR&VACUUM VALVE/ACCESS MANHOLE ASSEMBLY - DETAIL
SCALE: 1/2"=1'-0"



TYPICAL ACOUSTICAL MONITORING MANHOLE ASSEMBLY - DETAIL
SCALE: 1/2"=1'-0"

SCALES 1/2"=1'-0" 1 2 3 4 5

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Director of Public Works DATE 10/15
Chief - Bureau of Engineering DATE 9/25/15
Chief - Bureau of Utilities DATE 10/15
Chief, Utility Design Division DATE 9/25/15

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

DSN. BY:	GLF			
DRN. BY:	RPW			
CHK. BY:	RJD			
DATE:	09/15			
LR	2	RECORD DRAWINGS		11/18
RJD	1	DR-6		08/17
RJD	0	AS BID		09/15
BY	NO.	REVISION		DATE

TYPICAL ACCESS, AIR VALVE, BLOW-OFF AND MONITORING MANHOLE DETAILS

600' SCALE MAP NO. 30 BLOCK NO. 36

U.S. ROUTE 29 WATER TRANSMISSION MAIN
SOUTH ENTRANCE ROAD TO LITTLE PATUXENT PARKWAY

CAPITAL PROJECT: W-8296
CONTRACT NO.: 44-4776
ELECTION DISTRICT: 5
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 15 OF 48
FILE NO. 33498-XXXF

RECORD DRAWINGS

I:\HOWARD-CO-2343\45854.RT-29-RT-108-WA.DOCX(DWG) (SPLIT-SETS) SHEETS 45854-023A.DWG



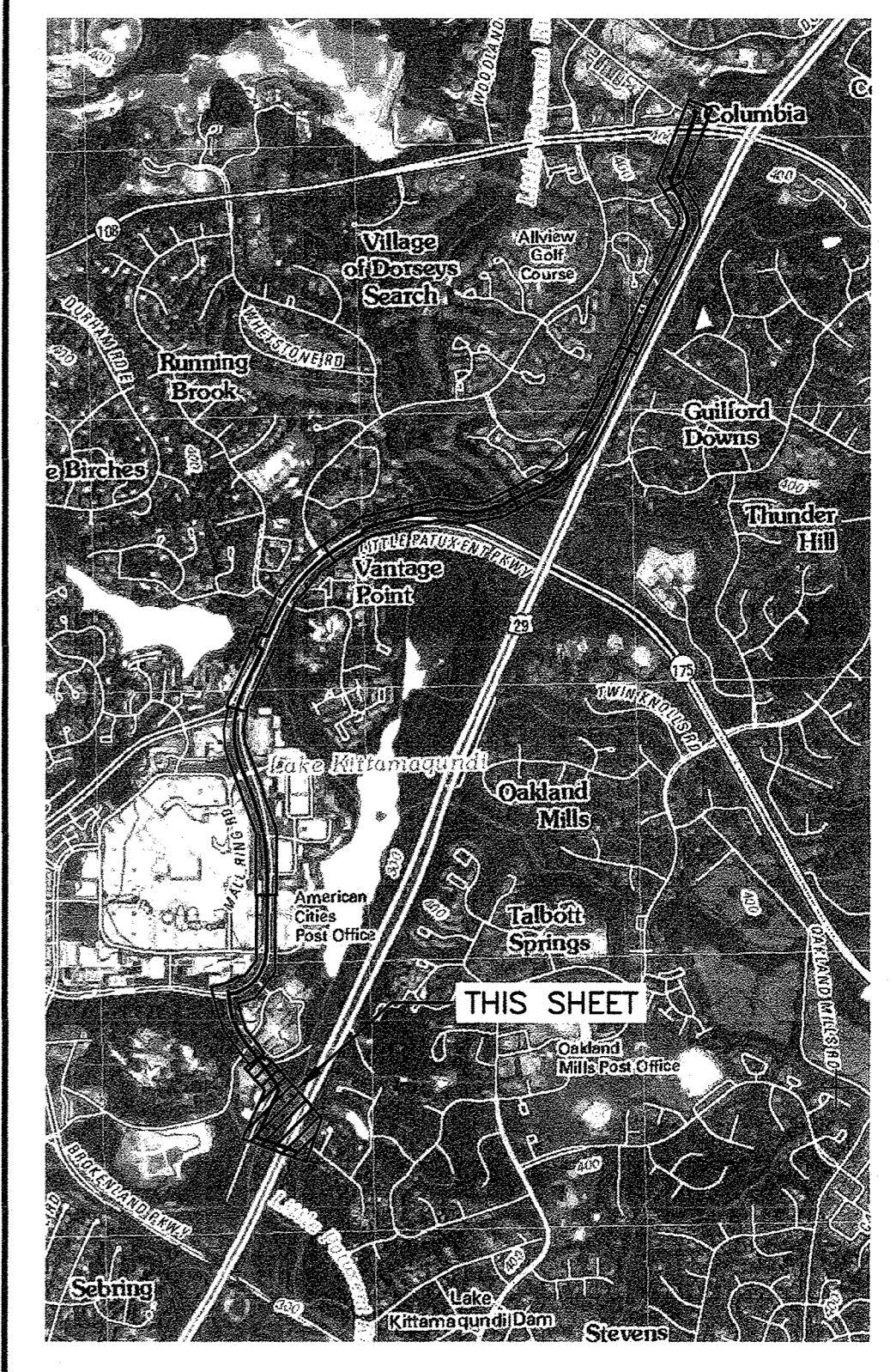
SEDIMENT CONTROL PLAN LEGEND

- LOD — LIMIT OF DISTURBANCE LINE
- TPF — TREE PROTECTION FENCE
- SF — SILT FENCE
- DF — DIVERSION FENCE
- [Hatched Box] STABILIZED CONSTRUCTION ENTRANCE
- [Box with Inlet] TEMPORARY INLET PROTECTION
- [Thick Line] PROPOSED WATER MAIN
- [Dashed Line] SOIL BOUNDARY LINE
- GhC SOIL LABEL
- [Dotted Line] FLOODPLAIN BOUNDARY
- [Wavy Line] WETLANDS AREA

PLANT COMPOSITION SCHEDULE
ZONE 3 - Mesic Meadow Size (acres): 0.26

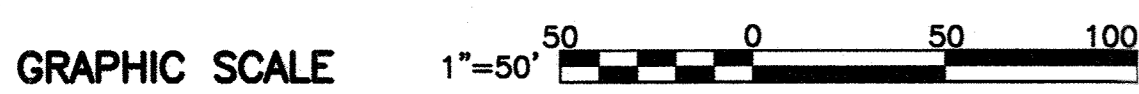
Overall Minimum Spacing (ft.)	Quantity per acre	Frequency (%)	Species Quantity	Vegetation Strata/Species Name	Common Name	Unit	Spacing Type	Size	Individual Minimum Spacing (ft.)
N/A	15			HERBACEOUS SEED (ERNMX-721 MD Lower Midland Upland Meadow Mix)					
		53	2.1	<i>Schizachyrium scoparium 'Camper'</i>	Little bluestem 'Camper'	SEED	LB of P.L.S. 76 %	N/A	N/A
		10	0.4	<i>Sorghastrum nutans</i>	Indiangrass	SEED	LB of P.L.S. 76 %	N/A	N/A
		10	0.4	<i>Elymus virginicus</i>	Virginia wild rye	SEED	LB of P.L.S. 76 %	N/A	N/A
		5	0.2	<i>Andropogon gerardii 'Niagara'</i>	Big bluestem 'Niagara'	SEED	LB of P.L.S. 76 %	N/A	N/A
		5	0.2	<i>Tridens flavus</i>	Purpletop	SEED	LB of P.L.S. 76 %	N/A	N/A
		5	0.2	<i>Rudbeckia hirta</i>	Blackeyed susan	SEED	LB of P.L.S. 76 %	N/A	N/A
		4	0.2	<i>Senna hebecarpa</i>	Wild Senna	SEED	LB of P.L.S. 76 %	N/A	N/A
		3	0.1	<i>Chamaecrista fasciculata</i>	Partridge pea	SEED	LB of P.L.S. 76 %	N/A	N/A
		2	0.1	<i>Eragrostis spectabilis</i>	Purple lovegrass	SEED	LB of P.L.S. 76 %	N/A	N/A
		2	0.1	<i>Monarda punctata</i>	Spotted beebalm	SEED	LB of P.L.S. 76 %	N/A	N/A
		1	0	<i>Solidago bicolor</i>	White goldenrod	SEED	LB of P.L.S. 76 %	N/A	N/A
		100	4						

CON = Contaminized
P.L.S. = Pure Live Seed



LOCATION AND INDEX MAP
SCALE: 1" = 2000'
ADAPTED FROM SAVAGE, MD USGS 7.5 MIN. QUADRANGLE (2011)

- NOTES**
- FOR ADDITIONAL SOIL EROSION AND SEDIMENT CONTROL NOTES, SEQUENCE OF CONSTRUCTION AND SOILS TABLE, LIMITATIONS AND RESOLUTIONS SEE SHEET 21.
 - THE LITTLE PATUXENT RIVER IS CLASSIFIED AS A USE I STREAM. NO INSTREAM WORK MAY BE CONDUCTED DURING THE PERIOD OF MARCH 1 THROUGH JUNE 15, INCLUSIVE, DURING ANY YEAR.
 - TRENCHING 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.



FOR CONTINUATION SEE SHEET 17

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.
Signature of Engineer - Registration Number: 18523 Date: 9/22/15

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Director of Public Works: [Signature] 10/1/15
Chief - Bureau of Engineering: [Signature] 9/30/15
Chief - Bureau of Utilities: [Signature] 9/30/15
Chief, Utility Design Division: [Signature] 9/30/15

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. 18523, EXPIRATION DATE 12/08/2015.

STATE OF MARYLAND
JOHN D. ROBERTS
REGISTERED PROFESSIONAL ENGINEER

DSN. BY:	SMS		
DRN. BY:	SMS		
CHK. BY:	RJD		
DATE:	08/15		
LR	2	RECORD DRAWINGS	11/18
RJD	1	ADDENDUM NO. 2	11/15
RJD	0	AS BID	09/15
BY	NO.	REVISION	DATE

SOIL EROSION AND SEDIMENT CONTROL PLAN
STA. 0+00 TO STA. 16+00

600' SCALE MAP NO. 30 BLOCK NO. 36

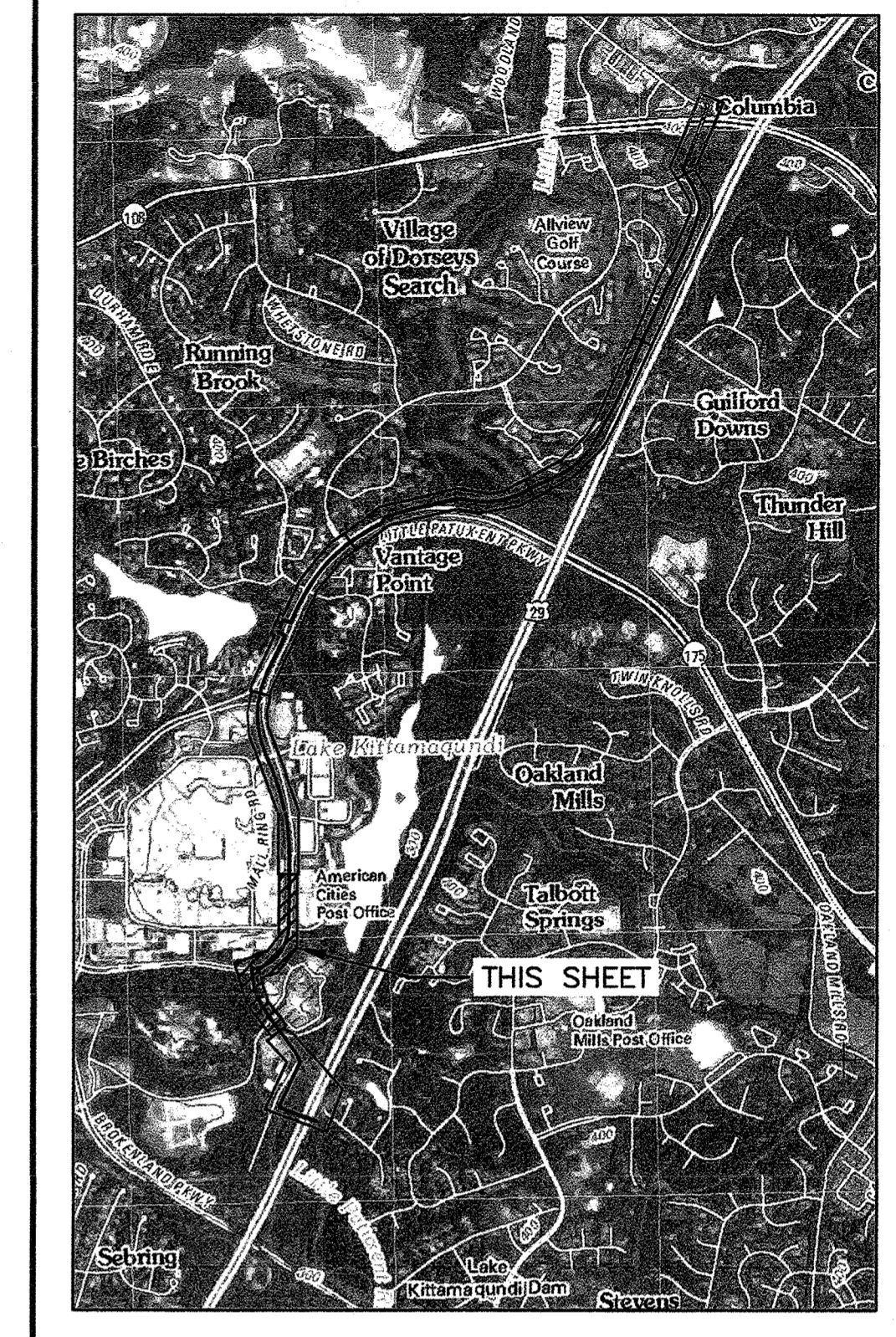
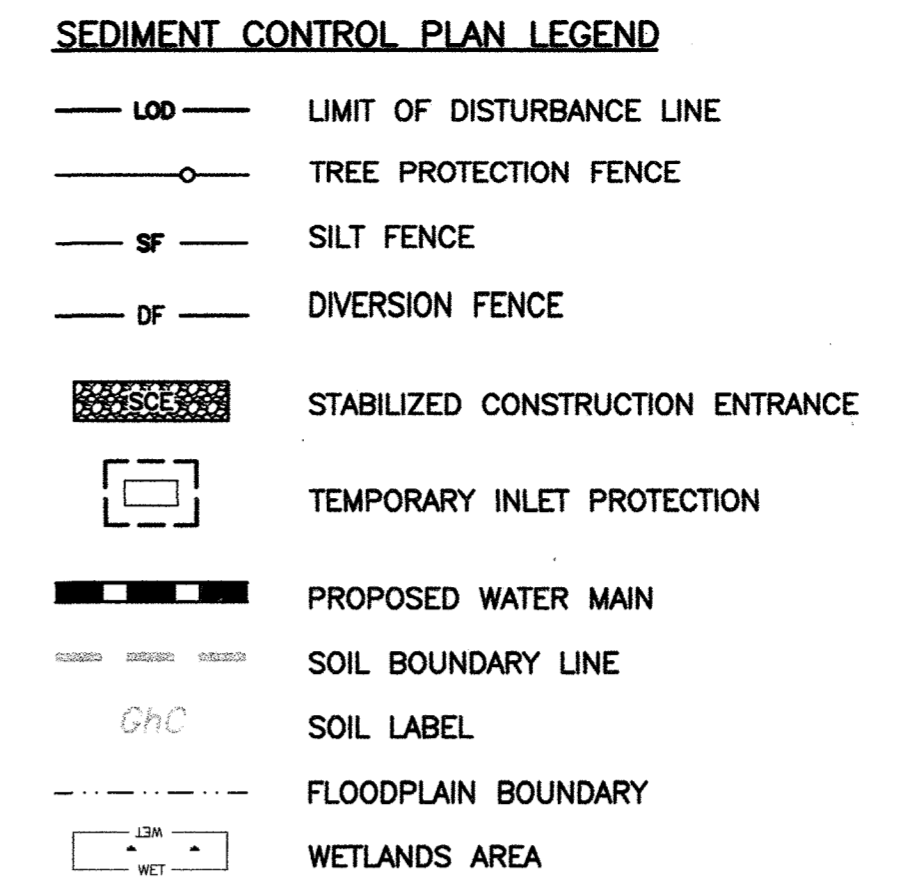
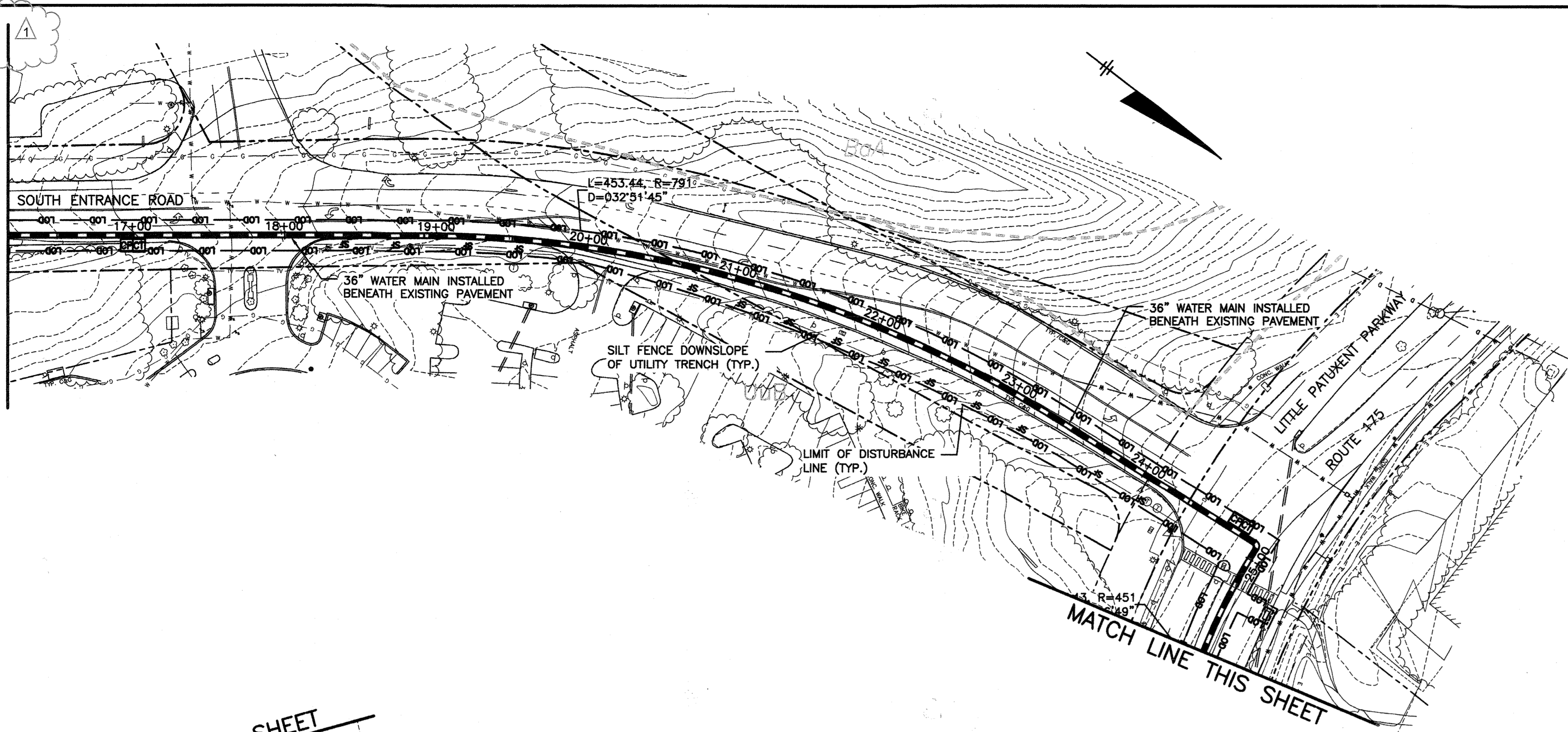
U.S. ROUTE 29 WATER TRANSMISSION MAIN
SOUTH ENTRANCE ROAD TO LITTLE PATUXENT PARKWAY

CAPITAL PROJECT: W-8296
CONTRACT NO.: 44-4776
ELECTION DISTRICT: 5
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 16 OF 48
FILE NO. 33498-XXX

I:\HOWARD-CO.2343\45854-RT-29-RT-108-WA\DWG\SET\DWG\SPRINT-SETS\SHEETS\45854-024.DWG

MATCH LINE FOR CONTINUATION SEE SHEET 16



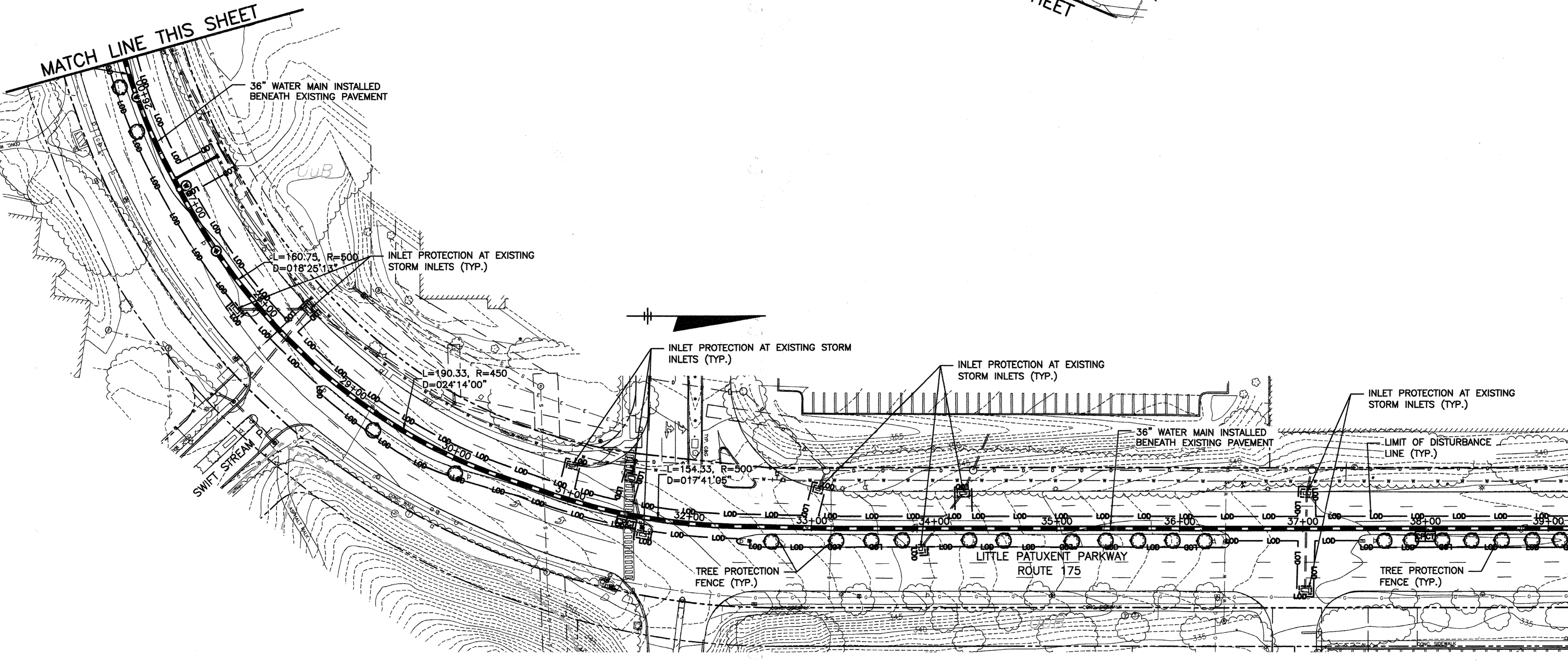
LOCATION AND INDEX MAP

SCALE: 1" = 2000'
ADAPTED FROM SAVAGE, MD USGS 7.5 MIN. QUADRANGLE (2011)

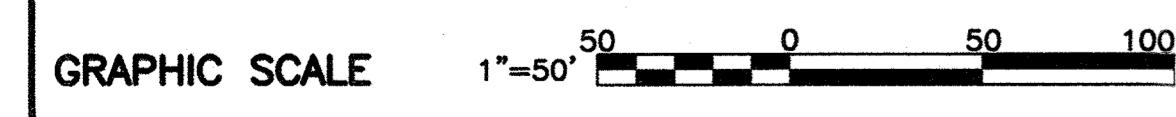
NOTES

1. FOR ADDITIONAL SOIL EROSION AND SEDIMENT CONTROL NOTES, SEQUENCE OF CONSTRUCTION AND SOILS TABLE, LIMITATIONS AND RESOLUTIONS SEE SHEET 21.
2. THE LITTLE PATUXENT RIVER IS CLASSIFIED AS A USE 1 STREAM. NO INSTREAM WORK MAY BE CONDUCTED DURING THE PERIOD OF MARCH 1 THROUGH JUNE 15, INCLUSIVE, DURING ANY YEAR.
3. TRENCHING 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.

MATCH LINE THIS SHEET



MATCH LINE FOR CONTINUATION SEE SHEET 18



DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

[Signature] 10/1/15
DIRECTOR OF PUBLIC WORKS DATE

[Signature] 9/21/15
CHIEF, BUREAU OF ENGINEERING DATE

[Signature] 9/21/15
CHIEF, UTILITY DESIGN DIVISION DATE

G O BRIEN & GERE

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

PROFESSIONAL CERTIFICATION:
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DSN. BY:	SMS				
DRN. BY:	SMS				
CHK. BY:	RJD	LR	2	RECORD DRAWINGS	11/18
		RJD	1	ADDENDUM NO. 2	11/15
		RJD	0	AS BID	09/15
DATE:	08/15	BY	NO.	REVISION	DATE

SOIL EROSION AND SEDIMENT CONTROL PLAN
STA. 16+00 TO STA. 39+00

600' SCALE MAP NO. 30 BLOCK NO. 36

U.S. ROUTE 29 WATER TRANSMISSION MAIN
SOUTH ENTRANCE ROAD TO LITTLE PATUXENT PARKWAY

CAPITAL PROJECT: W-8296
CONTRACT NO.: 44-4776
ELECTION DISTRICT: 5
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

SHEET 17 OF 48

ENGINEERS DESIGN CERTIFICATION:

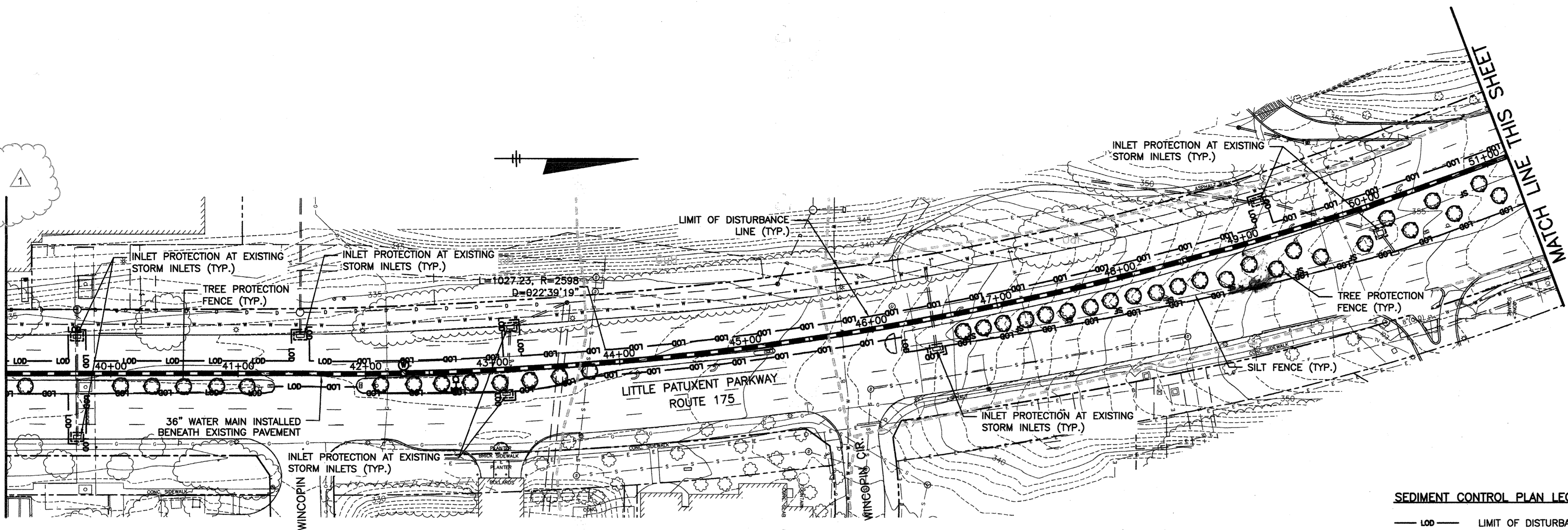
I CERTIFY THAT THIS PLAN FOR EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

[Signature] 18523 9/22/15
Signature of Engineer - Registration Number Date

RECORD DRAWINGS

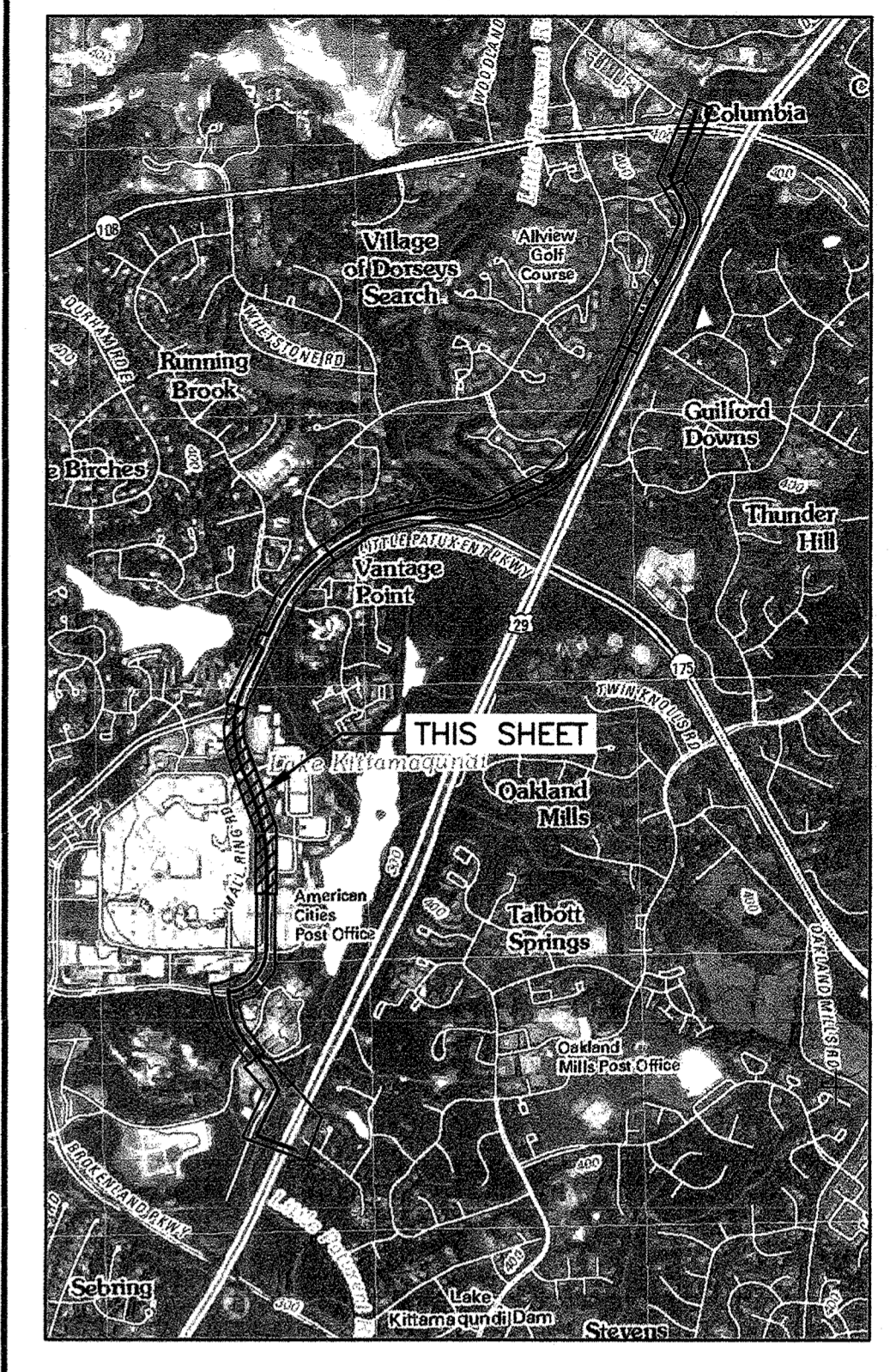
FILE NO. 33498-XXXF

MATCH LINE SEE SHEET 17
FOR CONTINUATION



SEDIMENT CONTROL PLAN LEGEND

- LDD — LIMIT OF DISTURBANCE LINE
- TPF — TREE PROTECTION FENCE
- SF — SILT FENCE
- DF — DIVERSION FENCE
- STABILIZED CONSTRUCTION ENTRANCE
- TEMPORARY INLET PROTECTION
- PROPOSED WATER MAIN
- SBL — SOIL BOUNDARY LINE
- GhC SOIL LABEL
- FFB — FLOODPLAIN BOUNDARY
- WETLANDS AREA



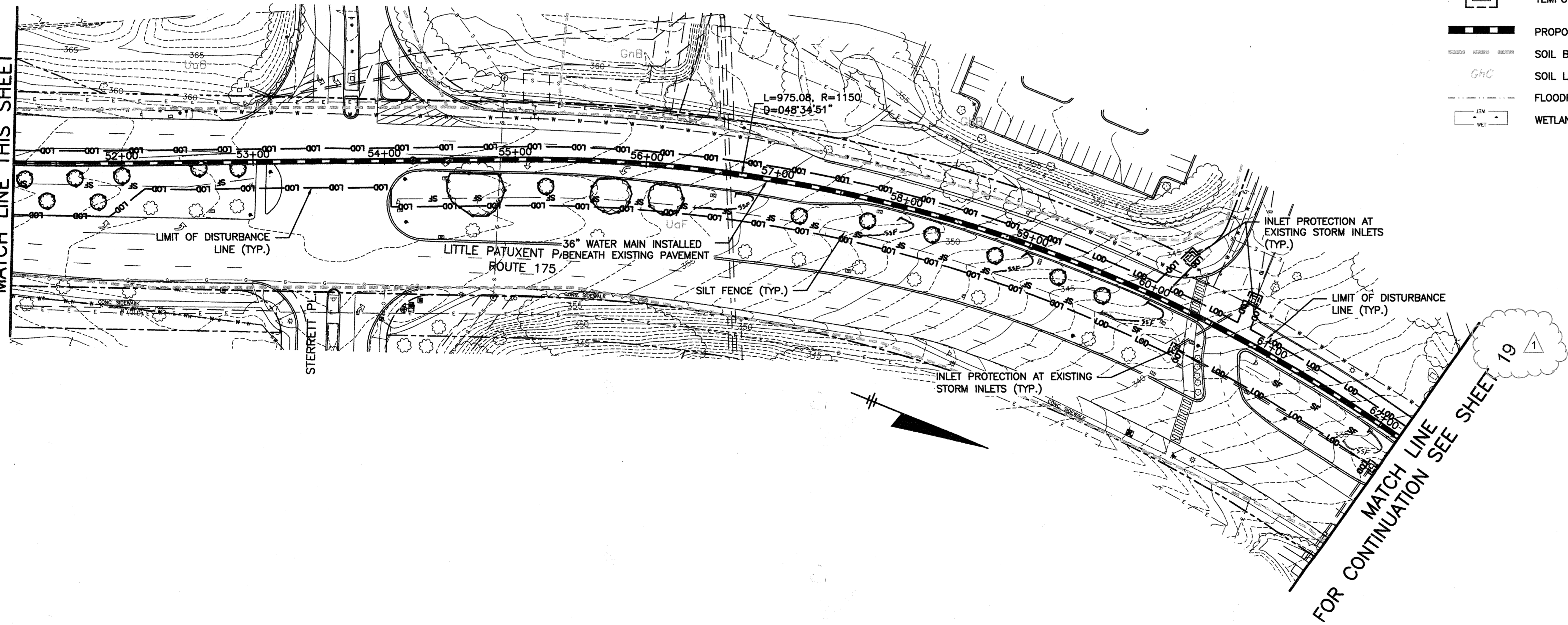
LOCATION AND INDEX MAP

SCALE: 1" = 2000'
ADAPTED FROM SAVAGE, MD USGS 7.5 MIN. QUADRANGLE (2011)

NOTES

1. FOR ADDITIONAL SOIL EROSION AND SEDIMENT CONTROL NOTES, SEQUENCE OF CONSTRUCTION AND SOILS TABLE, LIMITATIONS AND RESOLUTIONS SEE SHEET 21.
2. THE LITTLE PATUXENT RIVER IS CLASSIFIED AS A USE I STREAM. NO INSTREAM WORK MAY BE CONDUCTED DURING THE PERIOD OF MARCH 1 THROUGH JUNE 15, INCLUSIVE, DURING ANY YEAR.
3. TRENCHING 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.

MATCH LINE THIS SHEET



MATCH LINE SEE SHEET 19
FOR CONTINUATION

GRAPHIC SCALE 1"=50'

RECORD DRAWINGS

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.
[Signature] 18523 9/22/15
Signature of Engineer - Registration Number Date

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND
DIRECTOR OF PUBLIC WORKS: *[Signature]* 10/1/15
CHIEF - BUREAU OF UTILITIES: *[Signature]* 9/22/15

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

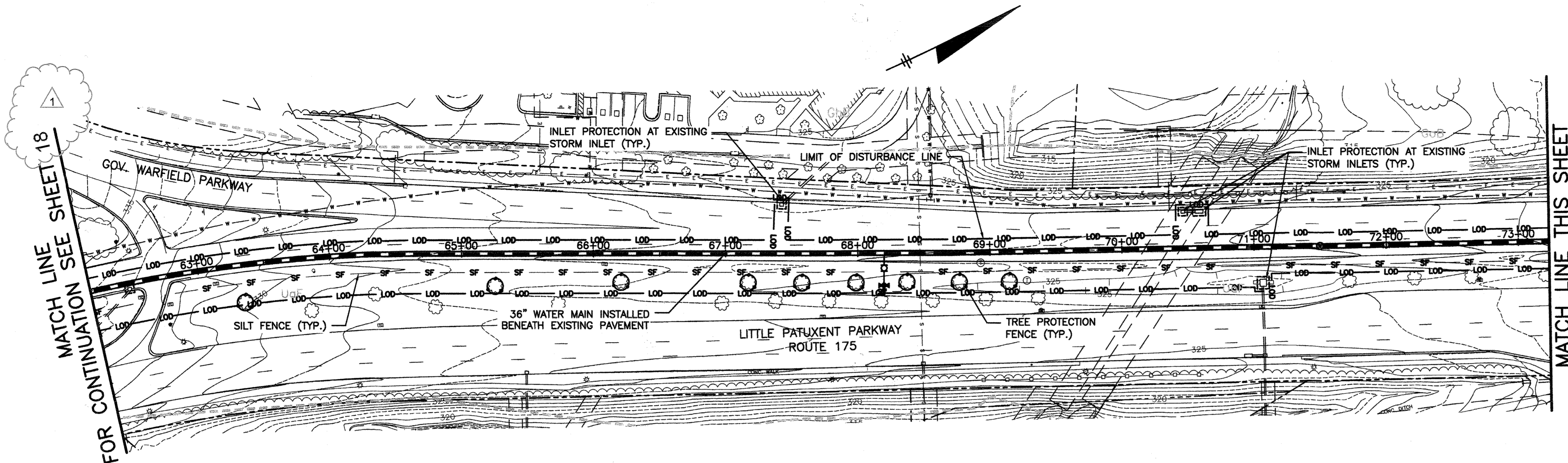
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DSN. BY:	SMS			
DRN. BY:	SMS			
CHK. BY:	RJD	LR 2	RECORD DRAWINGS	11/18
		RJD 1	ADDENDUM NO. 2	11/15
		RJD 0	AS BID	09/15
DATE:	08/15	BY NO.	REVISION	DATE

SOIL EROSION AND SEDIMENT CONTROL PLAN
STA. 39+00 TO STA. 62+00
600' SCALE MAP NO. 30 BLOCK NO. 36

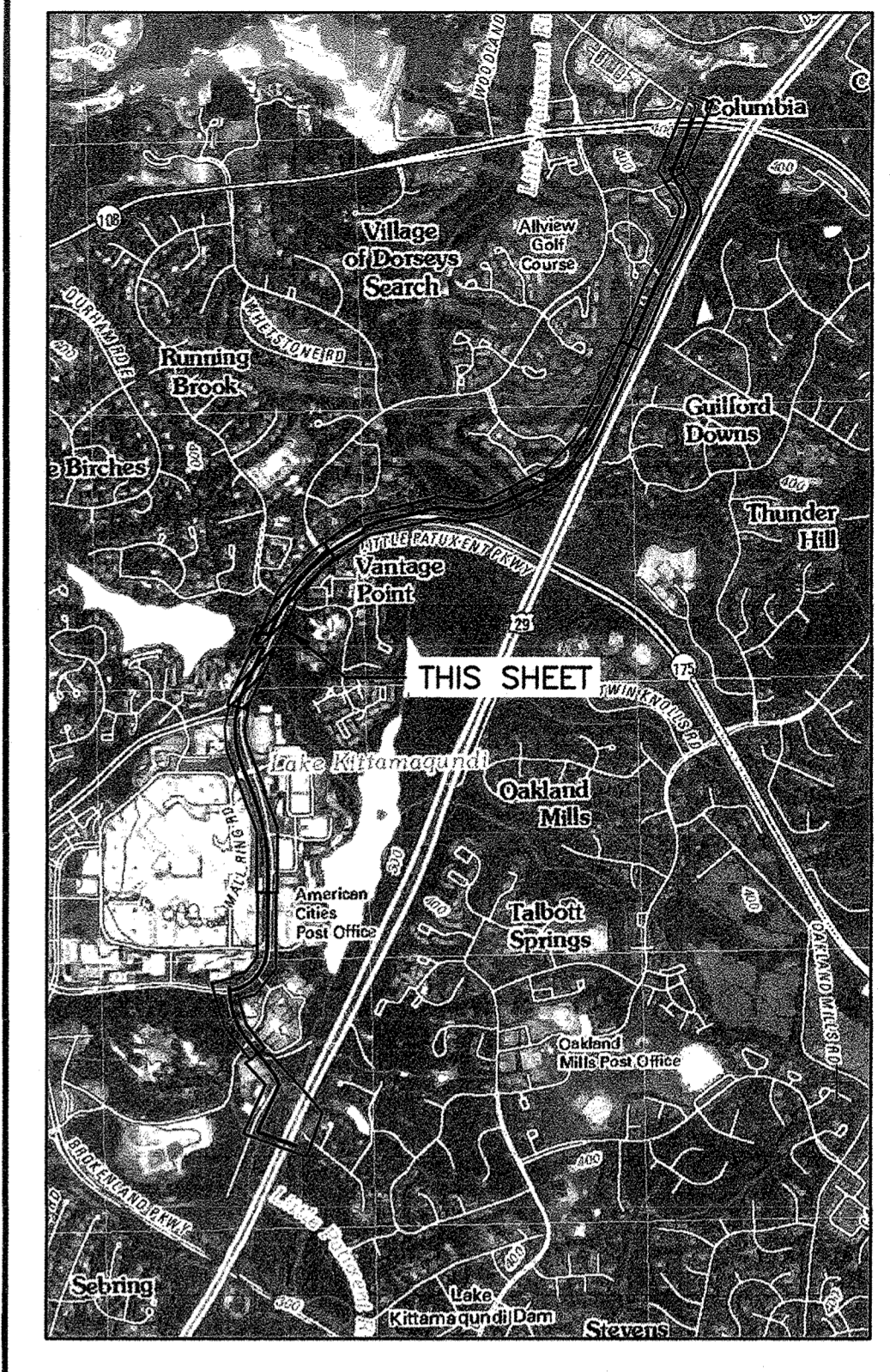
U.S. ROUTE 29 WATER TRANSMISSION MAIN
SOUTH ENTRANCE ROAD TO LITTLE PATUXENT PARKWAY
CAPITAL PROJECT: W-8296
CONTRACT NO.: 44-4776
ELECTION DISTRICT: 5
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 18 OF 48
FILE NO. 33498-XXXF



MATCH LINE SHEET 18
FOR CONTINUATION SEE SHEET 18

MATCH LINE THIS SHEET



LOCATION AND INDEX MAP

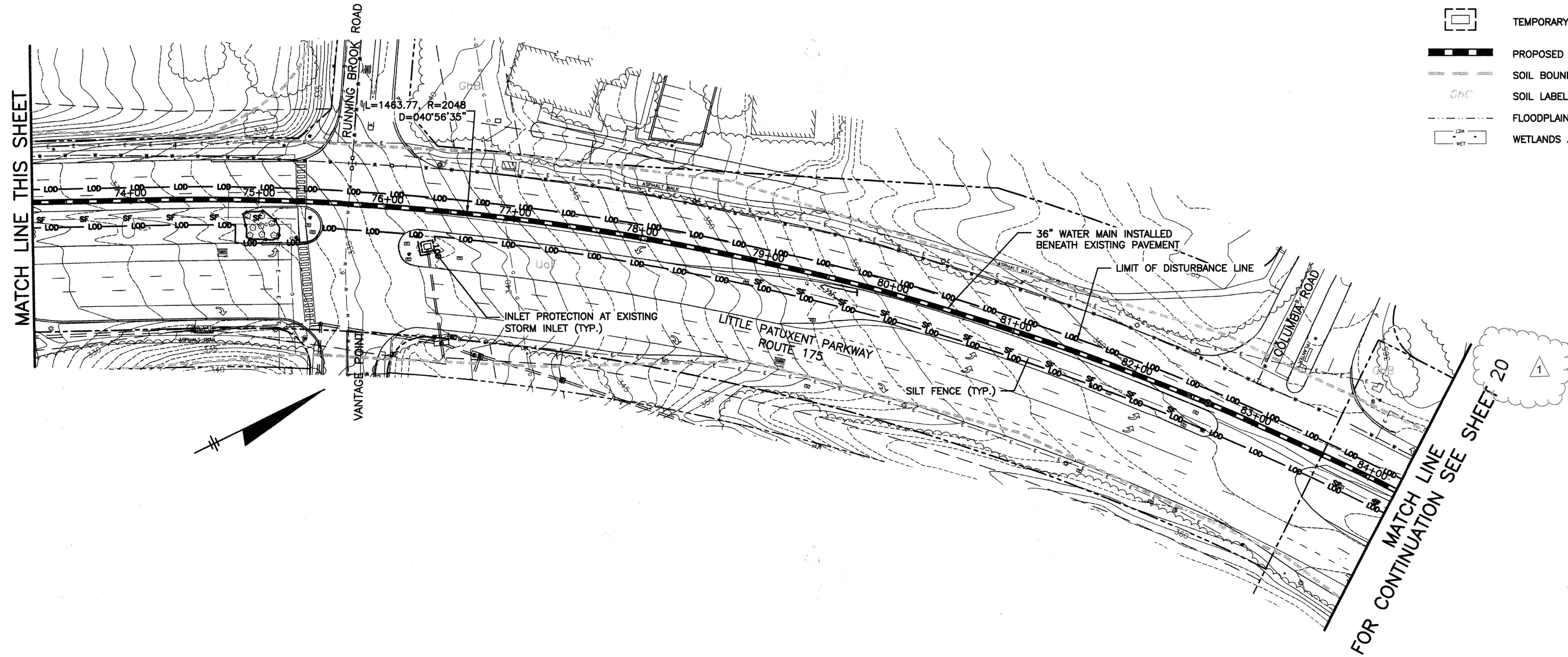
SCALE: 1" = 2000'
ADAPTED FROM SAVAGE, MD USGS 7.5 MIN. QUADRANGLE (2011)

SEDIMENT CONTROL PLAN LEGEND

- L00 — LIMIT OF DISTURBANCE LINE
- TREE PROTECTION FENCE
- SF — SILT FENCE
- DF — DIVERSION FENCE
- ▨ STABILIZED CONSTRUCTION ENTRANCE
- TEMPORARY INLET PROTECTION
- ▬ PROPOSED WATER MAIN
- SOIL BOUNDARY LINE
- ChC SOIL LABEL
- FLOODPLAIN BOUNDARY
- WET WETLANDS AREA

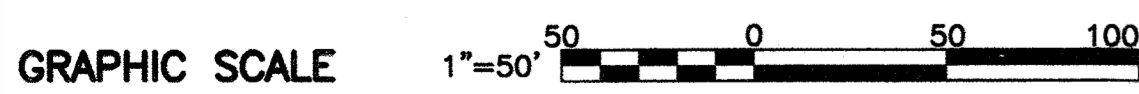
NOTES

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2. THE LITTLE PATUXENT RIVER IS CLASSIFIED AS A USE I STREAM. NO INSTREAM WORK MAY BE CONDUCTED DURING THE PERIOD OF MARCH 1 THROUGH JUNE 15, INCLUSIVE, DURING ANY YEAR.
3. TRENCHING 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.



MATCH LINE THIS SHEET

MATCH LINE SHEET 20
FOR CONTINUATION SEE SHEET 20



RECORDS DRAWINGS

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.

[Signature] 18523 9/22/15
Signature of Engineer - Registration Number Date

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Director of Public Works: *[Signature]* 10/15
Chief - Bureau of Engineering: *[Signature]* 2/30/15
Chief - Bureau of Utilities: *[Signature]* 10/15
Chief - Utility Design Division: *[Signature]* 9/21/15

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

PROFESSIONAL CERTIFICATION:
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DSN. BY:	SMS				
DRN. BY:	SMS				
CHK. BY:	RJD	LR 2	RECORD DRAWINGS	11/18	
		RJD 1	ADDENDUM NO. 2	11/15	
		RJD 0	AS BID	09/15	
DATE:	08/15	BY NO.	REVISION	DATE	

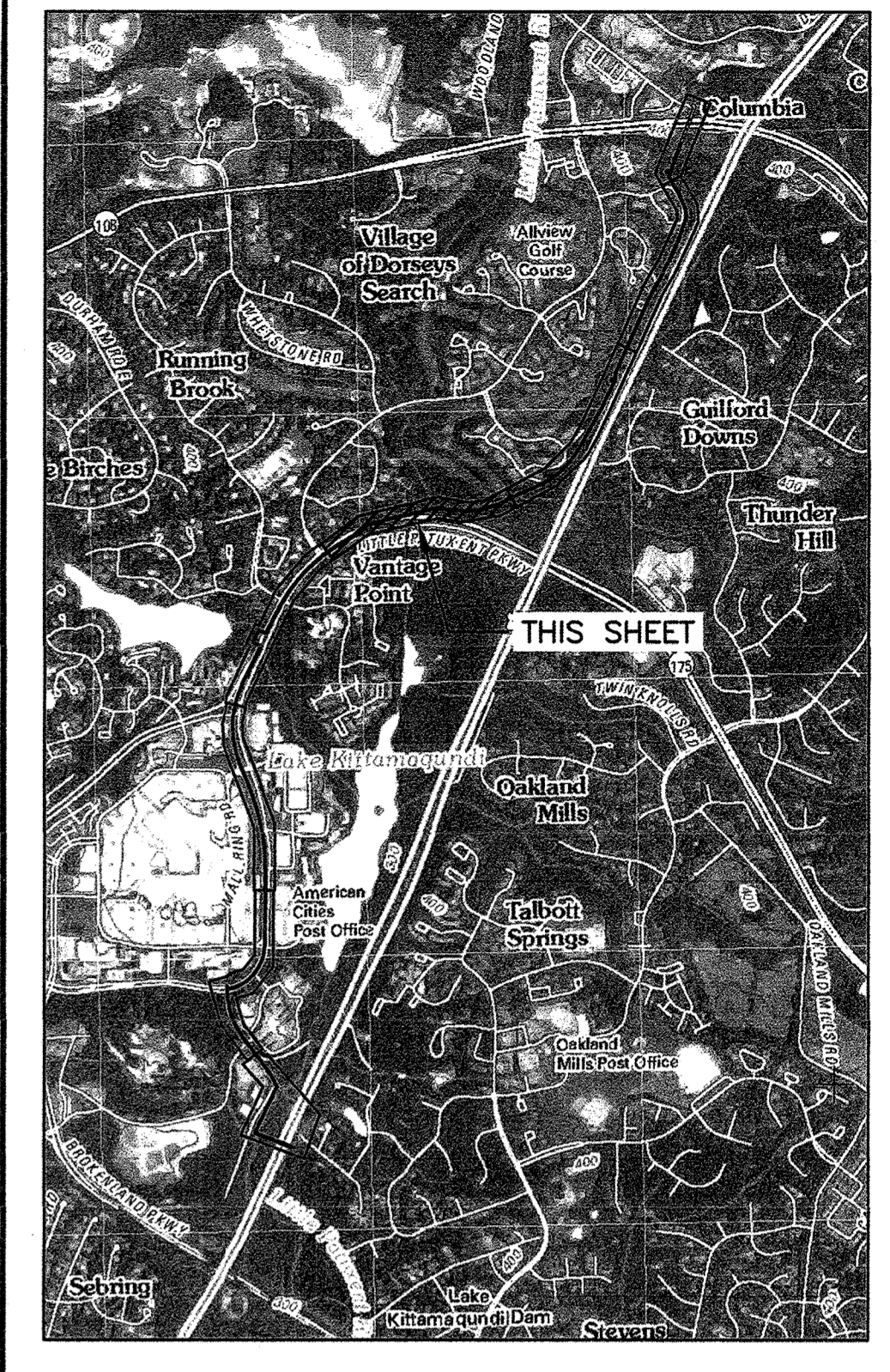
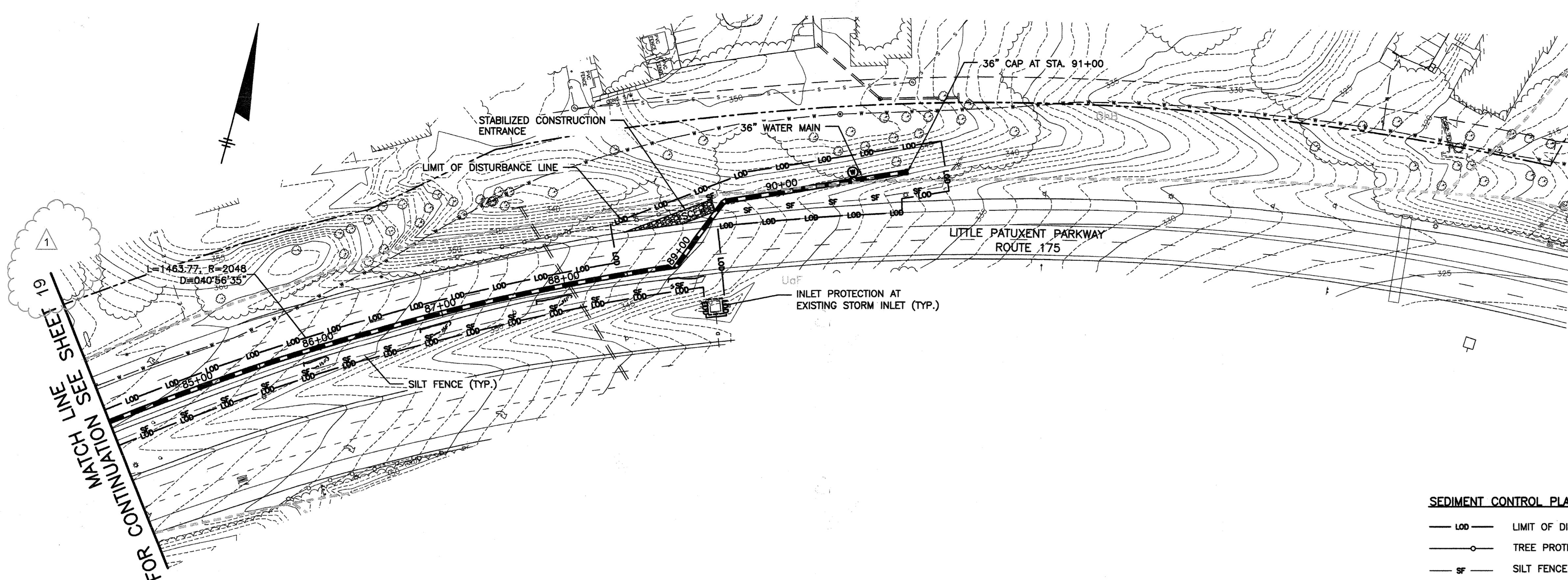
SOIL EROSION AND SEDIMENT CONTROL PLAN
STA. 62+00 TO STA. 84+00

600' SCALE MAP NO. 30 BLOCK NO. 36

U.S. ROUTE 29 WATER TRANSMISSION MAIN
SOUTH ENTRANCE ROAD TO LITTLE PATUXENT PARKWAY

CAPITAL PROJECT: W-8296
CONTRACT NO.: 44-4776
ELECTION DISTRICT: 5
HOWARD COUNTY, MARYLAND

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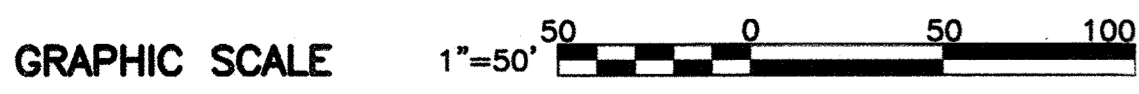


LOCATION AND INDEX MAP
SCALE: 1" = 2000'
ADAPTED FROM SAVAGE, MD USGS 7.5 MIN. QUADRANGLE (2011)

SEDIMENT CONTROL PLAN LEGEND

- LOD — LIMIT OF DISTURBANCE LINE
- TREE PROTECTION FENCE
- SF — SILT FENCE
- DF — DIVERSION FENCE
- STABILIZED CONSTRUCTION ENTRANCE
- TEMPORARY INLET PROTECTION
- PROPOSED WATER MAIN
- SOIL BOUNDARY LINE
- SOIL LABEL
- FLOODPLAIN BOUNDARY
- WETLANDS AREA

- NOTES**
- FOR ADDITIONAL SOIL EROSION AND SEDIMENT CONTROL NOTES, SEQUENCE OF CONSTRUCTION AND SOILS TABLE, LIMITATIONS AND RESOLUTIONS SEE SHEET 21.
 - THE LITTLE PATUXENT RIVER IS CLASSIFIED AS A USE 1 STREAM. NO INSTREAM WORK MAY BE CONDUCTED DURING THE PERIOD OF MARCH 1 THROUGH JUNE 15, INCLUSIVE, DURING ANY YEAR.
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RECORD DRAWINGS

ENGINEERS DESIGN CERTIFICATION:
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[Signature] 18523 9/22/15
Signature of Engineer - Registration Number Date

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

[Signature] 10/1/15
DIRECTOR OF PUBLIC WORKS DATE

[Signature] 9/30/15
CHIEF - BUREAU OF ENGINEERING DATE

[Signature] 9/30/15
CHIEF, UTILITY DESIGN DIVISION DATE

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

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[Signature]
ROBERT JOHN DUNN
REGISTERED PROFESSIONAL ENGINEER

DSN. BY:	SMS				
DRN. BY:	SMS				
CHK. BY:	RJD	LR 2	RECORD DRAWINGS	11/18	
		RJD 1	ADDENDUM NO. 2	11/15	
		RJD 0	AS BID	09/15	
DATE:	08/15	BY NO.	REVISION	DATE	

SOIL EROSION AND SEDIMENT CONTROL PLAN
STA. 84+00 TO STA. 94+00

600' SCALE MAP NO. 30 BLOCK NO. 36

U.S. ROUTE 29 WATER TRANSMISSION MAIN
SOUTH ENTRANCE ROAD TO LITTLE PATUXENT PARKWAY

CAPITAL PROJECT: W-8296
CONTRACT NO.: 44-4776
ELECTION DISTRICT: 5
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 20 OF 48

FILE NO. 33498-XXXF

I:\HOWARD-CO.2343\45854-RT-29-WA\DOCS\DWG\SPLOT-SETS\SHEETS\45854-032.DWG

PERMANENT SEEDING NOTES

APPLY TO GRADED OR CLEARED AREAS NOT SUBJECT TO IMMEDIATE FURTHER DISTURBANCE WHERE A PERMANENT LONG-LIVED VEGETATIVE COVER IS NEEDED.

SEEDBED PREPARATION: LOOSEN UPPER THREE INCHES OF SOIL BY RAKING, DISKING OR OTHER ACCEPTABLE MEANS BEFORE SEEDING, IF NOT PREVIOUSLY LOOSENED.

SOIL AMENDMENTS: IN LIEU OF SOIL TEST RECOMMENDATIONS, USE ONE OF THE FOLLOWING SCHEDULES:

- 1. PREFERRED: APPLY 2 TONS/ACRE DOLOMITIC LIMESTONE (92 LBS/1000 S.F.) AND 800 LBS/ACRE 10-10-10 FERTILIZER (14 LBS/1000 S.F.) BEFORE SEEDING. HARROW OR DISK INTO UPPER THREE INCHES OF SOIL. AT TIME OF SEEDING, APPLY 400 LBS/ACRE 30-0-0 UREAFORM FERTILIZER (9 LBS/1000 S.F.)
2. ACCEPTABLE: APPLY 2 TONS/ACRE DOLOMITIC LIMESTONE (92 LBS/1000 S.F.) AND 1000 LBS/ACRES 10-10-10 FERTILIZER (23 LBS/1000 S.F.) BEFORE SEEDING. HARROW OR DISK INTO UPPER THREE INCHES OF SOIL.

MULCHING: APPLY 1.5 TO 2 TONS PER ACRES (70 TO 90 LBS/S.F.) OF UNROTTED SMALL GRAIN STRAW IMMEDIATELY AFTER SEEDING. ANCHOR MULCH IMMEDIATELY AFTER APPLICATION USING MULCH ANCHORING TOOL OR 218 GALLONS/ACRE (3 GAL/1000 S.F.) OF EMULSIFIED ASPHALT ON FLAT AREAS. ON SLOPE 8 FEET OR HIGHER, USE 348 GALLONS PER ACRE (8 GAL/1000 S.F.) FOR ANCHORING.

MAINTENANCE: INSPECT ALL SEEDING AREAS AND MAKE NEEDED REPAIRS, REPLACEMENTS AND RESEEDINGS.

SEQUENCE OF CONSTRUCTION

- 1. PERFORM SURVEY AND STAKEOUT OF APPROVED WATERLINE ALIGNMENT. DELINEATE APPROVED LIMITS OF DISTURBANCE AND ALL WETLANDS AREAS TO BE PROTECTED WITH SURVEY STAKES AND FLAGS OR ORANGE CONSTRUCTION FENCING. CONTRACTOR SHALL NOT PERFORM ANY EARTH DISTURBANCE ACTIVITIES OUTSIDE OF APPROVED LIMITS OF DISTURBANCE.
2. INSTALL STABILIZED CONSTRUCTION ENTRANCES AND STABILIZED CONSTRUCTION STAGING AREAS.
3. INSTALL SILT FENCE AND TREE PROTECTION FENCE AS INDICATED ALONG WATERLINE ALIGNMENT IN VEGETATED AREAS. INSTALL INLET PROTECTION AT ALL EXISTING STORM INLETS AS INDICATED.
4. BEGIN EXCAVATION AND CONNECTION TO EXISTING WATER MAIN AT STATION 0+00. INSTALL PIPELINE FROM STATION 0+00 TO 5+00 BY TUNNELING. CONTRACTOR SHALL INSTALL SILT FENCING DOWNSLOPE OF SENDING AND RECEIVING PITS FOR BORING CONSTRUCTION.
5. CONTINUE EXCAVATION AND INSTALLATION OF NEW WATER MAIN FROM STATION 5+00 TO APPROXIMATE STATION 91+00. SEE NOTE #3 OF SHEETS 16-20.
6. COMPLETE RESTORATION OF ALL DISTURBED AREAS WITH PAVEMENT OR SEEDING AND MULCHING. ONCE ALL DISTURBED AREAS HAVE BEEN STABILIZED WITH A UNIFORM 80% PERENNIAL VEGETATIVE COVER OR OTHER PERMANENT NON-VEGETATIVE COVER (I.E. PAVEMENT), REMOVE TEMPORARY BEST MANAGEMENT PRACTICES WITH THE APPROVAL OF THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR. ANY AREA DISTURBED DURING THE REMOVAL OF A TEMPORARY BMP SHALL BE IMMEDIATELY STABILIZED WITH SEEDING AND MULCHING.

HOWARD SOIL CONSERVATION DISTRICT (HSCD) STANDARD SEDIMENT CONTROL NOTES

- 1. A PRE-CONSTRUCTION MEETING MUST OCCUR WITH THE HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS, CONSTRUCTION INSPECTION DIVISION (CID), 410-313-1855 AFTER THE FUTURE LOD AND PROTECTED AREAS ARE MARKED CLEARLY IN THE FIELD. A MINIMUM OF 48 HOUR NOTICE TO CID MUST BE GIVEN AT THE FOLLOWING STAGES:
A. PRIOR TO THE START OF EARTH DISTURBANCE.
B. UPON COMPLETION OF THE INSTALLATION OF PERIMETER EROSION AND SEDIMENT CONTROLS, BUT BEFORE PROCEEDING WITH ANY OTHER EARTH DISTURBANCE OR GRADING.
C. PRIOR TO THE START OF ANOTHER PHASE OF CONSTRUCTION OR OPENING OF ANOTHER GRADING UNIT.
D. PRIOR TO THE REMOVAL OR MODIFICATION OF SEDIMENT CONTROL PRACTICES. OTHER BUILDING OR GRADING INSPECTION APPROVALS MAY NOT BE AUTHORIZED UNTIL THIS INITIAL APPROVAL BY THE INSPECTION AGENCY IS MADE. OTHER RELATED STATE AND FEDERAL PERMITS SHALL BE REFERENCED TO ENSURE COORDINATION AND TO AVOID CONFLICTS WITH THIS PLAN. ALL VEGETATIVE AND STRUCTURAL PRACTICES ARE TO BE INSTALLED ACCORDING TO THE PROVISIONS OF THIS PLAN AND ARE TO BE IN CONFORMANCE WITH THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL, AND REVISIONS THERETO.
2. FOLLOWING INITIAL SOIL DISTURBANCE OR RE-DISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION IS REQUIRED WITHIN THREE (3) CALENDAR DAYS AS TO THE SURFACE OF ALL PERIMETER CONTROLS, DIKES, SWALES, DITCHES, PERIMETER SLOPES, AND ALL SLOPES STEEPER THAN 3 HORIZONTAL TO 1 VERTICAL (3:1); AND SEVEN (7) CALENDAR DAYS AS TO ALL OTHER DISTURBED AREAS ON THE PROJECT SITE EXCEPT FOR THOSE AREAS UNDER ACTIVE GRADING. 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 TOPSOIL (SEC. B-4-2), PERMANENT SEEDING (SEC. B-4-5), TEMPORARY SEEDING (SEC. B-4-4) AND MULCHING (SEC. B-4-3). TEMPORARY STABILIZATION WITH MULCH ALONE CAN ONLY BE APPLIED BETWEEN THE FALL AND SPRING SEEDING DATES IF THE GROUND IS FROZEN. INCREMENTAL STABILIZATION (SEC. B-4-1) SPECIFICATIONS SHALL BE ENFORCED IN AREAS WITH >15' OF CUT AND/OR FILL. STOCKPILES (SEC. B-4-B) IN EXCESS OF 20 FT. MUST BE BENCHED WITH STABLE OUTLET. ALL CONCENTRATED FLOW, STEEP SLOPE, AND HIGHLY ERODIBLE AREAS SHALL RECEIVE SOIL STABILIZATION MATTING (SEC. B-4-6).
3. ALL SEDIMENT CONTROL STRUCTURES SHALL BE MAINTAINED IN OPERATIVE CONDITION UNTIL PERMISSION FOR THEIR REMOVAL HAS BEEN OBTAINED FROM THE CID. SITE ANALYSIS:
TOTAL AREA OF SITE: 7.29 ACRES
AREA DISTURBED: 7.29 ACRES
AREA TO BE ROOFED OR PAVED: 3.2 ACRES (RESTORE EXISTING PAVEMENT)
AREA TO BE VEGETATIVELY STABILIZED: 4.09 ACRES
TOTAL CUT: 15,200 CU. YDS.
TOTAL FILL: 12,800 CU. YDS.
OFFSITE WASTE/BORROW AREA LOCATION: TO BE DETERMINED
4. ANY SEDIMENT CONTROL PRACTICE WHICH IS DISTURBED BY GRADING ACTIVITY FOR PLACEMENT OF UTILITIES MUST BE REPAIRED ON THE SAME DAY OF DISTURBANCE.
5. ADDITIONAL SEDIMENT CONTROL MUST BE PROVIDED, IF DEEMED NECESSARY BY THE CID. THE SITE AND ALL CONTROLS SHALL BE INSPECTED BY THE CONTRACTOR WEEKLY, AND THE NEXT DAY AFTER EACH RAIN EVENT. A WRITTEN REPORT BY THE CONTRACTOR, MADE AVAILABLE UPON REQUEST, IS PART OF EVERY INSPECTION AND SHOULD INCLUDE:
- INSPECTION DATE
- INSPECTION TYPE (ROUTINE, PRE-STORM EVENT, DURING RAIN EVENT)
- NAME AND TITLE OF INSPECTOR
- WEATHER INFORMATION (CURRENT CONDITIONS AS WELL AS TIME AND AMOUNT OF LAST RECORDED PRECIPITATION)
- BRIEF DESCRIPTION OF PROJECT'S STATUS (E.G., PERCENT COMPLETE) AND/OR CURRENT ACTIVITIES
- EVIDENCE OF SEDIMENT DISCHARGES
- IDENTIFICATION OF PLAN DEFICIENCIES
- IDENTIFICATION OF SEDIMENT CONTROLS THAT REQUIRE MAINTENANCE
- IDENTIFICATION OF MISSING OR IMPROPERLY INSTALLED SEDIMENT CONTROLS
- COMPLIANCE STATUS REGARDING THE SEQUENCE OF CONSTRUCTION AND STABILIZATION REQUIREMENTS
- PHOTOGRAPHS
- MONITORING/SAMPLING
- MAINTENANCE AND/OR CORRECTIVE ACTION PERFORMED
- OTHER INSPECTION ITEMS AS REQUIRED BY THE GENERAL PERMIT FOR STORMWATER ASSOCIATED WITH CONSTRUCTION ACTIVITIES (NPDES, MDE).
6. TRENCHES FOR THE CONSTRUCTION OF UTILITIES IS LIMITED TO THREE PIPE LENGTHS OR THAT WHICH CAN AND SHALL BE BACK-FILLED AND STABILIZED BY THE END OF EACH WORKDAY, WHICHEVER IS SHORTER.
7. ANY MAJOR CHANGES OR REVISIONS TO THE PLAN OR SEQUENCE OF CONSTRUCTION MUST BE REVIEWED AND APPROVED BY THE HSCD PRIOR TO PROCEEDING WITH CONSTRUCTION. MINOR REVISIONS MAY ALLOWED BY THE CID PER THE LIST OF HSCD-APPROVED FIELD CHANGES.
8. DISTURBANCE SHALL NOT OCCUR OUTSIDE THE L.O.D. A PROJECT IS TO BE SEQUENCED SO THAT SEEDING ACTIVITIES BEGIN ON ONE GRADING UNIT (MAXIMUM ACREAGE OF 30 AC. PER GRADING UNIT) AT A TIME. WORK MAY PROCEED TO A SUBSEQUENT GRADING UNIT WHEN AT LEAST 50 PERCENT OF THE DISTURBED AREA IN THE PRECEDING GRADING UNIT HAS BEEN STABILIZED AND APPROVED BY THE CID, UNLESS OTHERWISE SPECIFIED AND APPROVED BY THE CID, NO MORE THAN 30 ACRES CUMULATIVELY MAY BE DISTURBED AT A GIVEN TIME.
9. WASH WATER FROM ANY EQUIPMENT, VEHICLES, WHEELS, PAVEMENT, AND OTHER SOURCES MUST BE TREATED IN A SEDIMENT BASIN OR OTHER APPROVED WASHOUT STRUCTURE.
10. TOPSOIL SHALL BE STOCKPILED AND PRESERVED ON-SITE FOR REDISTRIBUTION ONTO FINAL GRADE. ALL SILT FENCE AND SUPER SILT FENCE SHALL BE PLACED ON-THE-CONTOUR, AND BE IMBRICATED AT 25' MINIMUM INTERVALS, WITH LOWER ENDS CURLED UPHILL BY 2' IN ELEVATION. STREAM CHANNELS MUST NOT BE DISTURBED DURING THE FOLLOWING RESTRICTED TIME PERIODS (INCLUSIVE):
- USE I AND IP MARCH 1 - JUNE 15
- USE III AND IIP OCTOBER 1 - APRIL 30
- USE IV MARCH 1 - MAY 31
11. A COPY OF THIS PLAN, THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL, AND ASSOCIATED PERMITS SHALL BE ON-SITE AND AVAILABLE WHEN THE SITE IS ACTIVE.

GENERAL SOIL EROSION AND SEDIMENT CONTROL NOTES

- 1. EARTHWORK QUANTITIES SHOWN HEREIN ARE APPROXIMATE AND ARE FOR THE REVIEWING AGENCY USE ONLY. THE CONTRACTOR SHALL MAKE HIS OWN DETERMINATION OF EARTHWORK QUANTITIES.
2. CONSTRUCTION SHALL BEGIN AFTER THE RECEIPT OF ALL NECESSARY FEDERAL, STATE, COUNTY AND LOCAL PERMITS. THE CONTRACTOR IS RESPONSIBLE FOR ENSURING THAT ALL PERMITS HAVE BEEN OBTAINED AND THAT COPIES ARE AVAILABLE ON THE PROJECT SITE.
3. A COPY OF THE APPROVED AND SIGNED SOIL EROSION AND SEDIMENT CONTROL PLAN MUST BE MAINTAINED ON THE PROJECT SITE AT ALL TIMES DURING CONSTRUCTION.
4. AT LEAST SEVEN (7) DAYS BEFORE THE INITIATION OF ANY EARTH DISTURBANCE ACTIVITIES, THE CONTRACTOR SHALL INVITE ANY AND ALL SUBCONTRACTORS INVOLVED IN THOSE UTILITIES AND THE HOWARD COUNTY DEPARTMENT OF LICENSES AND PERMITS, SEDIMENT CONTROL DIVISION TO A PRE-CONSTRUCTION MEETING ON THE PROJECT SITE.
5. MODIFICATIONS TO THE APPROVED EROSION AND SEDIMENT CONTROL PLANS MUST BE REVIEWED AND APPROVED BY THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.
6. THE CONTRACTOR IS RESPONSIBLE FOR THE IMPLEMENTATION, INSPECTION AND MAINTENANCE OF ALL EROSION AND SEDIMENTATION CONTROLS ON THE PROJECT SITE.
7. SUITABLE EXCAVATED MATERIAL SHALL BE UTILIZED AS UTILITY TRENCH BACKFILL. MATERIAL DETERMINED TO BE UNSUITABLE FOR USE AS BACKFILL SHALL BE REMOVED FROM THE PROJECT SITE AT THE END OF EACH WORKING DAY.
8. THE SITE SHALL, AT ALL TIMES, BE GRADED AND MAINTAINED SUCH THAT ALL STORMWATER RUNOFF FROM DISTURBED AREAS IS DIVERTED TO SOIL EROSION AND SEDIMENT CONTROL FACILITIES.
9. ALL SOIL EROSION AND SEDIMENT CONTROL FACILITIES SHALL BE INSPECTED AND MAINTAINED ON A REGULAR (WEEKLY) BASIS AND AFTER EVERY STORM EVENT. THE CONTRACTOR SHALL MAINTAIN A WRITTEN LOG OF ALL SUCH INSPECTIONS INCLUDING ANY DEFICIENCIES AND REPAIRS PERFORMED. THE CONTRACTOR SHALL PROVIDE COPIES OF ALL INSPECTION LOGS TO THE HOWARD SOIL CONSERVATION DISTRICT UPON REQUEST.
10. PAVED ROADWAYS SHALL BE KEPT CLEAN AND FREE OF SEDIMENT AT ALL TIMES. ANY SEDIMENT TRACKED ONTO A PAVED ROADWAY SHALL BE COLLECTED AND RETURNED TO THE PROJECT SITE AT THE END OF EACH WORKING DAY.
11. ALL DEWATERING OPERATIONS MUST DISCHARGE TO AN APPROPRIATE SEDIMENT FILTRATION DEVICE. THE SEDIMENT FILTER MUST BE PLACED SO AS NOT TO CAUSE EROSION OF THE DOWNSTREAM AREA. FIELD PLACEMENT OF THE DEVICE MUST BE APPROVED BY THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR PRIOR TO COMMENCEMENT OF DEWATERING OPERATIONS.
12. CONCRETE TRUCK WASHOUT AREAS SHALL BE PROVIDED AS NEEDED AND MAINTAINED ON A CONTINUAL BASIS. FIELD LOCATION OF CONCRETE WASHOUT AREAS SHALL BE APPROVED BY THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.

SOILS TABLE with columns: SYMBOL, DESCRIPTION, SLOPES, HYDRIC COMPONENTS?, HYDROLOGIC SOIL GROUP, LIMITATIONS. Rows include BaA BAILE SILT LOAM, Co CODORUS AND HATBORO SILT LOAMS, GbB GLADSTONE LOAM, etc.

RESOLUTIONS TO SOIL LIMITATIONS

- 1. CUTBANKS CAVE: UTILIZE PROPER SLOPING AND BENCHING; SHORING; OR TRENCH BOXES TO SUPPORT EXCAVATIONS AS NECESSARY TO PREVENT CAVE-INS.
2. SEASONAL HIGH WATER TABLE: PERFORM WORK DURING DRY PERIODS TO THE EXTENT PRACTICAL. DEWATER EXCAVATIONS THROUGH AN APPROVED SEDIMENT FILTERING DEVICE AS NECESSARY.
3. SLOW PERCOLATION: PERFORM WORK DURING DRY PERIODS TO THE EXTENT PRACTICAL. DEWATER EXCAVATIONS THROUGH AN APPROVED SEDIMENT FILTERING DEVICE AS NECESSARY.
4. PONDING / FLOODING: PERFORM WORK DURING DRY PERIODS TO THE EXTENT PRACTICAL. INSTALL TEMPORARY DIVERSIONS AROUND WORK AREA AS NEEDED TO ROUTE CLEAN SURFACE WATERS AWAY FROM DISTURBED AREAS. DEWATER EXCAVATIONS THROUGH AN APPROVED SEDIMENT FILTERING DEVICE AS NECESSARY.

BEST MANAGEMENT PRACTICES FOR WORKING IN NON-TIDAL WETLANDS, WETLAND BUFFERS AND 100-YEAR FLOODPLAINS

- 1. FOR UTILITY LINE INSTALLATION, STRIP, STOCKPILE AND MAINTAIN SEPARATELY THE TOP 6" OF SOIL MATERIAL FROM THE NON-TIDAL WETLANDS AND BUFFER TO BE REPLACED AS THE TOP LAYER OF BACKFILL MATERIAL.
2. NO EXCESS FILL, CONSTRUCTION MATERIAL OR DEBRIS SHALL BE STOCKPILED OR STORED IN NON-TIDAL WETLANDS, NON-TIDAL WETLAND BUFFERS, WATERWAYS OR THE 100-YEAR FLOODPLAIN.
3. PLACE MATERIALS IN A LOCATION AND MANNER WHICH DOES NOT ADVERSELY IMPACT SURFACE OR SUBSURFACE WATER FLOW INTO OR OUT OF NON-TIDAL WETLANDS, NON-TIDAL WETLANDS BUFFERS, WATERWAYS OR THE 100-YEAR FLOODPLAIN.
4. DO NOT USE 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 ONLY CLEAN FILL MATERIAL FREE OF WASTE METAL PRODUCTS, UNSIGHTLY DEBRIS, TOXIC MATERIAL OR OTHER DELETERIOUS SUBSTANCE.
5. PLACE HEAVY EQUIPMENT ON MATS OR SUITABLY OPERATE THE EQUIPMENT TO PREVENT DAMAGE TO NON-TIDAL WETLANDS, WETLAND BUFFERS, WATERWAYS OR THE 100-YEAR FLOODPLAIN.
6. REPAIR AND MAINTAIN ANY SERVICEABLE STRUCTURE OR FILL SO THERE IS NO PERMANENT LOSS OF NON-TIDAL WETLANDS, WETLAND BUFFERS, OR WATERWAYS OR PERMANENT MODIFICATION TO THE 100-YEAR FLOODPLAIN IN EXCESS OF THAT LOSS UNDER THE ORIGINALLY AUTHORIZED STRUCTURE OR FILL.
7. RECTIFY ANY NON-TIDAL WETLANDS, WETLAND BUFFERS, WATERWAYS OR 100-YEAR FLOODPLAIN TEMPORARILY IMPACTED BY ANY CONSTRUCTION.
8. ALL STABILIZATION WITHIN NON-TIDAL WETLANDS AND NON-TIDAL WETLAND BUFFERS 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 NON-TIDAL WETLANDS AND WATERWAYS DIVISION. KENTUCKY 31 FESCUE SHALL NOT BE UTILIZED IN WETLAND OR BUFFER AREAS. THE AREA SHOULD BE SEEDING AND MULCHED TO REDUCE EROSION AFTER CONSTRUCTION ACTIVITIES HAVE BEEN COMPLETED.
9. AFTER UTILITY LINE CONSTRUCTION HAS BEEN COMPLETED, MAKE POST-CONSTRUCTION GRADES AND ELEVATIONS THE SAME AS THE ORIGINAL GRADES AND ELEVATIONS IN TEMPORARILY IMPACTED AREAS.
10. 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.
11. STORMWATER RUNOFF FROM IMPERVIOUS SURFACES SHALL BE CONTROLLED TO PREVENT THE WASHING OF DEBRIS INTO THE WATERWAY.
12. 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.
13. NO REMOVAL OF VEGETATION, GRADING, FILLING, DRAINING OR OTHER ALTERATION OF NON-TIDAL WETLANDS OR BUFFER OUTSIDE THE LIMITS OF DISTURBANCE SHALL OCCUR WITHOUT WRITTEN AUTHORIZATION FROM THE WATER MANAGEMENT ADMINISTRATION.

PERMANENT SEEDING SUMMARY table with columns: SPECIES, APPLICATION RATE, SEEDING DATES, SEEDING DEPTHS, FERTILIZER RATE, LIME RATE. Rows include TALL FESCUE, KENTUCKY BLUEGRASS, PERENNIAL RYEGRASS, etc.

TEMPORARY SEEDING SUMMARY table with columns: SPECIES, APPLICATION RATE, SEEDING DATES, SEEDING DEPTHS, FERTILIZER RATE, LIME RATE. Rows include ANNUAL RYEGRASS, FOXTAIL MILLET.

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. Signature: [Signature] 18523, Date: 9/22/15

RECORD DRAWINGS

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND. Includes signatures and dates for Director of Public Works and Chief - Bureau of Engineering.

O'Brien & Gere logo and address: 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 LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 18523, EXPIRATION DATE 12/08/2015. Includes State of Maryland seal.

Revision table with columns: DSN, DRN, CHK, DATE, BY, NO., REVISION. Includes entries for RECORD DRAWINGS, ADDENDUM NO. 2, PERMIT SUBMITTAL.

SOIL EROSION AND SEDIMENT CONTROL PLAN NOTES AND DETAILS - 1. 600' SCALE MAP NO. 30 BLOCK NO. 36

U.S. ROUTE 29 WATER TRANSMISSION MAIN SOUTH ENTRANCE ROAD TO LITTLE PATUXENT PARKWAY. CAPITAL PROJECT: W-8296 CONTRACT NO.: 44-4776 ELECTION DISTRICT: 5 HOWARD COUNTY, MARYLAND

DETAIL B-1 STABILIZED CONSTRUCTION ENTRANCE

STANDARD SYMBOL: SCE

CONSTRUCTION SPECIFICATIONS

- PLACE STABILIZED CONSTRUCTION ENTRANCE IN ACCORDANCE WITH THE APPROVED PLAN. VEHICLES MUST TRAVEL OVER THE ENTIRE LENGTH OF THE SCE. USE MINIMUM LENGTH OF 50 FEET (*30 FEET FOR SINGLE RESIDENCE LOT). USE MINIMUM WIDTH OF 10 FEET. FLARE SCE 10 FEET MINIMUM AT THE EXISTING ROAD TO PROVIDE A TURNING RADIUS.
- PIPE ALL SURFACE WATER FLOWING TO OR DIVERTED TOWARD THE SCE UNDER THE ENTRANCE. MAINTAINING POSITIVE DRAINAGE. PROTECT PIPE INSTALLED THROUGH THE SCE WITH A MOUNTABLE BERM WITH 5:1 SLOPES AND A MINIMUM OF 12 INCHES OF STONE OVER THE PIPE. PROVIDE PIPE AS SPECIFIED ON APPROVED PLAN. WHEN THE SCE IS LOCATED AT A HIGH SPOT AND HAS NO DRAINAGE TO CONVEY, A PIPE IS NOT NECESSARY. A MOUNTABLE BERM IS REQUIRED WHEN SCE IS NOT LOCATED AT A HIGH SPOT.
- PREPARE SUBGRADE AND PLACE NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS.
- PLACE CRUSHED AGGREGATE (2 TO 3 INCHES IN SIZE) OR EQUIVALENT RECYCLED CONCRETE (WITHOUT REBAR) AT LEAST 6 INCHES DEEP OVER THE LENGTH AND WIDTH OF THE SCE.
- MAINTAIN ENTRANCE IN A CONDITION THAT MINIMIZES TRACKING OF SEDIMENT. ADD STONE OR MAKE OTHER REPAIRS AS CONDITIONS DEMAND TO MAINTAIN CLEAN SURFACE, MOUNTABLE BERM, AND SPECIFIED DIMENSIONS. IMMEDIATELY REMOVE STONE AND/OR SEDIMENT SPILLED, DROPPED, OR TRACKED ONTO ADJACENT ROADWAY BY VACUUMING, SCRAPING, AND/OR SWEEPING. WASHING ROADWAY TO REMOVE MUD TRACKED ONTO PAVEMENT IS NOT ACCEPTABLE UNLESS WASH WATER IS DIRECTED TO AN APPROVED SEDIMENT CONTROL PRACTICE.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL
 U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE 2011 MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL E-1 SILT FENCE

STANDARD SYMBOL: SF

CONSTRUCTION SPECIFICATIONS

- USE WOOD POSTS 1 1/2 x 1 1/2 x 1/2 INCH (MINIMUM) SQUARE CUT OF SOUND QUALITY HARDWOOD. AS AN ALTERNATIVE TO WOODEN POST USE STANDARD "T" OR "U" SECTION STEEL POSTS WEIGHING NOT LESS THAN 1 POUND PER LINEAR FOOT.
- USE 36 INCH MINIMUM POSTS DRIVEN 16 INCH MINIMUM INTO GROUND NO MORE THAN 6 FEET APART.
- USE WOVEN SLIT FILM GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS AND FASTEN GEOTEXTILE SECURELY TO UPSLOPE SIDE OF FENCE POSTS WITH WIRE TIES OR STAPLES AT TOP AND MID-SECTION.
- PROVIDE MANUFACTURER CERTIFICATION TO THE AUTHORIZED REPRESENTATIVE OF THE INSPECTION/ENFORCEMENT AUTHORITY SHOWING THAT THE GEOTEXTILE USED MEETS THE REQUIREMENTS IN SECTION H-1 MATERIALS.
- EMBED GEOTEXTILE A MINIMUM OF 8 INCHES VERTICALLY INTO THE GROUND. BACKFILL AND COMPACT THE SOIL ON BOTH SIDES OF FABRIC.
- WHERE TWO SECTIONS OF GEOTEXTILE ADJOIN: OVERLAP, TWIST, AND STAPLE TO POST IN ACCORDANCE WITH THIS DETAIL.
- EXTEND BOTH ENDS OF THE SILT FENCE A MINIMUM OF FIVE HORIZONTAL FEET UPSLOPE AT 45 DEGREES TO THE MAIN FENCE ALIGNMENT TO PREVENT RUNOFF FROM GOING AROUND THE ENDS OF THE SILT FENCE.
- REMOVE ACCUMULATED SEDIMENT AND DEBRIS WHEN BULGES DEVELOP IN SILT FENCE OR WHEN SEDIMENT REACHES 25% OF FENCE HEIGHT. REPLACE GEOTEXTILE IF TORN, IF UNDERMINING OCCURS, REINSTALL FENCE.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL
 U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE 2011 MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL E-6 FILTER LOG

STANDARD SYMBOL: FL-18
 DESIGNATION FL-18 REFERS TO 18 INCH DIAMETER FILTER LOG.

CONSTRUCTION SPECIFICATIONS

- PRIOR TO INSTALLATION, CLEAR ALL OBSTRUCTIONS INCLUDING ROCKS, CLODS, AND DEBRIS GREATER THAN ONE INCH THAT MAY INTERFERE WITH PROPER FUNCTION OF FILTER LOG.
- FILL LOG NETTING UNIFORMLY WITH COMPOST (IN ACCORDANCE WITH SECTION H-1 MATERIALS), OR OTHER APPROVED BIODEGRADABLE MATERIAL TO DESIRED LENGTH SUCH THAT LOGS DO NOT DEFORM.
- INSTALL FILTER LOGS PERPENDICULAR TO THE FLOW DIRECTION AND PARALLEL TO THE SLOPE WITH THE BEGINNING AND END OF THE INSTALLATION POINTING SLIGHTLY UP THE SLOPE CREATING A "J" SHAPE AT EACH END TO PREVENT BYPASS.
- FOR UNTRENCHED INSTALLATION BLOW OR HAND PLACE MULCH OR COMPOST ON UPHILL SIDE OF THE SLOPE ALONG LOG.
- STAKE FILTER LOG EVERY 4 FEET OR CLOSER ALONG ENTIRE LENGTH OF LOG OR TRENCH LOG INTO GROUND A MINIMUM OF 4 INCHES AND STAKE LOG EVERY 8 FEET OR CLOSER.
- USE STAKES WITH A MINIMUM NOMINAL CROSS SECTION OF 2X2 INCH AND OF SUFFICIENT LENGTH TO ATTAIN A MINIMUM OF 12 INCHES INTO THE GROUND AND 3 INCHES PROTRUDING ABOVE LOG.
- WHEN MORE THAN ONE LOG IS NEEDED, OVERLAP ENDS 12 INCHES MINIMUM AND STAKE.
- REMOVE SEDIMENT WHEN IT HAS ACCUMULATED TO A DEPTH OF 1/2 THE EXPOSED HEIGHT OF LOG AND REPLACE MULCH. REPLACE FILTER LOG IF TORN, REINSTALL FILTER LOG IF UNDERMINING OR DISLOGGING OCCURS. REPLACE CLOGGED FILTER LOGS. FOR PERMANENT APPLICATIONS, ESTABLISH AND CONTINUOUSLY MEET REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL
 U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE 2011 MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL F-4 FILTER BAG

STANDARD SYMBOL: FB

CONSTRUCTION SPECIFICATIONS

- TIGHTLY SEAL SLEEVE AROUND THE PUMP DISCHARGE HOSE WITH A STRAP OR SIMILAR DEVICE.
- PLACE FILTER BAG ON SUITABLE BASE (E.G., MULCH, LEAF/WOOD COMPOST, WOODCHIPS, SAND, OR STRAW BALES) LOCATED ON A LEVEL OR 5% MAXIMUM SLOPING SURFACE. DISCHARGE TO A STABILIZED AREA. EXTEND BASE A MINIMUM OF 12 INCHES FROM EDGES OF BAG.
- CONTROL PUMPING RATE TO PREVENT EXCESSIVE PRESSURE WITHIN THE FILTER BAG IN ACCORDANCE WITH THE MANUFACTURER RECOMMENDATIONS. AS THE BAG FILLS WITH SEDIMENT, REDUCE PUMPING RATE.
- REMOVE AND PROPERLY DISPOSE OF FILTER BAG UPON COMPLETION OF PUMPING OPERATIONS OR AFTER BAG HAS REACHED CAPACITY, WHICHEVER OCCURS FIRST. SPREAD THE DEWATERED SEDIMENT FROM THE BAG IN AN APPROVED UPLAND AREA AND STABILIZE WITH SEED AND MULCH BY THE END OF THE WORK DAY. RESTORE THE SURFACE AREA BENEATH THE BAG TO ORIGINAL CONDITION UPON REMOVAL OF THE DEVICE.
- USE NONWOVEN GEOTEXTILE WITH DOUBLE STITCHED SEAMS USING HIGH STRENGTH THREAD. SIZE SLEEVE TO ACCOMMODATE A MAXIMUM 4 INCH DIAMETER PUMP DISCHARGE HOSE. THE BAG MUST BE MANUFACTURED FROM A NONWOVEN GEOTEXTILE THAT MEETS OR EXCEEDS MINIMUM AVERAGE ROLL VALUES (MARV) FOR THE FOLLOWING:

GRAB TENSILE	250 LB	ASTM D-4632
PUNCTURE	150 LB	ASTM D-4833
FLOW RATE	70 GAL./MIN./FT ²	ASTM D-4491
PERMITIVITY (SEC ⁻¹)	1.2 SEC ⁻¹	ASTM D-4491
UV RESISTANCE	70X STRENGTH @ 500 HOURS	ASTM D-4355
APPARENT OPENING SIZE (AOS)	0.15-0.18 MM	ASTM D-4751
SEAM STRENGTH	90%	ASTM D-4632

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL
 U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE 2011 MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL B-4-6-B TEMPORARY SOIL STABILIZATION MATTING SLOPE APPLICATION

STANDARD SYMBOL: TSSMS - * lb./ft² (* INCLUDE SHEAR STRESS)

CONSTRUCTION SPECIFICATIONS

- USE MATTING THAT HAS A DESIGN VALUE FOR SHEAR STRESS EQUAL TO OR HIGHER THAN THE SHEAR STRESS DESIGNATED ON APPROVED PLANS.
- USE TEMPORARY SOIL STABILIZATION MATTING MADE OF DEGRADABLE (LASTS 6 MONTHS MINIMUM) NATURAL OR MAN-MADE FIBERS (MOSTLY ORGANIC). MAT MUST HAVE UNIFORM THICKNESS AND DISTRIBUTION OF FIBERS THROUGHOUT AND BE SHOLDER RESISTANT. CHEMICALS USED IN THE MAT MUST BE NON-LEACHING AND NON-TOXIC TO VEGETATION AND SEED GERMINATION AND NON-INJURIOUS TO THE SKIN. IF PRESENT, NETTING MUST BE EXTRUDED PLASTIC WITH A MAXIMUM MESH OPENING OF 2x2 INCHES AND SUFFICIENTLY BONDED OR SEWN ON 2 INCH CENTERS ALONG LONGITUDINAL AXIS OF THE MATERIAL TO PREVENT SEPARATION OF THE NET FROM THE PARENT MATERIAL.
- SECURE MATTING USING STEEL STAPLES, WOOD STAKES, OR BIODEGRADABLE EQUIVALENT. STAPLES MUST BE "U" OR "T" SHAPED STEEL WIRE HAVING A MINIMUM GAUGE OF NO. 11 AND NO. 8 RESPECTIVELY. "U" SHAPED STAPLES MUST AVERAGE 1 TO 1 1/2 INCHES WIDE AND BE A MINIMUM OF 6 INCHES LONG. "T" SHAPED STAPLES MUST HAVE A MINIMUM 8 INCH MAIN LEG, A MINIMUM 1 INCH SECONDARY LEG, AND A MINIMUM 4 INCH HEAD. WOOD STAKES MUST BE ROUGH-SAWN HARDWOOD, 12 TO 24 INCHES IN LENGTH, 1x3 INCH IN CROSS SECTION, AND WEDGE SHAPED AT THE BOTTOM.
- PERFORM FINAL GRADING, TOPSOIL APPLICATION, SEEDBED PREPARATION, AND PERMANENT SEEDING IN ACCORDANCE WITH SPECIFICATIONS. PLACE MATTING WITHIN 48 HOURS OF COMPLETING SEEDING OPERATIONS UNLESS END OF WORKDAY STABILIZATION IS SPECIFIED ON THE APPROVED EROSION & SEDIMENT CONTROL PLAN.
- UNROLL MATTING DOWNSLOPE. LAY MAT SMOOTHLY AND FIRMLY UPON THE SEEDBED SURFACE. AVOID STRETCHING THE MATTING.
- OVERLAP OR ABUT ROLL EDGES PER MANUFACTURER RECOMMENDATIONS. OVERLAP ROLL ENDS BY 6 INCHES (MINIMUM), WITH THE UPSLOPE MAT OVERLAPPING ON TOP OF THE DOWNSLOPE MAT.
- KEY IN THE UPSLOPE END OF MAT 6 INCHES (MINIMUM) BY DIGGING A TRENCH, PLACING THE MATTING ROLL END IN THE TRENCH, STAPLING THE MAT IN PLACE, REPLACING THE EXCAVATED MATERIAL, AND TAMPING TO SECURE THE MAT END IN THE KEY.
- STAPLE/STAKE MAT IN A STAGGERED PATTERN ON 4 FOOT (MAXIMUM) CENTERS THROUGHOUT AND 2 FOOT (MAXIMUM) CENTERS ALONG SEAMS, JOINTS, AND ROLL ENDS.
- ESTABLISH AND MAINTAIN VEGETATION SO THAT REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT ARE CONTINUOUSLY MET IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL
 U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE 2011 MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL E-1 SILT FENCE

STANDARD SYMBOL: SF

CONSTRUCTION SPECIFICATIONS

- USE WOOD POSTS 1 1/2 x 1 1/2 x 1/2 INCH (MINIMUM) SQUARE CUT OF SOUND QUALITY HARDWOOD. AS AN ALTERNATIVE TO WOODEN POST USE STANDARD "T" OR "U" SECTION STEEL POSTS WEIGHING NOT LESS THAN 1 POUND PER LINEAR FOOT.
- USE 36 INCH MINIMUM POSTS DRIVEN 16 INCH MINIMUM INTO GROUND NO MORE THAN 6 FEET APART.
- USE WOVEN SLIT FILM GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS AND FASTEN GEOTEXTILE SECURELY TO UPSLOPE SIDE OF FENCE POSTS WITH WIRE TIES OR STAPLES AT TOP AND MID-SECTION.
- PROVIDE MANUFACTURER CERTIFICATION TO THE AUTHORIZED REPRESENTATIVE OF THE INSPECTION/ENFORCEMENT AUTHORITY SHOWING THAT THE GEOTEXTILE USED MEETS THE REQUIREMENTS IN SECTION H-1 MATERIALS.
- EMBED GEOTEXTILE A MINIMUM OF 8 INCHES VERTICALLY INTO THE GROUND. BACKFILL AND COMPACT THE SOIL ON BOTH SIDES OF FABRIC.
- WHERE TWO SECTIONS OF GEOTEXTILE ADJOIN: OVERLAP, TWIST, AND STAPLE TO POST IN ACCORDANCE WITH THIS DETAIL.
- EXTEND BOTH ENDS OF THE SILT FENCE A MINIMUM OF FIVE HORIZONTAL FEET UPSLOPE AT 45 DEGREES TO THE MAIN FENCE ALIGNMENT TO PREVENT RUNOFF FROM GOING AROUND THE ENDS OF THE SILT FENCE.
- REMOVE ACCUMULATED SEDIMENT AND DEBRIS WHEN BULGES DEVELOP IN SILT FENCE OR WHEN SEDIMENT REACHES 25% OF FENCE HEIGHT. REPLACE GEOTEXTILE IF TORN, IF UNDERMINING OCCURS, REINSTALL FENCE.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL
 U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE 2011 MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL E-6 FILTER LOG

STANDARD SYMBOL: FL-18
 DESIGNATION FL-18 REFERS TO 18 INCH DIAMETER FILTER LOG.

CONSTRUCTION SPECIFICATIONS

- PRIOR TO INSTALLATION, CLEAR ALL OBSTRUCTIONS INCLUDING ROCKS, CLODS, AND DEBRIS GREATER THAN ONE INCH THAT MAY INTERFERE WITH PROPER FUNCTION OF FILTER LOG.
- FILL LOG NETTING UNIFORMLY WITH COMPOST (IN ACCORDANCE WITH SECTION H-1 MATERIALS), OR OTHER APPROVED BIODEGRADABLE MATERIAL TO DESIRED LENGTH SUCH THAT LOGS DO NOT DEFORM.
- INSTALL FILTER LOGS PERPENDICULAR TO THE FLOW DIRECTION AND PARALLEL TO THE SLOPE WITH THE BEGINNING AND END OF THE INSTALLATION POINTING SLIGHTLY UP THE SLOPE CREATING A "J" SHAPE AT EACH END TO PREVENT BYPASS.
- FOR UNTRENCHED INSTALLATION BLOW OR HAND PLACE MULCH OR COMPOST ON UPHILL SIDE OF THE SLOPE ALONG LOG.
- STAKE FILTER LOG EVERY 4 FEET OR CLOSER ALONG ENTIRE LENGTH OF LOG OR TRENCH LOG INTO GROUND A MINIMUM OF 4 INCHES AND STAKE LOG EVERY 8 FEET OR CLOSER.
- USE STAKES WITH A MINIMUM NOMINAL CROSS SECTION OF 2X2 INCH AND OF SUFFICIENT LENGTH TO ATTAIN A MINIMUM OF 12 INCHES INTO THE GROUND AND 3 INCHES PROTRUDING ABOVE LOG.
- WHEN MORE THAN ONE LOG IS NEEDED, OVERLAP ENDS 12 INCHES MINIMUM AND STAKE.
- REMOVE SEDIMENT WHEN IT HAS ACCUMULATED TO A DEPTH OF 1/2 THE EXPOSED HEIGHT OF LOG AND REPLACE MULCH. REPLACE FILTER LOG IF TORN, REINSTALL FILTER LOG IF UNDERMINING OR DISLOGGING OCCURS. REPLACE CLOGGED FILTER LOGS. FOR PERMANENT APPLICATIONS, ESTABLISH AND CONTINUOUSLY MEET REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL
 U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE 2011 MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

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.
 Signature of Engineer: [Signature] 18523 Registration Number
 Date: 9/22/15

DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND
 Director of Public Works: [Signature] 10/16/15
 Chief of Bureau of Engineering: [Signature] 9/22/15
 Chief of Bureau of Utilities: [Signature] 10/16/15
 Chief of Utility Design Division: [Signature] 9/22/15

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 FULLY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 18523, EXPIRATION DATE 12/08/2015.

DSN. BY: SMS
 DRN. BY: SMS
 CHK. BY: RJD
 DATE: 08/15

LR 1
 RJD 0
 BY NO.

SOIL EROSION AND SEDIMENT CONTROL PLAN
 NOTES AND DETAILS - 2
 RECORD DRAWINGS 11/18
 PERMIT SUBMITTAL 08/15
 REVISION DATE

U.S. ROUTE 29 WATER TRANSMISSION MAIN
 SOUTH ENTRANCE ROAD TO LITTLE PATUXENT PARKWAY
 CAPITAL PROJECT: W-8296
 CONTRACT NO.: 44-4776
 ELECTION DISTRICT: 5
 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
 SHEET 22 OF 48
 FILE NO. 33498-XXXF

DETAIL E-9-1 STANDARD INLET PROTECTION STANDARD SYMBOL SIP

TYPE A MAXIMUM DRAINAGE AREA = 1/4 ACRE
TYPE B MAXIMUM DRAINAGE AREA = 1 ACRE

1 OF 2

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE 2011 MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL E-9-2 AT-GRADE INLET PROTECTION STANDARD SYMBOL AGIP

MAXIMUM DRAINAGE AREA = 1 ACRE

CONSTRUCTION SPECIFICATIONS

- USE NONWOVEN GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS.
- LIFT GRATE AND WRAP WITH NONWOVEN GEOTEXTILE TO COMPLETELY COVER ALL OPENINGS. SECURE WITH WIRE TIES AND SET GRATE BACK IN PLACE.
- PLACE CLEAN 3/4 TO 1 1/2 INCH STONE OR EQUIVALENT RECYCLED CONCRETE 6 INCHES THICK ON THE GRATE.
- STORM DRAIN INLET PROTECTION REQUIRES FREQUENT MAINTENANCE. REMOVE ACCUMULATED SEDIMENT AFTER EACH RAIN EVENT TO MAINTAIN FUNCTION AND AVOID PREMATURE CLOGGING. IF INLET PROTECTION DOES NOT COMPLETELY DRAIN WITHIN 24 HOURS AFTER A STORM EVENT, IT IS CLOGGED. WHEN THIS OCCURS, REMOVE ACCUMULATED SEDIMENT AND CLEAN, OR REPLACE GEOTEXTILE AND STONE.

1 OF 2

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE 2011 MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL E-9-6 COMBINATION INLET PROTECTION STANDARD SYMBOL COIP

MAXIMUM DRAINAGE AREA = 1/4 ACRE

CONSTRUCTION SPECIFICATIONS

- USE NOMINAL 2 INCH x 4 INCH LUMBER.
- USE NONWOVEN GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS.
- LIFT GRATE AND WRAP WITH NONWOVEN GEOTEXTILE TO COMPLETELY COVER ALL OPENINGS, THEN SET GRATE BACK IN PLACE.
- ATTACH A CONTINUOUS PIECE OF 1/2 INCH GALVANIZED HARDWARE CLOTH WITH A MINIMUM WIDTH OF 30 INCHES AND A MINIMUM LENGTH OF 4 FEET LONGER THAN THE THROAT OPENING, TO THE 2x4 WEIR, EXTENDING 2 FEET BEYOND THROAT ON EACH SIDE.
- PLACE A CONTINUOUS PIECE OF NONWOVEN GEOTEXTILE THE SAME DIMENSIONS AS THE HARDWARE CLOTH OVER THE HARDWARE CLOTH AND SECURELY ATTACH IT TO THE WEIR.
- NAIL THE 2x4 WEIR TO THE TOP OF A 9 INCH LONG VERTICAL SPACER TO BE LOCATED BETWEEN THE WEIR AND THE INLET FACE (MAXIMUM 4 FEET APART).
- PLACE THE ASSEMBLY AGAINST THE INLET THROAT AND NAIL TO 2x4 ANCHORS (MINIMUM 2 FOOT LENGTHS OF 2x4 INCH TO THE TOP OF THE WEIR AT SPACER LOCATIONS). EXTEND 2x4 ANCHORS ACROSS THE INLET TOP AND HOLD IN PLACE BY SANDBAGS OR OTHER APPROVED ANCHORING METHOD.
- INSTALL END SPACERS A MINIMUM OF 1 FOOT BEYOND BOTH ENDS OF THE THROAT OPENING.
- FORM THE 1/2 INCH HARDWARE CLOTH AND THE GEOTEXTILE TO THE CONCRETE GUTTER AND AGAINST THE FACE OF THE CURB ON BOTH SIDES OF THE INLET. PLACE CLEAN 3/4 TO 1 1/2 INCH STONE OR EQUIVALENT RECYCLED CONCRETE OVER THE HARDWARE CLOTH AND GEOTEXTILE IN SUCH A MANNER TO PREVENT WATER FROM ENTERING THE INLET UNDER OR AROUND THE GEOTEXTILE.
- AT NON-SUMP LOCATIONS, INSTALL A TEMPORARY SANDBAG OR ASPHALT BERM TO PREVENT INLET BYPASS.
- STORM DRAIN INLET PROTECTION REQUIRES FREQUENT MAINTENANCE. REMOVE ACCUMULATED SEDIMENT AFTER EACH RAIN EVENT TO MAINTAIN FUNCTION AND AVOID PREMATURE CLOGGING. IF INLET PROTECTION DOES NOT COMPLETELY DRAIN WITHIN 24 HOURS AFTER A STORM EVENT, IT IS CLOGGED. WHEN THIS OCCURS, REMOVE ACCUMULATED SEDIMENT AND CLEAN, OR REPLACE GEOTEXTILE AND STONE.

2 OF 2

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE 2011 MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL C-9 DIVERSION FENCE STANDARD SYMBOL DF

MAXIMUM DRAINAGE AREA = 2 ACRES

CONSTRUCTION SPECIFICATIONS

- USE 42 INCH HIGH, 9 GAUGE OR THICKER CHAIN LINK FENCING (2 3/4 INCH MAXIMUM OPENING).
- USE 2 3/4 INCH DIAMETER GALVANIZED STEEL POSTS OF 0.095 INCH WALL THICKNESS AND SIX FOOT LENGTH SPACED NO FURTHER THAN 10 FEET APART. THE POSTS DO NOT NEED TO BE SET IN CONCRETE.
- FASTEN CHAIN LINK FENCE SECURELY TO THE FENCE POSTS WITH WIRE TIES.
- SECURE 10 MIL OR THICKER UV RESISTANT, IMPERMEABLE SHEETING TO CHAIN LINK FENCE WITH TIES SPACED EVERY 24 INCHES AT TOP, MID SECTION, AND BELOW GROUND SURFACE.
- EXTEND SHEETING A MINIMUM OF 4 FEET ALONG FLOW SURFACE AND EMBED END A MINIMUM OF 8 INCHES INTO GROUND. SOIL STABILIZATION MATTING MAY BE USED IN LIEU OF IMPERMEABLE SHEETING ALONG FLOW SURFACE.
- WHEN TWO SECTIONS OF SHEETING ADJOIN EACH OTHER, OVERLAP BY 6 INCHES AND FOLD WITH SEAM FACING DOWNGRADE.
- KEEP FLOW SURFACE ALONG DIVERSION FENCE AND POINT OF DISCHARGE FREE OF EROSION. REMOVE ACCUMULATED SEDIMENT AND DEBRIS. MAINTAIN POSITIVE DRAINAGE. REPLACE IMPERMEABLE SHEETING IF TORN. IF UNDERMINING OCCURS, REINSTALL FENCE.

1 OF 2

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE 2011 MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL E-9-1 STANDARD INLET PROTECTION STANDARD SYMBOL SIP

CONSTRUCTION SPECIFICATIONS

- USE WOVEN SLIT FILM GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS.
- EXCAVATE COMPLETELY AROUND THE INLET TO A DEPTH OF 18 INCHES BELOW THE NOTCH ELEVATION.
- FOR TYPE A, USE NOMINAL 2 INCH x 4 INCH CONSTRUCTION GRADE LUMBER POSTS, DRIVEN 1 FOOT INTO THE GROUND AT EACH CORNER OF THE INLET. PLACE NAIL STRIPS BETWEEN THE POSTS ON THE ENDS OF THE INLET. ASSEMBLE THE TOP PORTION OF THE 2x4 FRAME AS SHOWN. STRETCH 1/2 INCH GALVANIZED HARDWARE CLOTH TIGHTLY AROUND THE FRAME AND FASTEN SECURELY. FASTEN GEOTEXTILE SECURELY TO THE HARDWARE CLOTH WITH TIES SPACED EVERY 24 INCHES AT THE TOP AND MID SECTION. EMBED GEOTEXTILE AND HARDWARE CLOTH A MINIMUM OF 18 INCHES BELOW THE WEIR CREST. THE ENDS OF THE GEOTEXTILE MUST MEET AT A POST, BE OVERLAPPED AND FOLDED, THEN FASTENED TO THE POST.
- FOR TYPE B, USE 2 3/4 INCH DIAMETER GALVANIZED STEEL POSTS OF 0.095 INCH WALL THICKNESS AND 6 FOOT LENGTH, DRIVEN A MINIMUM OF 36 INCHES BELOW THE WEIR CREST AT EACH CORNER OF THE STRUCTURE. FASTEN 9 GAUGE OR HEAVIER CHAIN LINK FENCE, 42 INCHES IN HEIGHT, SECURELY TO THE FENCE POSTS WITH WIRE TIES. FASTEN GEOTEXTILE SECURELY TO THE CHAIN LINK FENCE WITH TIES SPACED EVERY 24 INCHES AT THE TOP AND MID SECTION. EMBED GEOTEXTILE AND CHAIN LINK FENCE A MINIMUM OF 18 INCHES BELOW THE WEIR CREST.
- BACKFILL AROUND THE INLET IN LOOSE 4 INCH LIFTS AND COMPACT UNTIL SOIL IS LEVEL WITH THE NOTCH ELEVATION ON THE ENDS AND TOP ELEVATION ON THE SIDES.
- STORM DRAIN INLET PROTECTION REQUIRES FREQUENT MAINTENANCE. REMOVE ACCUMULATED SEDIMENT AFTER EACH RAIN EVENT TO MAINTAIN FUNCTION AND AVOID PREMATURE CLOGGING. IF INLET PROTECTION DOES NOT COMPLETELY DRAIN WITHIN 24 HOURS AFTER A STORM EVENT, IT IS CLOGGED. WHEN THIS OCCURS, REMOVE ACCUMULATED SEDIMENT AND CLEAN, OR REPLACE GEOTEXTILE AND STONE.

2 OF 2

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE 2011 MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL E-9-3 CURB INLET PROTECTION STANDARD SYMBOL CIP

MAXIMUM DRAINAGE AREA = 1/4 ACRE

CONSTRUCTION SPECIFICATIONS

- USE NOMINAL 2 INCH x 4 INCH LUMBER.
- USE NONWOVEN GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS.
- NAIL THE 2x4 WEIR TO 9 INCH LONG VERTICAL SPACERS (MAXIMUM 6 FEET APART).
- ATTACH A CONTINUOUS PIECE OF 1/2 INCH GALVANIZED HARDWARE CLOTH, WITH A MINIMUM WIDTH OF 30 INCHES AND A MINIMUM LENGTH OF 4 FEET LONGER THAN THE THROAT OPENING, TO THE 2x4 WEIR, EXTENDING IT 2 FEET BEYOND THROAT ON EACH SIDE.
- PLACE A CONTINUOUS PIECE OF NONWOVEN GEOTEXTILE OF THE SAME DIMENSIONS AS THE HARDWARE CLOTH OVER THE HARDWARE CLOTH AND SECURELY ATTACH IT TO THE 2x4 WEIR.
- PLACE THE ASSEMBLY AGAINST THE INLET THROAT AND NAIL TO 2x4 ANCHORS (MINIMUM 2 FOOT LENGTH). EXTEND THE ANCHORS ACROSS THE INLET TOP AND HOLD IN PLACE BY SANDBAGS OR OTHER APPROVED ANCHORING METHOD.
- INSTALL END SPACERS A MINIMUM OF 1 FOOT BEYOND THE ENDS OF THE THROAT OPENING.
- FORM THE HARDWARE CLOTH AND THE GEOTEXTILE TO THE CONCRETE GUTTER AND FACE OF CURB TO SPAN THE INLET OPENING. COVER THE HARDWARE CLOTH AND GEOTEXTILE WITH CLEAN 3/4 TO 1 1/2 INCH STONE OR EQUIVALENT RECYCLED CONCRETE.
- AT NON-SUMP LOCATIONS, INSTALL A TEMPORARY SANDBAG OR ASPHALT BERM TO PREVENT INLET BYPASS.
- STORM DRAIN INLET PROTECTION REQUIRES FREQUENT MAINTENANCE. REMOVE ACCUMULATED SEDIMENT AFTER EACH RAIN EVENT TO MAINTAIN FUNCTION AND AVOID PREMATURE CLOGGING. IF INLET PROTECTION DOES NOT COMPLETELY DRAIN WITHIN 24 HOURS AFTER A STORM EVENT, IT IS CLOGGED. WHEN THIS OCCURS, REMOVE ACCUMULATED SEDIMENT AND CLEAN, OR REPLACE GEOTEXTILE AND STONE.

1 OF 2

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE 2011 MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL E-9-6 COMBINATION INLET PROTECTION STANDARD SYMBOL COIP

CONSTRUCTION SPECIFICATIONS

- USE NOMINAL 2 INCH x 4 INCH LUMBER.
- USE NONWOVEN GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS.
- LIFT GRATE AND WRAP WITH NONWOVEN GEOTEXTILE TO COMPLETELY COVER ALL OPENINGS, THEN SET GRATE BACK IN PLACE.
- ATTACH A CONTINUOUS PIECE OF 1/2 INCH GALVANIZED HARDWARE CLOTH WITH A MINIMUM WIDTH OF 30 INCHES AND A MINIMUM LENGTH OF 4 FEET LONGER THAN THE THROAT OPENING, TO THE 2x4 WEIR, EXTENDING 2 FEET BEYOND THROAT ON EACH SIDE.
- PLACE A CONTINUOUS PIECE OF NONWOVEN GEOTEXTILE THE SAME DIMENSIONS AS THE HARDWARE CLOTH OVER THE HARDWARE CLOTH AND SECURELY ATTACH IT TO THE WEIR.
- NAIL THE 2x4 WEIR TO THE TOP OF A 9 INCH LONG VERTICAL SPACER TO BE LOCATED BETWEEN THE WEIR AND THE INLET FACE (MAXIMUM 4 FEET APART).
- PLACE THE ASSEMBLY AGAINST THE INLET THROAT AND NAIL TO 2x4 ANCHORS (MINIMUM 2 FOOT LENGTHS OF 2x4 INCH TO THE TOP OF THE WEIR AT SPACER LOCATIONS). EXTEND 2x4 ANCHORS ACROSS THE INLET TOP AND HOLD IN PLACE BY SANDBAGS OR OTHER APPROVED ANCHORING METHOD.
- INSTALL END SPACERS A MINIMUM OF 1 FOOT BEYOND BOTH ENDS OF THE THROAT OPENING.
- FORM THE 1/2 INCH HARDWARE CLOTH AND THE GEOTEXTILE TO THE CONCRETE GUTTER AND AGAINST THE FACE OF THE CURB ON BOTH SIDES OF THE INLET. PLACE CLEAN 3/4 TO 1 1/2 INCH STONE OR EQUIVALENT RECYCLED CONCRETE OVER THE HARDWARE CLOTH AND GEOTEXTILE IN SUCH A MANNER TO PREVENT WATER FROM ENTERING THE INLET UNDER OR AROUND THE GEOTEXTILE.
- AT NON-SUMP LOCATIONS, INSTALL A TEMPORARY SANDBAG OR ASPHALT BERM TO PREVENT INLET BYPASS.
- STORM DRAIN INLET PROTECTION REQUIRES FREQUENT MAINTENANCE. REMOVE ACCUMULATED SEDIMENT AFTER EACH RAIN EVENT TO MAINTAIN FUNCTION AND AVOID PREMATURE CLOGGING. IF INLET PROTECTION DOES NOT COMPLETELY DRAIN WITHIN 24 HOURS AFTER A STORM EVENT, IT IS CLOGGED. WHEN THIS OCCURS, REMOVE ACCUMULATED SEDIMENT AND CLEAN, OR REPLACE GEOTEXTILE AND STONE.

2 OF 2

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE 2011 MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

TREE PROTECTION FENCE

NOTES:

- AVOID ROOT DAMAGE WHEN PLACING ANCHOR POSTS.
- FENCE SHALL BE PROPERLY MAINTAINED DURING CONSTRUCTION.

N.T.S.

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.

Signature of Engineer: *[Signature]* 18523 9/22/15
Registration Number Date

RECORD DRAWINGS

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS: *[Signature]* 10/1/15
DATE

CHIEF - BUREAU OF ENGINEERING: *[Signature]* 9/30/15
DATE

CHIEF - BUREAU OF UTILITIES: *[Signature]* 10/1/15
DATE

CHIEF, UTILITY DESIGN DIVISION: *[Signature]* PSD
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. 18523, EXPIRATION DATE 12/08/2015

STATE OF MARYLAND
ROBERT JOHN WOOD
REGISTERED PROFESSIONAL ENGINEER

DSN. BY:	SMS				
DRN. BY:	SMS				
CHK. BY:	RJD				
DATE:	08/15				
LR	1	RECORD DRAWINGS		11/18	
RJD	0	PERMIT SUBMITTAL		08/15	
BY	NO.	REVISION			

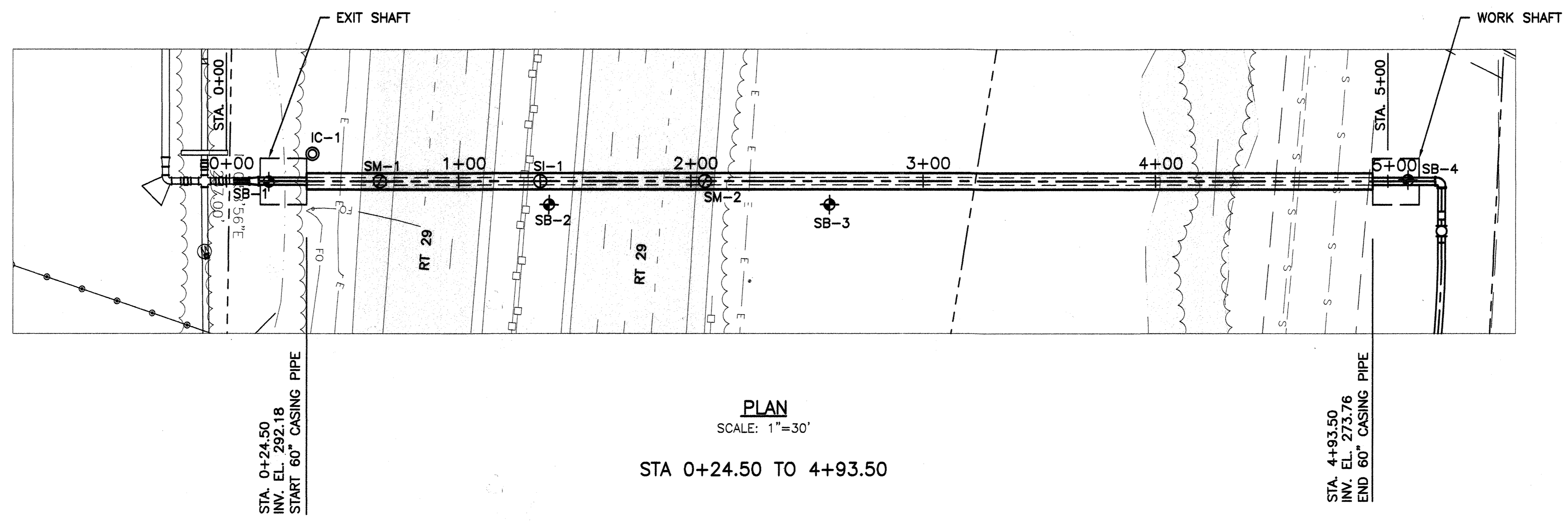
SOIL EROSION AND SEDIMENT CONTROL
NOTES AND DETAILS - 3

600' SCALE MAP NO. 30 BLOCK NO. 36

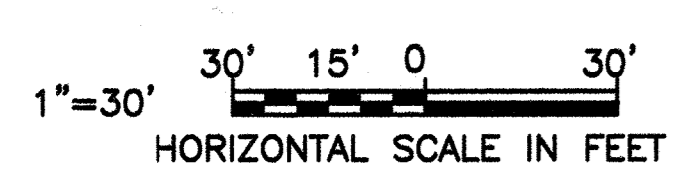
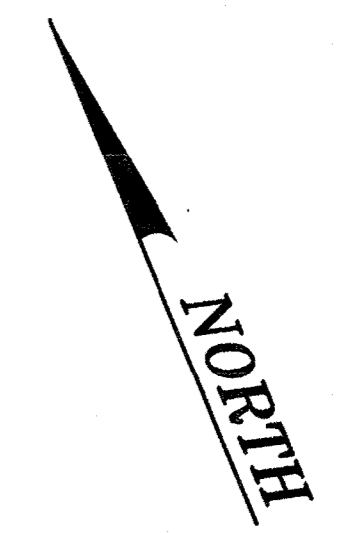
U.S. ROUTE 29 WATER TRANSMISSION MAIN
SOUTH ENTRANCE ROAD TO LITTLE PATUXENT PARKWAY

CAPITAL PROJECT: W-8296
CONTRACT NO.: 44-4776
ELECTION DISTRICT: 5
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 23 OF 48



PLAN
SCALE: 1"=30'
STA 0+24.50 TO 4+93.50



- LEGEND**
- ⊕ - BORING
 - ⊙ (IC) - INCLINOMETER
 - ⊕ (SI) - SUBSURFACE SHALLOW SETTLEMENT INDICATOR
 - ⊙ (SM) - SURFACE SETTLEMENT MARKER

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

[Signature] 10/1/15
DIRECTOR OF PUBLIC WORKS DATE

[Signature] 9/2/15
CHIEF - BUREAU OF ENGINEERING DATE

[Signature] 10/1/15
CHIEF BUREAU OF UTILITIES DATE

[Signature] 9/2/15
CHIEF, UTILITY DESIGN DIVISION PSD DATE

JEC JENNY ENGINEERING CORPORATION
CONSULTING ENGINEERS
3 Edison Place, Suite 200, New Canaan, MD
Phone: 878-278-8888 Fax: 878-278-9774
Website: www.jennyeng.com

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. 21100, EXPIRATION DATE 01/19/2016

[Signature]
21100
PROFESSIONAL ENGINEER

DSN. BY:	LJG			
DRN. BY:	JSA/RS			
CHK. BY:	LG			
DATE:	JULY 2015	LR	0	RECORD DRAWINGS
BY	NO.	REVISION	DATE	

GEOTECHNICAL INSTRUMENTATIONAL PLAN

600' SCALE MAP NO. _____ BLOCK NO. # _____

US ROUTE 29 WATER TRANSMISSION MAIN
SOUTH ENTRANCE ROAD TO LITTLE PATUXENT PARKWAY

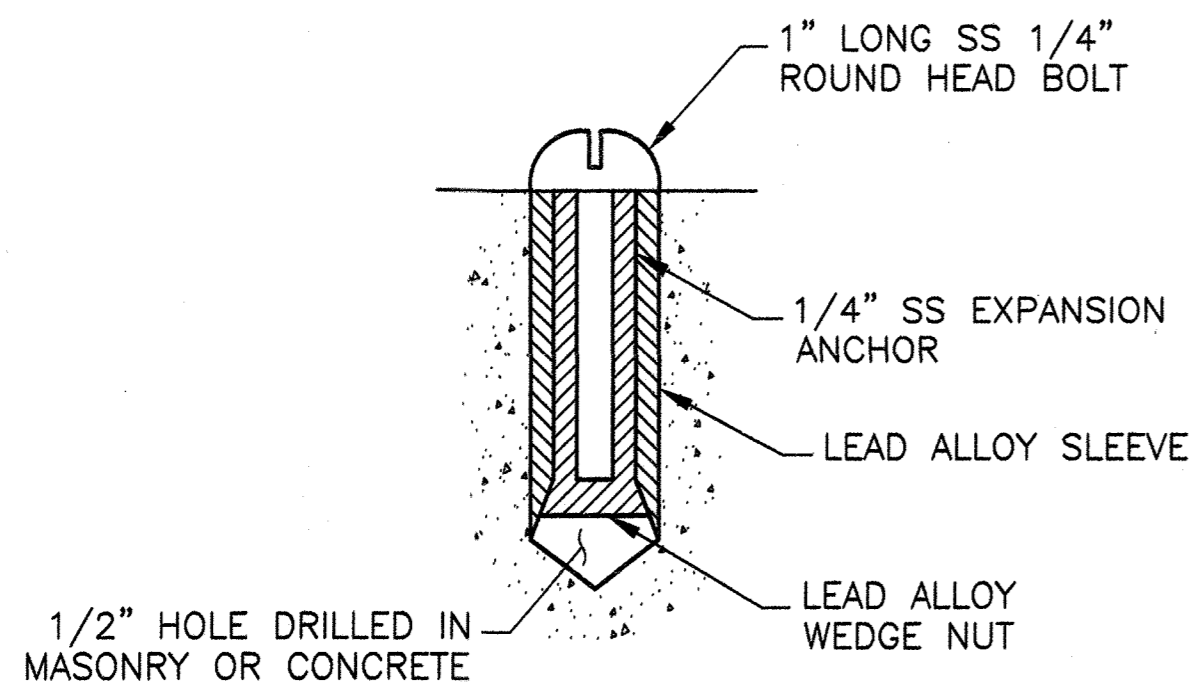
CAPITAL PROJECT: W-8296
CONTRACT NO.: 44-4776
ELECTION DISTRICT: X
HOWARD COUNTY, MARYLAND

RECORD DRAWINGS

SCALE AS SHOWN

SHEET 24 OF 48

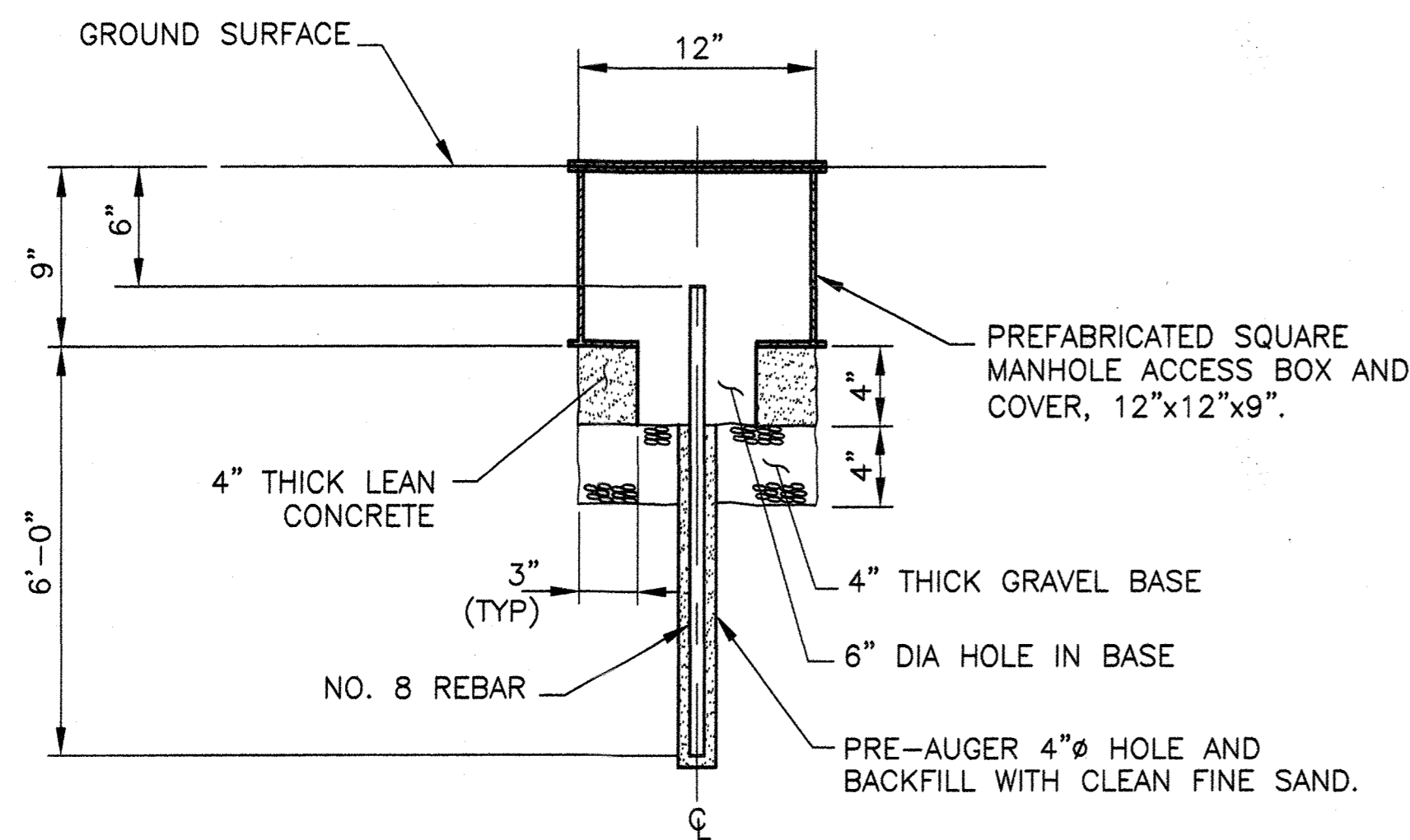
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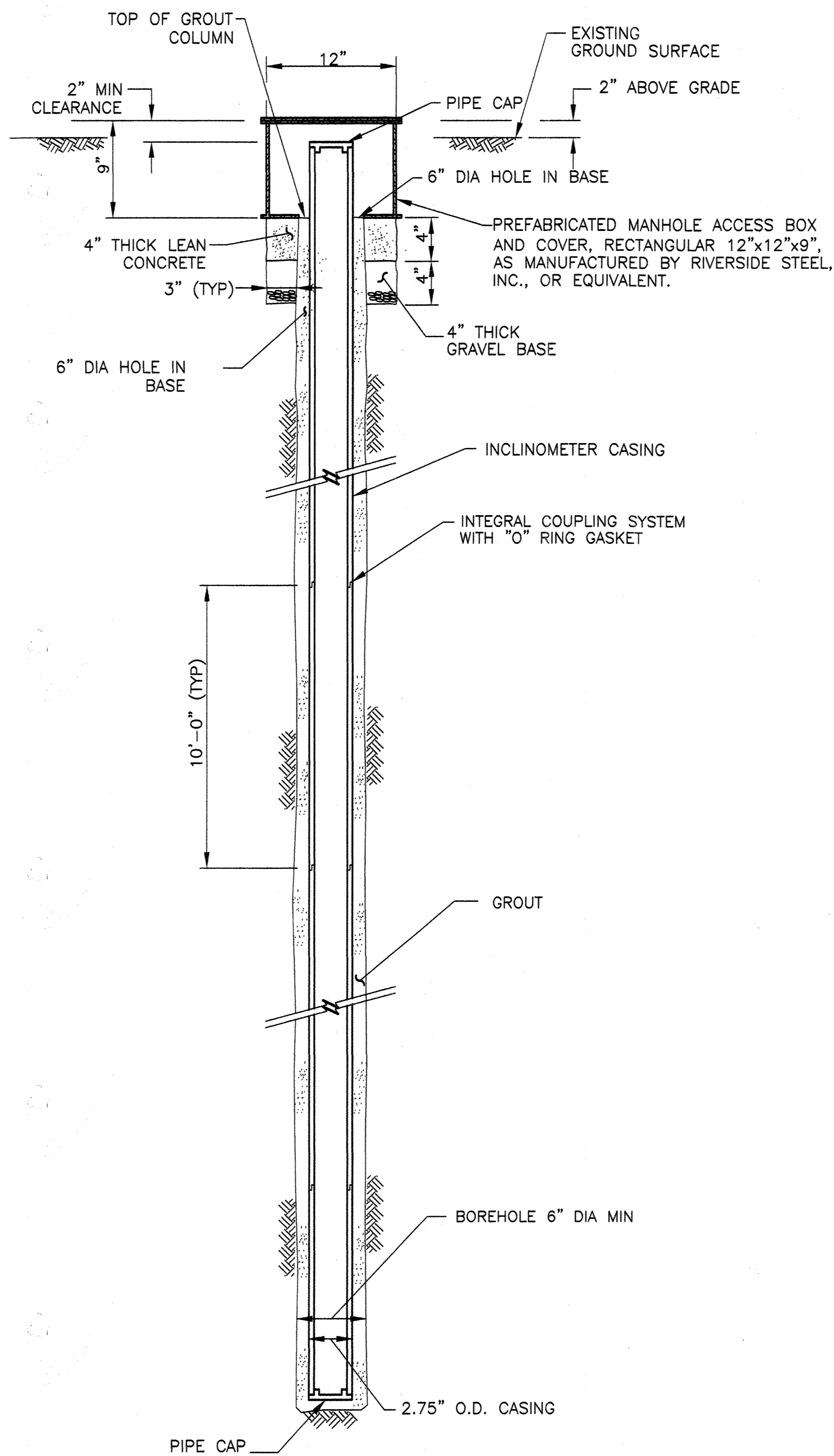
SURFACE SETTLEMENT MARKER
HORIZONTAL MASONRY, CONCRETE SURFACE OR PAVEMENT
 (SM)

NOTE:

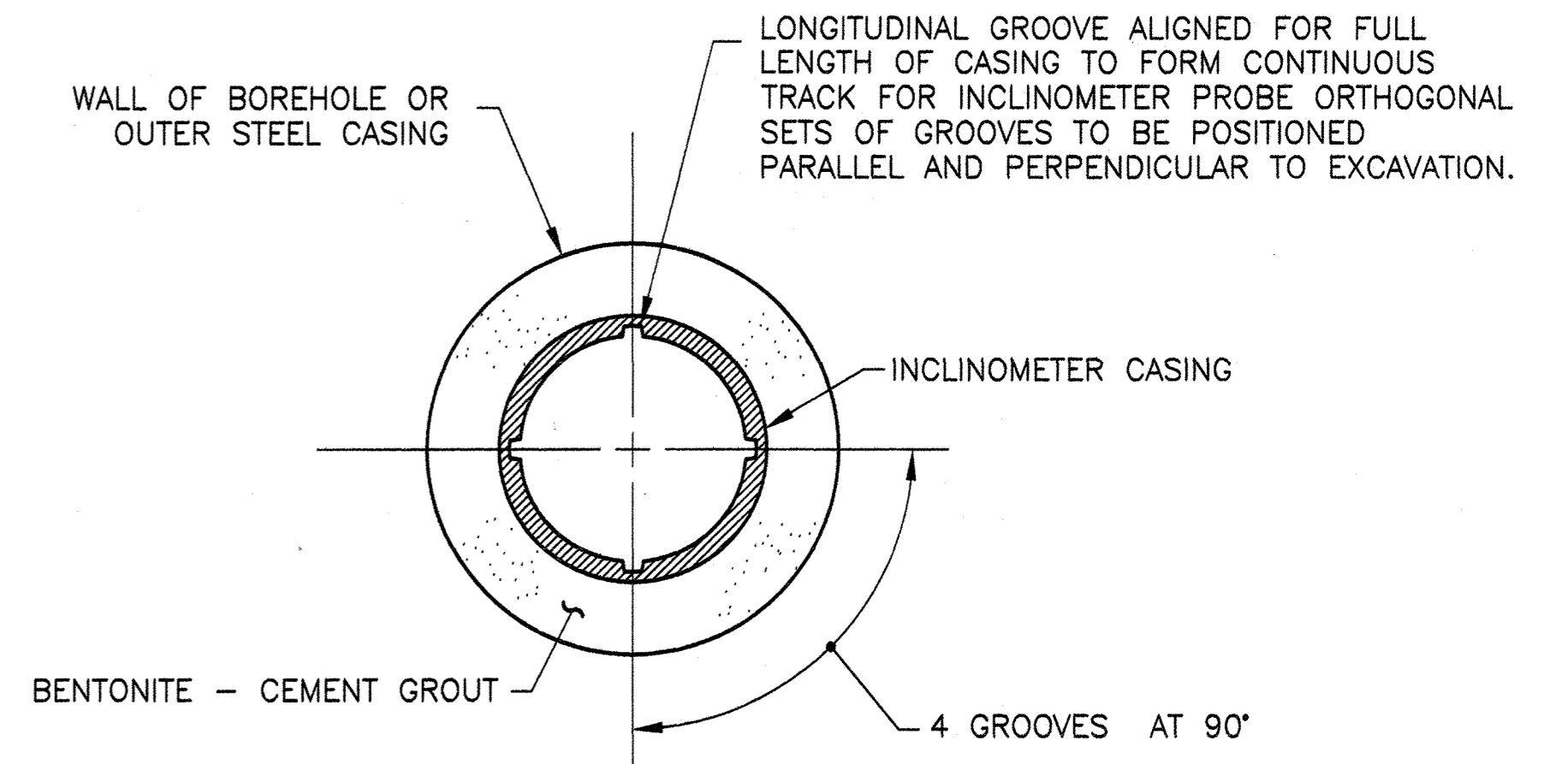
THE CONTRACTOR MAY USE PK NAIL ON THE BITUMINOUS SURFACE IN LIEU OF THE ABOVE DETAIL.



SUBSURFACE SHALLOW SETTLEMENT INDICATOR
 (SI)



INCLINOMETER CASING
 (IC)



CROSS SECTION THROUGH
INCLINOMETER CASING

SURFACE SETTLEMENT MARKERS SCHEDULE
 (SM)

MARKER NUMBER	LOCATION		
	STA ☉	OFFSET (FT)	COMMENTS
SM-1	0+55	0	--
SM-2	2+14	0	--

SUBSURFACE SHALLOW SETTLEMENT INDICATORS SCHEDULE
 (SI)

INDICATOR NUMBER	LOCATION	
	STA ☉	OFFSET (FT)
SI-1	1+35	0

INCLINOMETERS SCHEDULE
 (IC)

INCLINOMETER NUMBER	LOCATION		APPROXIMATE GROUND ELEVATION (FT)	MINIMUM BOTTOM ELEVATION (FT)
	STA ☉	OFFSET (FT)		
IC-1	0+37	12 L	301	280

NOTE:

1. R AND L UNDER OFFSET HEADING INDICATE RIGHT AND LEFT OF THE TUNNEL CENTERLINE LOOKING UPSTATION.

LEGEND

- ⊙ (IC) - INCLINOMETER
- ⊕ (SI) - SUBSURFACE SHALLOW SETTLEMENT INDICATOR
- ⊙ (SM) - SURFACE SETTLEMENT MARKER

RECORD DRAWINGS

DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND

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

[Signature] 9/23/15
 CHIEF - BUREAU OF ENGINEERING DATE

[Signature] 9/23/15
 CHIEF, UTILITY DESIGN DIVISION DATE

JEC JENNY ENGINEERING CORPORATION
 CONSULTING ENGINEERS
 4201 MITCHELLVILLE ROAD
 SUITE 500
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 PHONE: 301-731-5622

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[Signature]
 PROFESSIONAL ENGINEER

DSN. BY: LJG			
DRN. BY: JSA/RS			
CHK. BY: LG			
DATE: JULY 2015			
LR 0	RECORD DRAWINGS	11/18	
BY NO.	REVISION	DATE	

GEOTECHNICAL INSTRUMENTATION MONITORING DETAILS

600' SCALE MAP NO. _____ BLOCK NO. # _____

US ROUTE 29 WATER TRANSMISSION MAIN
 SOUTH ENTRANCE ROAD TO LITTLE PATUXENT PARKWAY

CAPITAL PROJECT: W-8296
 CONTRACT NO.: 44-4776
 ELECTION DISTRICT: X
 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
 SHEET 25 OF 48
 FILE NO. 33498-XXX

MINIMUM DESIGN CRITERIA FOR TEMPORARY EXCAVATION SUPPORT SYSTEM

TRAFFIC AND CONSTRUCTION EQUIPMENT LOAD	CIRCULAR SHAFT	BRACED PORTALS OR RECTANGULAR SHAFTS		LIST OF SYMBOLS
		SINGLE BRACING LEVEL SYSTEMS	MULTIPLE BRACING SYSTEMS	
				<p>C_u - UNDRAINED SHEAR STRENGTH OF COHESIVE SOIL (PSF).</p> <p>H - HEIGHT OF CUT FROM GROUND SURFACE TO THE BOTTOM OF THE EXCAVATION (FT.)</p> <p>K_a - LATERAL EARTH PRESSURE COEFFICIENT FOR RANKINE ACTIVE CONDITION</p> <p>K_o - LATERAL EARTH PRESSURE COEFFICIENT FOR RANKINE AT REST CONDITION</p> <p>K_p - LATERAL EARTH PRESSURE COEFFICIENT FOR RANKINE PASSIVE CONDITION</p> <p>P_s - LATERAL EARTH SURCHARGE PRESSURE</p> <p>P_w - LATERAL HYDROSTATIC PRESSURE</p> <p>d - EMBEDMENT DEPTH BELOW BOTTOM OF EXCAVATION</p> <p>d_w - DEPTH FROM GROUND SURFACE TO DESIGN WATER LEVEL</p> <p>h - DEPTH BELOW GROUND SURFACE (FT)</p> <p>h_w - DEPTH FROM DESIGN GROUNDWATER LEVEL TO BOTTOM OF EXCAVATION (FT)</p> <p>γ_s - BUOYANT UNIT WEIGHT OF SOIL (PSF)</p> <p>γ_t - TOTAL UNIT WEIGHT OF SOIL (PCF)</p>

NOTES:

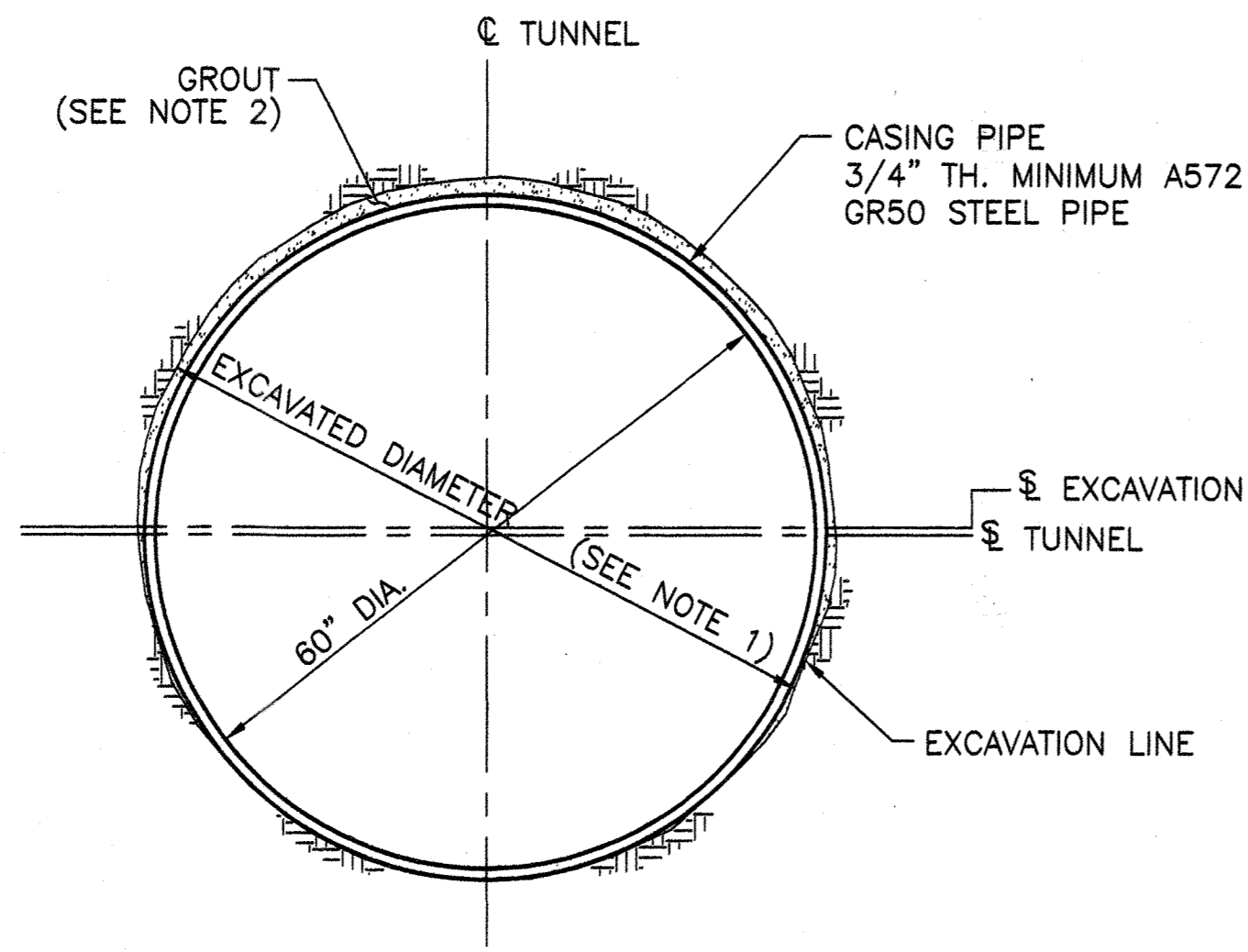
1. THE MINIMUM DESIGN CRITERIA DESCRIBED HEREIN APPLIES TO BOTH THE JACKING AND RECEIVING PITS TO BE DESIGNED BY THE CONTRACTOR.
2. LATERAL PRESSURE
 - 2.1. MINIMUM DESIGN LOADING CONDITIONS ARE TO BE DETERMINED BY ADDING TOGETHER THE APPROPRIATE LOADING DIAGRAMS FOR EARTH (E), WATER (W) WHERE APPLICABLE, AND THE APPROPRIATE COMBINATION OF SURCHARGES (S).
 - 2.2. CALCULATIONS ARE TO BE BASED ON A DESIGN WATER LEVEL EQUAL TO MAXIMUM WATER LEVEL OBSERVED.
 - 2.3. BRACING LEVELS ARE NOT SHOWN. DIAGRAMS AS NOTED ARE APPLICABLE TO SINGLE-LEVEL BRACED OR MULTIPLE-BRACED SYSTEMS IN THE ULTIMATE CONFIGURATION.
 - 2.4. LATERAL PRESSURE, DUE TO TRAFFIC AND CONSTRUCTION EQUIPMENT, IS BASED ON AN ASSUMED MINIMUM SURFACE SURCHARGE OF 500 PSF ACTING OVER A 20-FT. WIDE INFLUENCE AREA IMMEDIATELY ADJACENT TO THE EXCAVATION, BEYOND WHICH A 200 PSF SURCHARGE IS ASSUMED. FOR MORE SEVERE CONSTRUCTION EQUIPMENT LOADING, SPECIAL ANALYSES SHALL BE MADE. THE CONTRACTOR SHALL ACCOUNT FOR MORE CRITICAL SURCHARGE LOADINGS OR OTHER LOADINGS CONDITIONS NOT DESCRIBED HEREIN.
 - 2.5. THE TEMPORARY EXCAVATION SUPPORT SYSTEM SHALL BE CONSIDERED TO BE SUBJECTED TO LATERAL SURCHARGE PRESSURES FROM LOADS ASSOCIATED WITH ADJACENT STRUCTURES IF THE ADJACENT STRUCTURE IS LOCATED WITHIN A ZONE DEFINED BY A 1 HORIZONTAL TO 1 VERTICAL LINE DRAWN UPWARD AND OUTWARD TOWARD THE ADJACENT STRUCTURE FROM THE BOTTOM OF THE FINAL EXCAVATION LEVEL AT THE OUTSIDE FACE OF THE TEMPORARY EXCAVATION SUPPORT SYSTEM.
3. TOE AND BOTTOM STABILITY DESIGN.
 - 3.1. TO DETERMINE THE EMBEDMENT LENGTH OF TOE PENETRATION REQUIRED TO PROVIDE TOE STABILITY, SOLVE FOR THE REQUIRED TOE EMBEDMENT BY MOMENT EQUILIBRIUM ($M=0$) ABOUT THE LOWEST BRACING LEVEL FOR MULTIPLE BRACED SYSTEMS, CONSIDER ONLY THE LATERAL PRESSURES ACTING ON THE WALL BELOW THE LOWEST BRACING LEVEL. LATERAL SURCHARGE PRESSURES SHALL BE INCLUDED IF THE SURCHARGE PRESSURES ACT ON THE WALL BELOW THE LOWEST BRACING LEVEL. ASSUME A HINGE IN THE WALL AT THE LOWEST BRACING LEVEL FOR MULTIPLE BRACED SYSTEMS.
 - 3.2. FOR CALCULATIONS OF REQUIREMENTS FOR TOE PENETRATION OF MULTIPLE LEVEL BRACED EXCAVATIONS, THE ACTIVE AND PASSIVE EARTH PRESSURES BELOW THE BOTTOM OF THE EXCAVATION SHALL BE CALCULATED USING RANKINE ACTIVE AND PASSIVE EARTH PRESSURES TOGETHER WITH THE SOIL PARAMETERS INDICATED IN THE TABLE IN NOTE 4.1.
4. SOIL PARAMETERS
 - 4.1. THE FOLLOWING SOIL PARAMETERS ARE TO BE USED FOR DESIGN. A FACTOR OF SAFETY OF 1.5 SHALL BE APPLIED TO THE COEFFICIENT OF PASSIVE EARTH PRESSURE K_p , LENGTH OF TOE PENETRATION.

SOIL STRATUM	MOIST UNIT WEIGHT (PCF)	TOTAL UNIT WEIGHT (PCF)	FRICTION ANGLE (DEGREES)	UNDRAINED COMPRESSIVE STRENGTH C_u (PSF)	K_a	K_p	K_o
FILL	115	120	26	-	0.39	2.56	0.56
SILTY/CLAYEY SAND	120	125	28	-	0.36	2.77	0.53
DECOMPOSED ROCK	125	130	32	-	0.30	3.25	0.47
WEATHERED ROCK	140	145	45	-	0.17	5.83	0.29

<p>DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND</p> <p><i>[Signature]</i> 10/14/15 DIRECTOR OF PUBLIC WORKS DATE</p> <p><i>[Signature]</i> 10/14/15 CHIEF - BUREAU OF ENGINEERING DATE</p> <p><i>[Signature]</i> 10/14/15 CHIEF, UTILITY DESIGN DIVISION DATE</p>	<p>JEC JENNY ENGINEERING CORPORATION 2 Edison Plaza Springfield, New Jersey 07081 Phone: 973-374-8888 Fax: 973-374-8774 Website: www.jennyeng.com</p>	<p>G O BRIEN & GERE 4201 MITCHELLVILLE ROAD SUITE 500 BOWIE, MD 20716 PHONE: 301-731-5622</p>	<p>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. 21100, EXPIRATION DATE 01/19/2016</p> <p><i>[Signature]</i> 21100 REGISTERED PROFESSIONAL ENGINEER</p>	<p>DSN. BY: LIG</p> <p>DRN. BY: JSA/RS</p> <p>CHK. BY: LG</p> <p>DATE: JULY 2015</p>	<p>CONSTRUCTION SHAFTS DESIGN CRITERIA</p> <p>LR 0 RECORD DRAWINGS 11/18</p> <p>BY NO. REVISION DATE</p>	<p>US ROUTE 29 WATER TRANSMISSION MAIN SOUTH ENTRANCE ROAD TO LITTLE PATUXENT PARKWAY</p> <p>CAPITAL PROJECT: W-8296 CONTRACT NO.: 44-4776 ELECTION DISTRICT: X HOWARD COUNTY, MARYLAND</p>	<p>SCALE AS SHOWN</p> <p>SHEET 26 OF 48</p>
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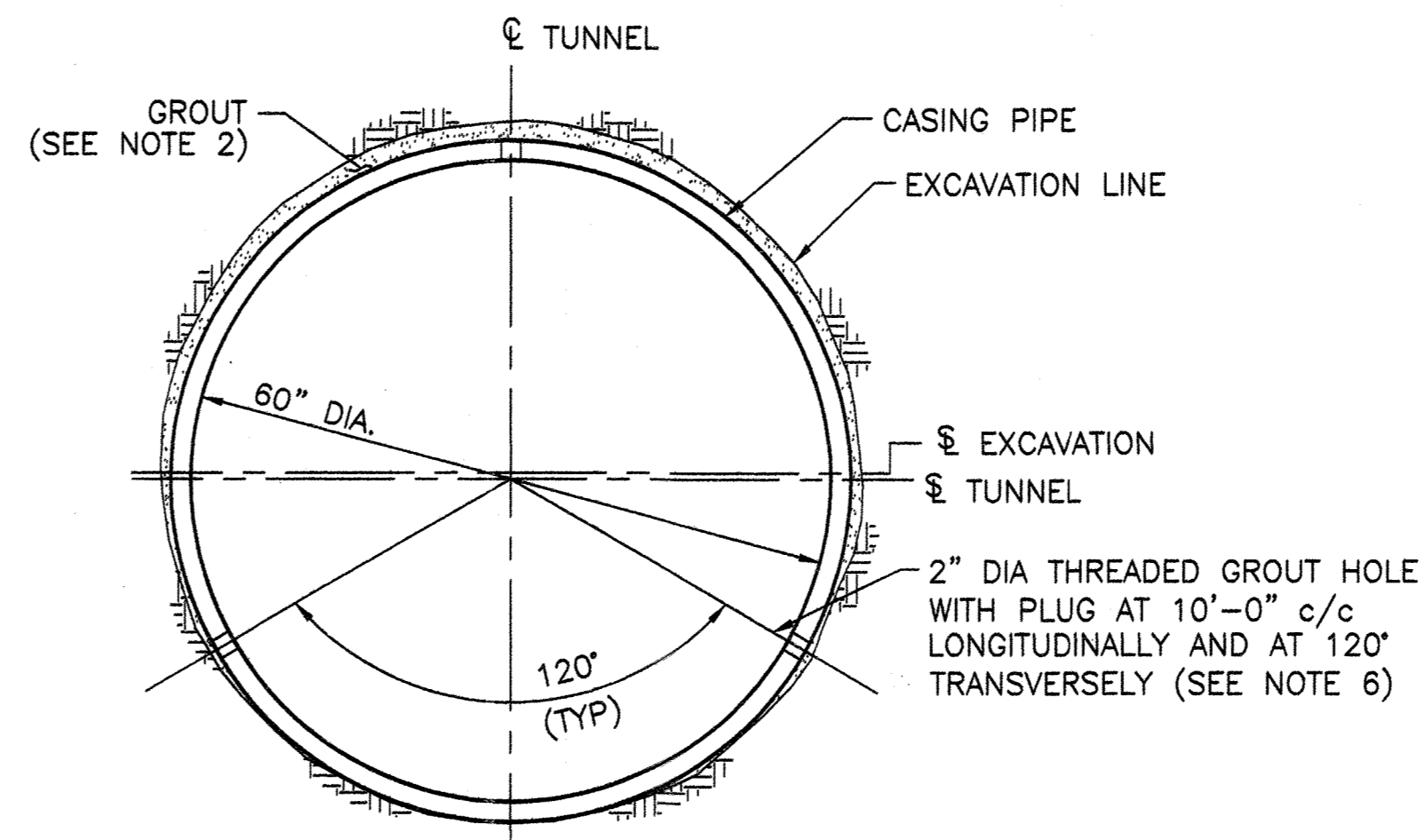
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FILE NO. 33498-XXX



TYPICAL TUNNEL SECTION - STEEL CASING PIPE
SCALE: 3/4"=1'-0"

STA 0+24.50 TO 4+93.50

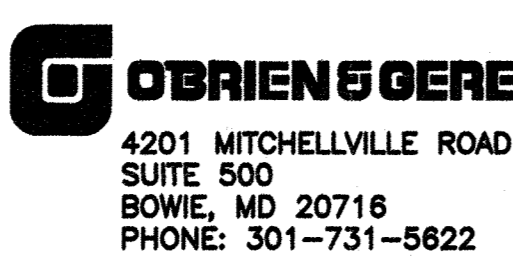
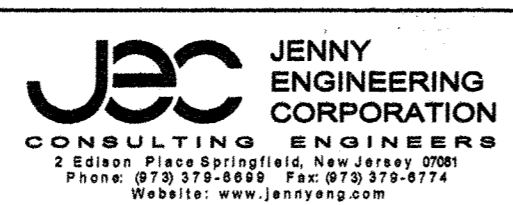


TYPICAL GROUTING DETAIL
N.T.S.

NOTES:

1. THE EXCAVATED DIAMETER SHALL BE SELECTED BY THE CONTRACTOR TO FACILITATE THE CONTRACTOR'S MEANS AND METHODS OF EXCAVATION AND CASING INSTALLATION.
2. GROUTING, AS SPECIFIED, SHALL BE UTILIZED TO FILL THE ANNULAR VOID OR OTHER VOIDS, IF DEVELOPED DURING MICROTUNNELING, GROUTING SHALL BE EMPLOYED TO FILL THOSE VOIDS.
3. THE CONTRACTOR SHALL SUBMIT DETAILS OF PIPE AND PIPE JOINT TO THE ENGINEER PRIOR TO COMMENCEMENT OF MICROTUNNELING.
4. THE CONTRACTOR SHALL VERIFY THAT THE CASING PIPE AND PIPE JOINT HAVE THE CAPACITY TO CARRY JACKING FORCES ANTICIPATED BY THE CONTRACTOR AND SHALL PROVIDE SUPPORTING CALCULATIONS FOR ENGINEER'S REVIEW AND APPROVAL.
5. LUBRICATION OF PIPE EXTERIOR IS MANDATORY DURING MICROTUNNELING AND SHALL BE CONDUCTED CONTINUOUSLY UTILIZING BENTONITE SLURRY OR OTHER APPROVED MATERIAL.
6. DETAILS OF THE 2" DIA. GROUT HOLES SHALL BE PROVIDED BY THE CONTRACTOR FOR THE REVIEW AND APPROVAL BY THE ENGINEER.

SCALES: 3/4"=1'-0"



PROFESSIONAL CERTIFICATION: I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 21100, EXPIRATION DATE 01/19/2016.

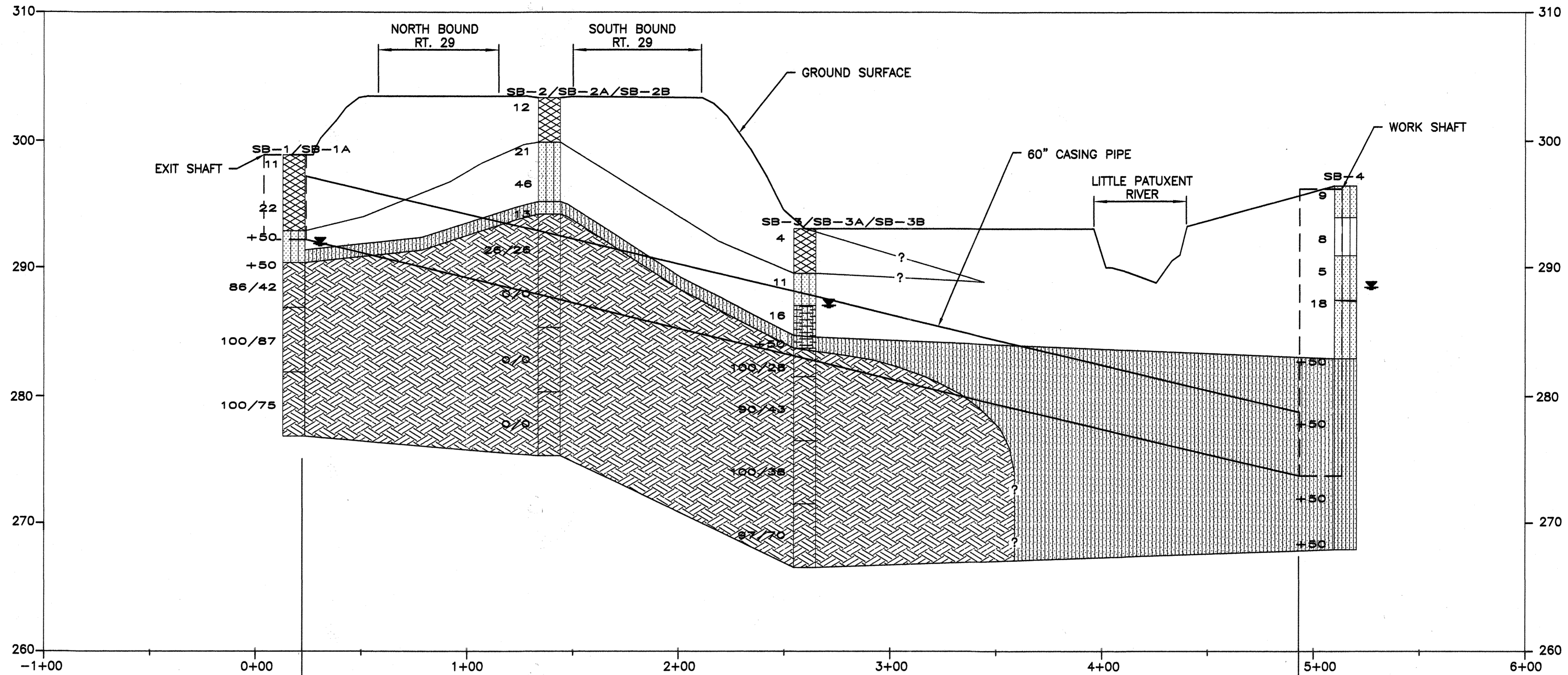
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DRN. BY:	JSA/RS			
CHK. BY:	LG			
DATE:	JULY 2015			
LR	0	RECORD DRAWINGS	11/18	
BY	NO.	REVISION	DATE	

TUNNEL SECTIONS AND DETAILS	
600' SCALE MAP NO.	BLOCK NO.

US ROUTE 29 WATER TRANSMISSION MAIN
SOUTH ENTRANCE ROAD TO LITTLE PATUXENT PARKWAY
CAPITAL PROJECT: W-8296
CONTRACT NO.: 44-4776
ELECTION DISTRICT: X
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 27 OF 48

RECORD DRAWINGS

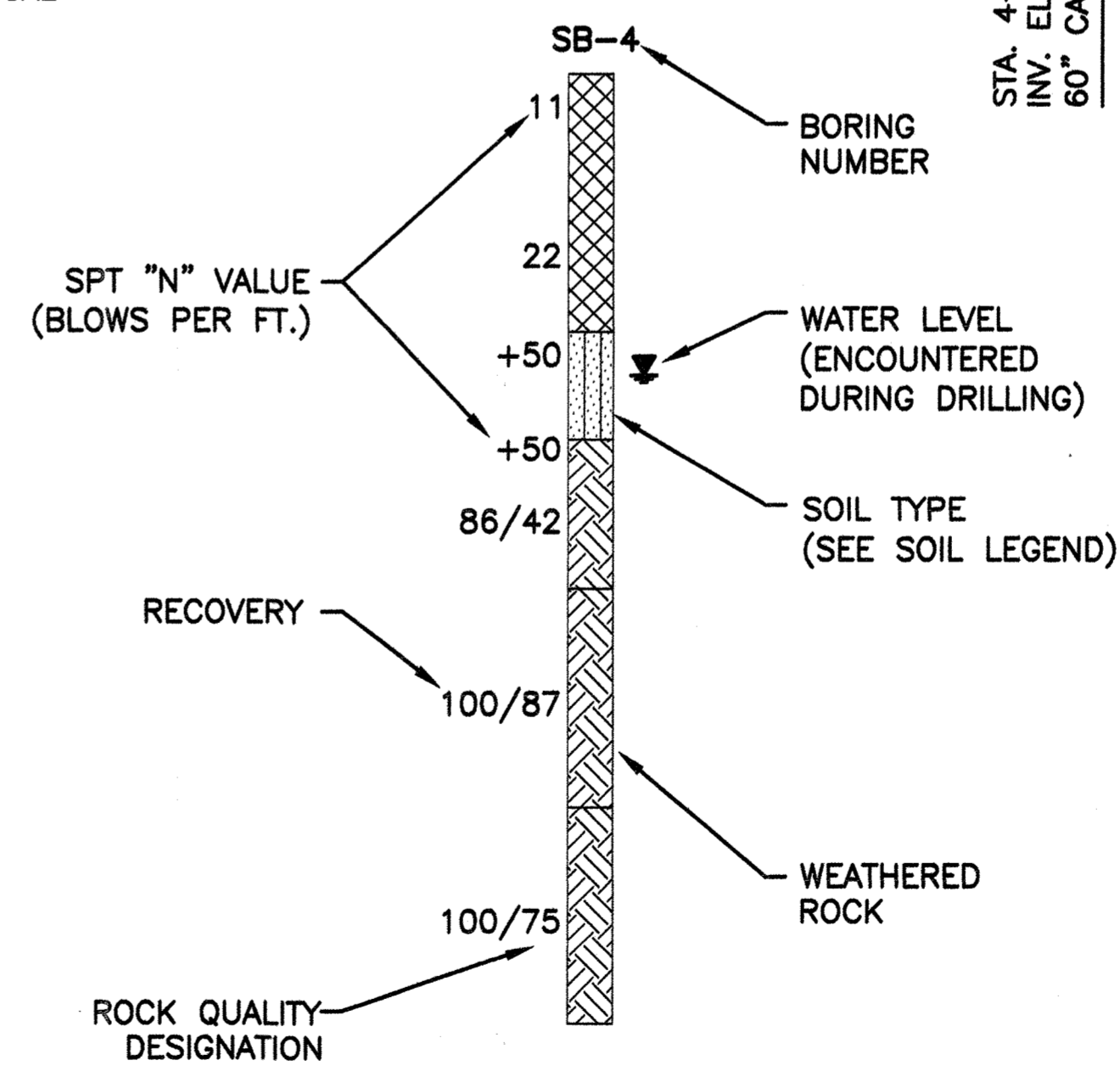


PROFILE
SCALE: 1"=30' HORIZONTAL
SCALE: 1"=5' VERTICAL

SOILS

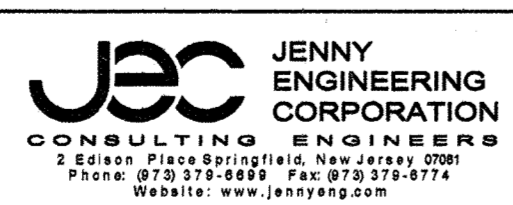
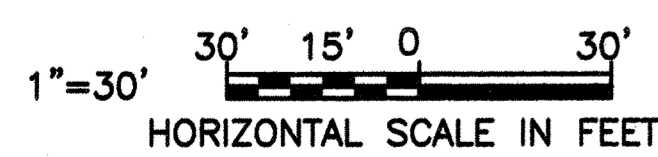
- SILTY/CLAYEY SAND, CLAY (SM-CL) (FILL)
- SILTY SAND (SM)
- POORLY GRADED GRAVEL (GP-GM)
- SANDY SILT (ML)
- DECOMPOSED ROCK
- WEATHERED ROCK

LEGEND:

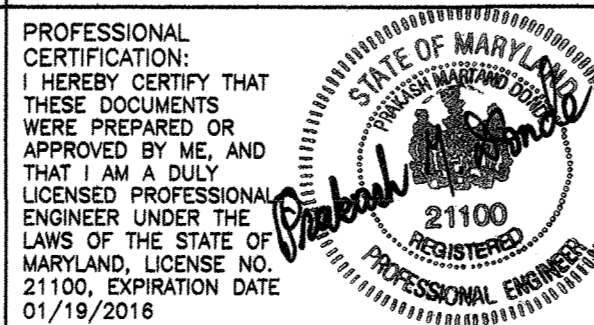


NOTES:

1. THE GENERALIZED GEOLOGIC PROFILE WAS DEVELOPED BASED ON THE FINDING FROM WIDELY SPACED BORINGS. ACTUAL SUBSURFACE CONDITIONS BETWEEN BORING LOCATIONS MAY BE EXPECTED TO VARY FROM THOSE SHOWN IN THIS PROFILE.



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

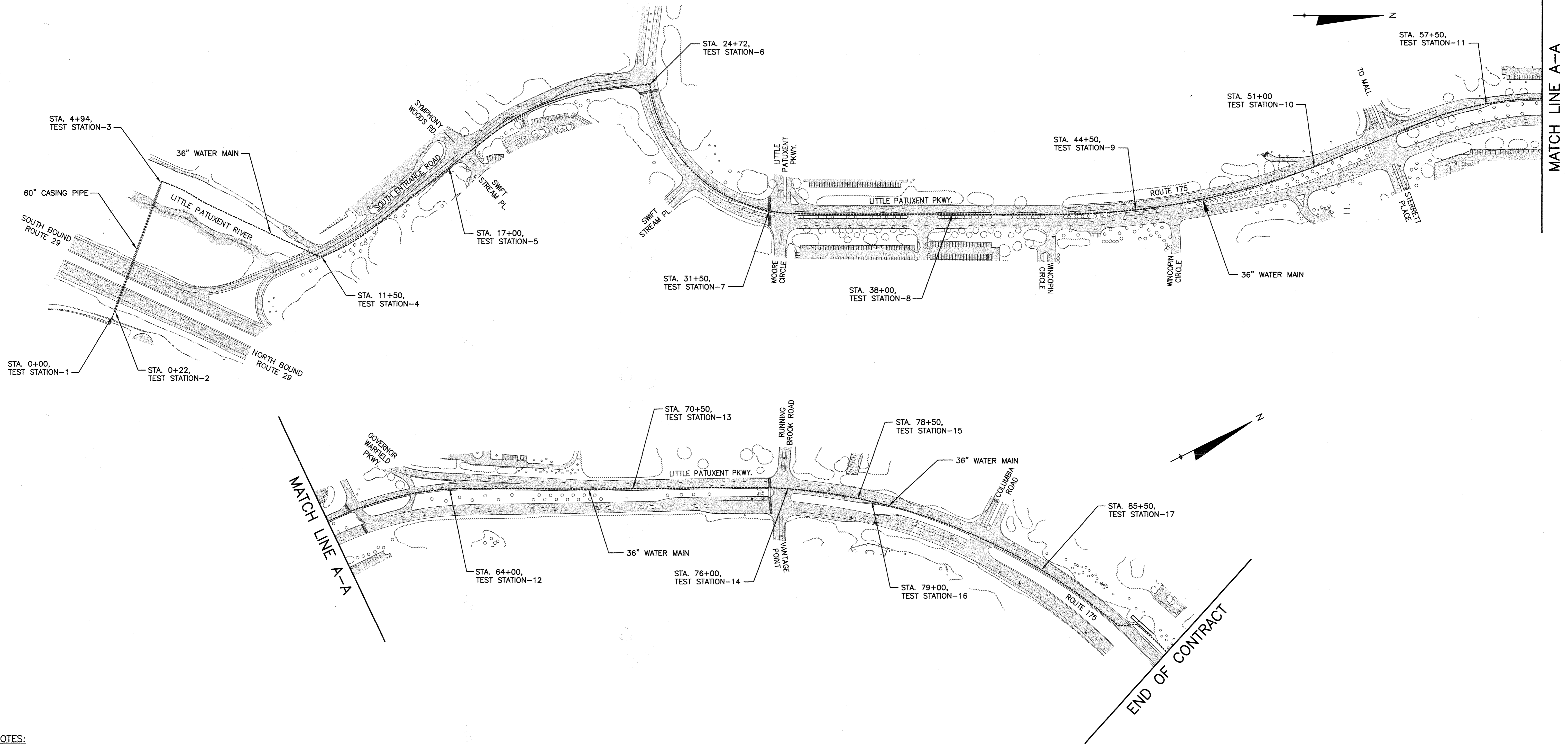


DSN. BY:	LJG		
DRN. BY:	JSA/RS		
CHK. BY:	LG		
DATE:	JULY 2015		
LR	0	RECORD DRAWINGS	11/18
BY	NO.	REVISION	DATE

GENERALIZED GEOLOGIC PROFILE
STA. 0+24.50 TO STA. 4+93.50

US ROUTE 29 WATER TRANSMISSION MAIN
SOUTH ENTRANCE ROAD TO LITTLE PATUXENT PARKWAY

CAPITAL PROJECT: W-8296
CONTRACT NO.: 44-4776
ELECTION DISTRICT: X
HOWARD COUNTY, MARYLAND



- NOTES:**
1. PCCP OR BAR WRAPPED CONCRETE CYLINDER PIPE TO BE FABRICATED WITH STEEL BONDING PLATES, SEE DETAIL CC-7.
 2. BOND ALL NEW PIPE JOINTS. EXCEPT THOSE SPECIFIED TO BE ELECTRICALLY ISOLATED. SEE DETAILS CC-6 AND CC-7.
 3. ELECTRICAL ISOLATION IS REQUIRED FOR ALL CONNECTIONS TO NEW WATER MAIN. SEE DETAIL CC-1.
 4. INSTALL SEPERATOR MESH ON WATER MAIN AT EXISTING UTILITY CROSSING IF THERE IS LESS THAN 12 INCHES OF SPACING BETWEEN THEM, SEE DETAIL CC-9.
 5. SEE DETAIL CC-13 FOR TEST STATION SCHEDULE.

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

CATHODIC PROTECTION LAYOUT 1

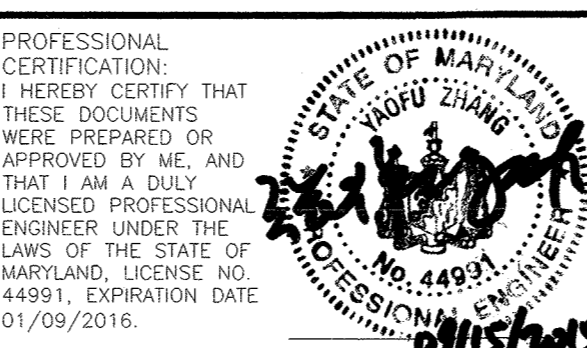
Scale: N.T.S



RECORD DRAWINGS

DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND
 Director of Public Works: *Lee M. Van...* 10/15/15
 Chief - Bureau of Engineering: *Monroe E. Butler* 9/30/15
 Chief, Utility Design Division: *PSD* 9/30/15

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



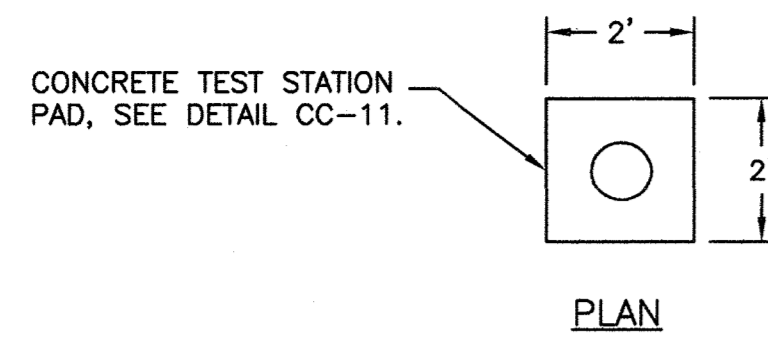
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DRN. BY: JWW			
CHK. BY: YZ			
DATE: 9/15/2015	LR 0	RECORD DRAWINGS	11/18
	BY NO.	REVISION	DATE

CATHODIC PROTECTION LAYOUT 1

US ROUTE 29 WATER TRANSMISSION MAIN
 SOUTH ENTRANCE ROAD TO LITTLE PATUXENT PARKWAY
 CAPITAL PROJECT: W-8296
 CONTRACT NO.: 44-4776
 ELECTION DISTRICT: 5
 HOWARD COUNTY, MARYLAND

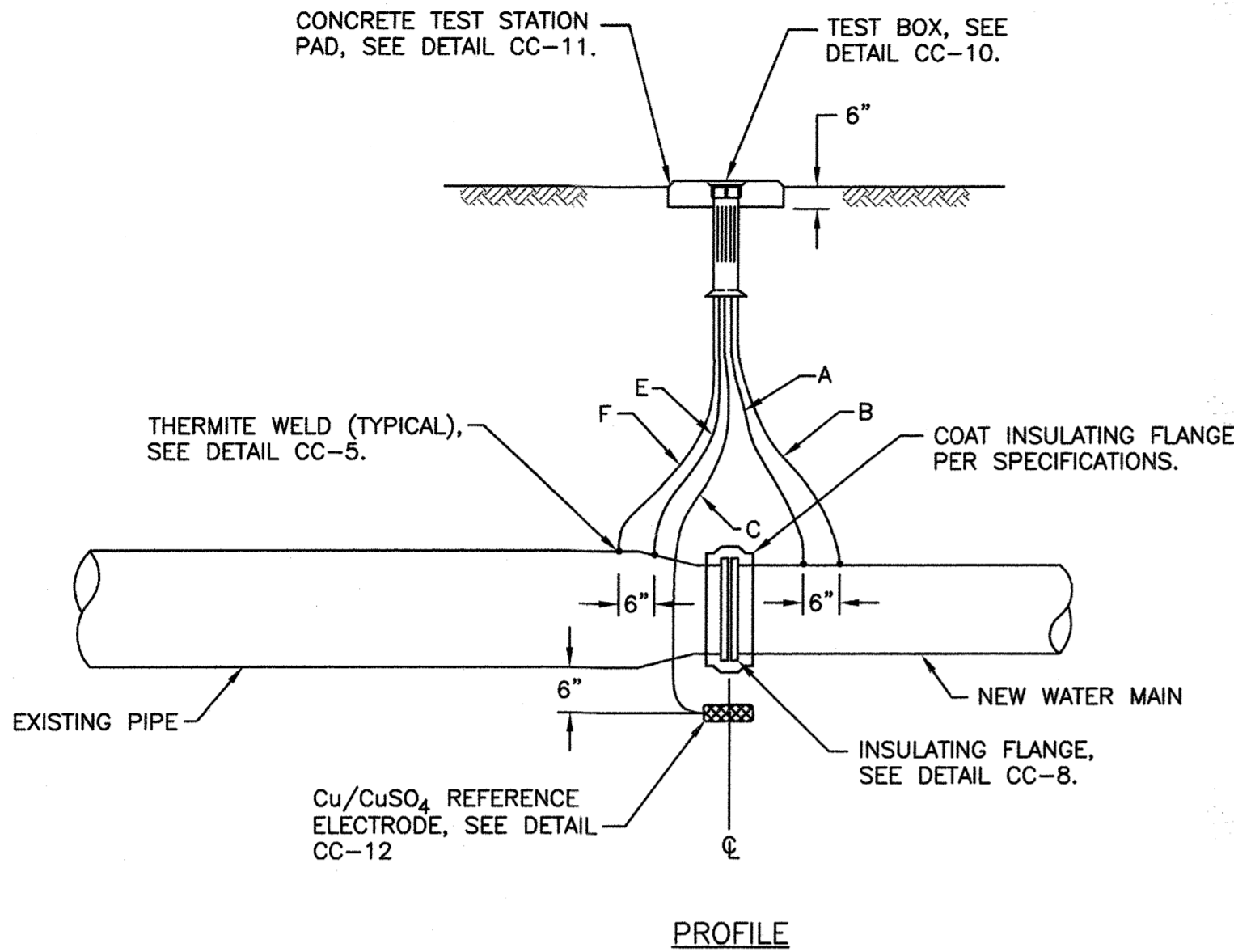
SCALE AS SHOWN
 SHEET 29 OF 48

FILE NO. 33498-



CONCRETE TEST STATION PAD, SEE DETAIL CC-11.

PLAN



PROFILE

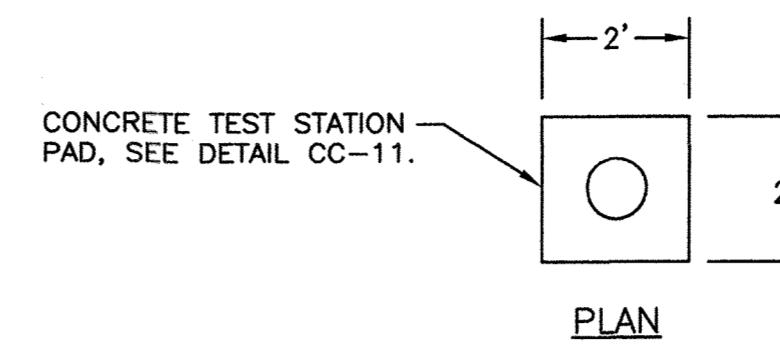
CC-1: INSULATING FLANGE TEST STATION

Scale: None

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

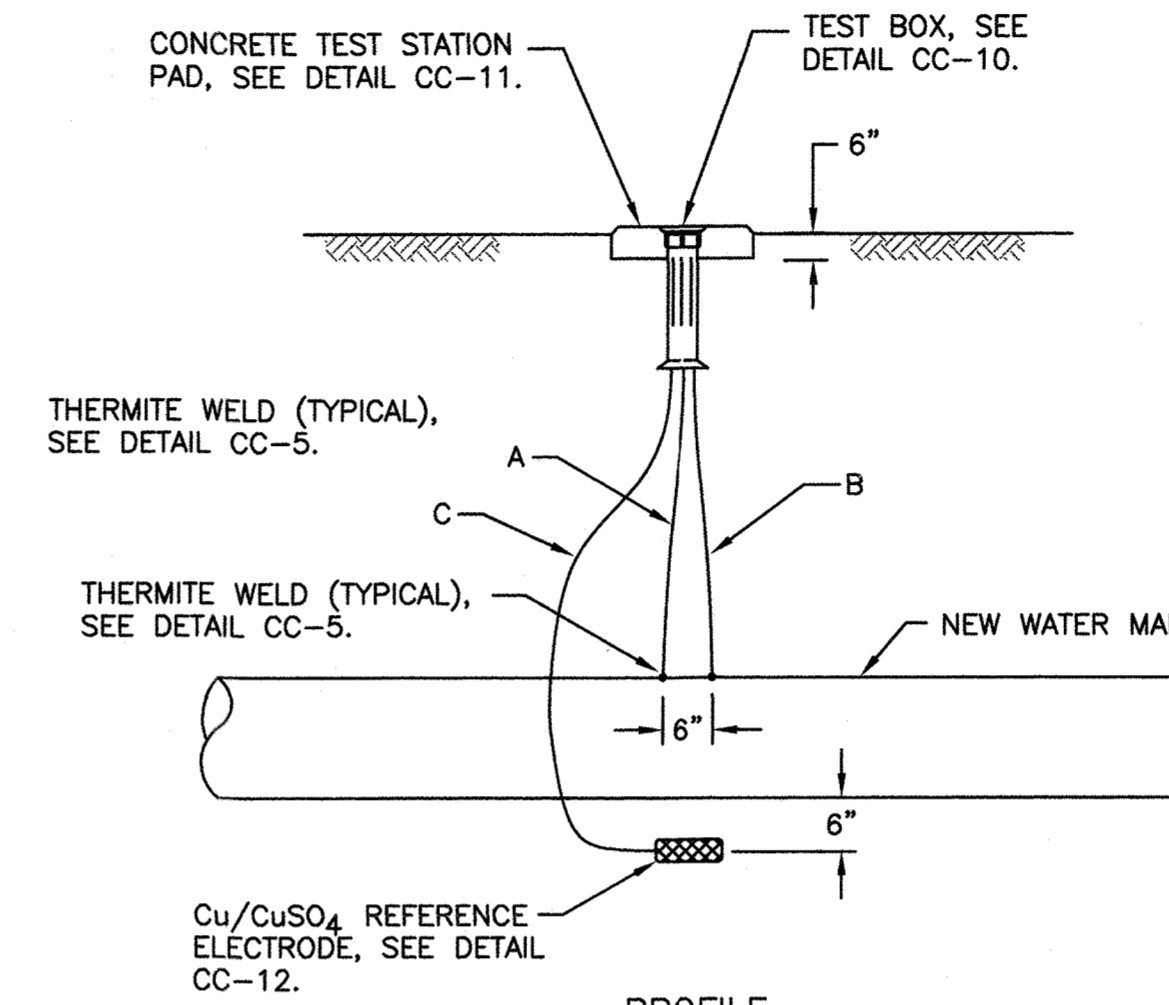
NOTES:

- DO NOT SET TEST STATION IN ROADWAY. PLACE TEST BOX IN NON-PAVED AREA (GRASS MEDIAN) NEXT TO ROADWAY. ROUTE ALL WIRES TO FINAL TEST BOX LOCATION.
- ALL THERMITE WELDS TO PCCP OR BAR WRAPPED CONCRETE CYLINDER PIPE TO BE PERFORMED AT STEEL BONDING PLATES, SEE DETAIL CC-7.



CONCRETE TEST STATION PAD, SEE DETAIL CC-11.

PLAN



PROFILE

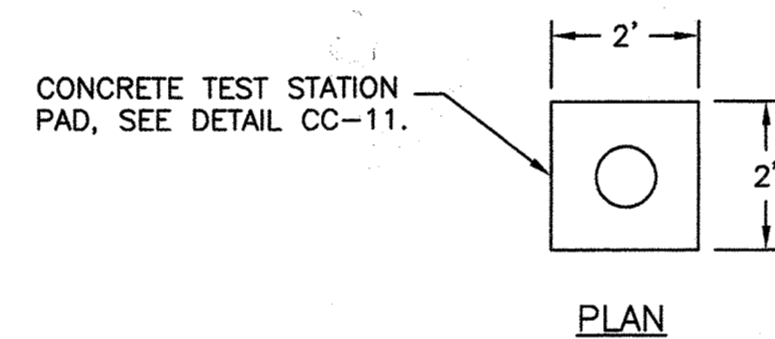
CC-2: STANDARD TEST STATION

Scale: None

WIRING SCHEDULE					
DESCRIPTION	WIRE	TEST STATION TERMINAL	AWG WIRE SIZE	TYPE OF INSULATION	COLOR OF INSULATION
NEW WATER MAIN	A B	1 3	#8 #10	THWN THWN	BLUE BLUE
PERMANENT REFERENCE ELECTRODE	C	6	#14	HMWPE	BLACK

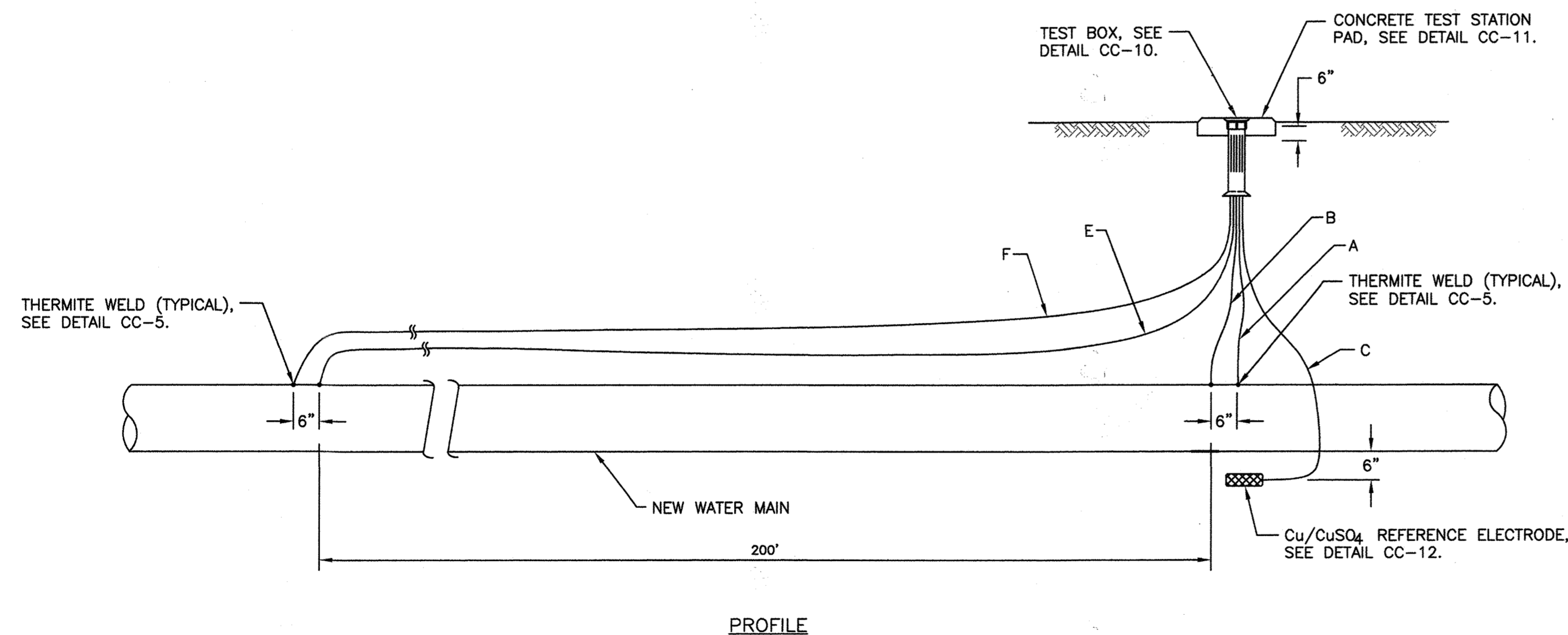
NOTES:

- DO NOT SET TEST STATION IN ROADWAY. PLACE TEST BOX IN NON-PAVED AREA (GRASS MEDIAN) NEXT TO ROADWAY. ROUTE ALL WIRES TO FINAL TEST BOX LOCATION.
- ALL THERMITE WELDS TO PCCP OR BAR WRAPPED CONCRETE CYLINDER PIPE TO BE PERFORMED AT STEEL BONDING PLATES, SEE DETAIL CC-7.



CONCRETE TEST STATION PAD, SEE DETAIL CC-11.

PLAN



PROFILE

CC-3: IR DROP TEST STATION

Scale: None

WIRING SCHEDULE					
DESCRIPTION	WIRE	TEST STATION TERMINAL	AWG WIRE SIZE	TYPE OF INSULATION	COLOR OF INSULATION
NEW WATER MAIN	A B	1 3	#8 #10	THWN THWN	BLUE BLUE
PERMANENT REFERENCE ELECTRODE	C	6	#14	HMWPE	BLACK
NEW WATER MAIN 200 FT. AWAY FROM TEST STATION	E F	2 5	#8 #10	THWN THWN	WHITE WHITE

NOTES:

- DO NOT SET TEST STATION IN ROADWAY. PLACE TEST BOX IN NON-PAVED AREA (GRASS MEDIAN) NEXT TO ROADWAY. ROUTE ALL WIRES TO FINAL TEST BOX LOCATION.
- ALL THERMITE WELDS TO PCCP OR BAR WRAPPED CONCRETE CYLINDER PIPE TO BE PERFORMED AT STEEL BONDING PLATES, SEE DETAIL CC-7.

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DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Director of Public Works: *[Signature]* 10/1/15
 Chief - Bureau of Engineering: *[Signature]* 9/30/15
 Chief, Bureau of Utilities: *[Signature]* 10/1/15
 Chief, Utility Design Division: *[Signature]* 9/30/15

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

[Signature]
Professional Engineer

DSN. BY: YZ					
DRN. BY: JWW					
CHK. BY: YZ					
DATE: 9/15/2015	LR 0	RECORD DRAWINGS	11/18		
	BY NO.	REVISION	DATE		

CATHODIC PROTECTION DETAILS 1

600' SCALE MAP NO. _____ BLOCK NO. _____

US ROUTE 29 WATER TRANSMISSION MAIN
SOUTH ENTRANCE ROAD TO LITTLE PATUXENT PARKWAY

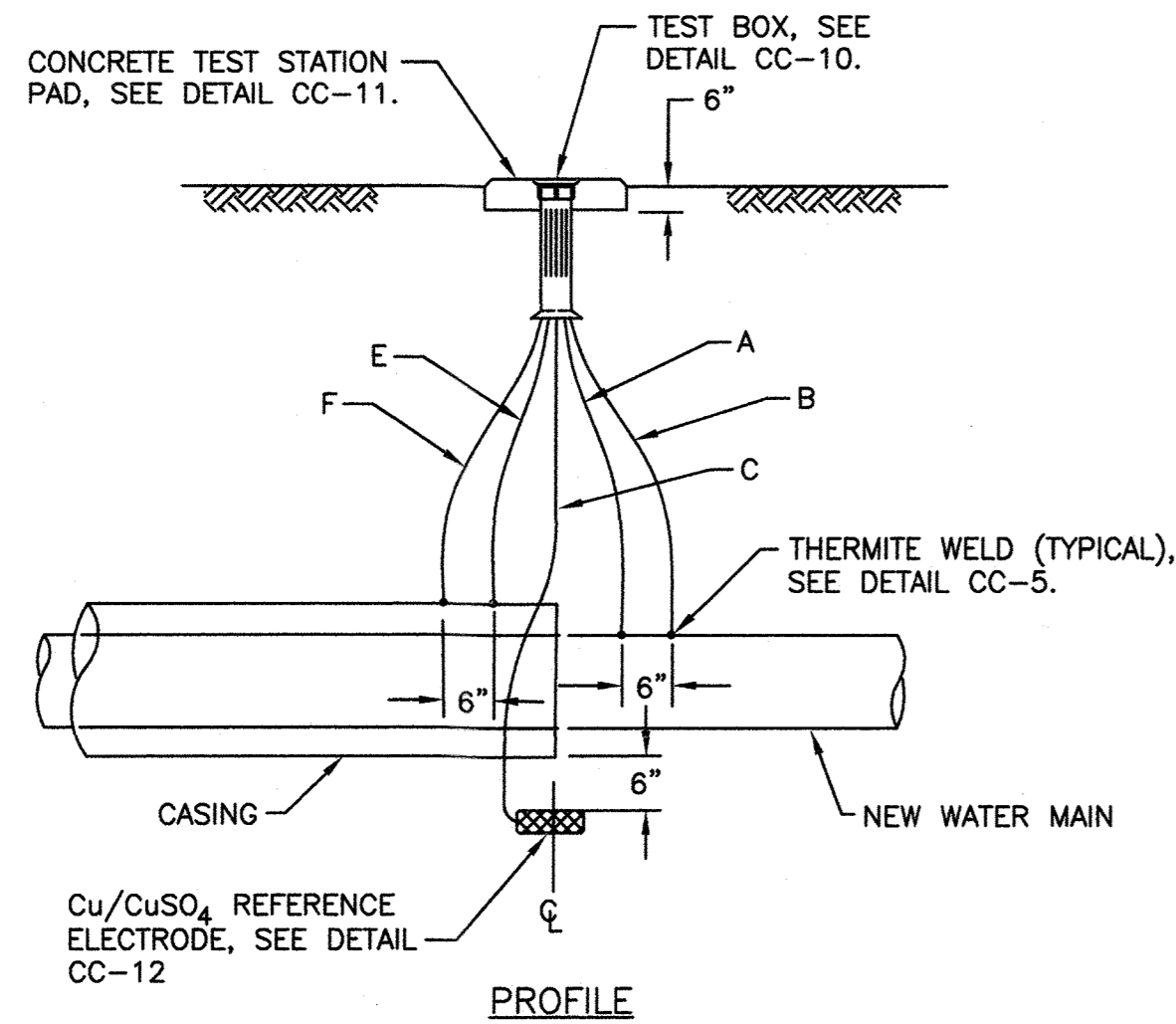
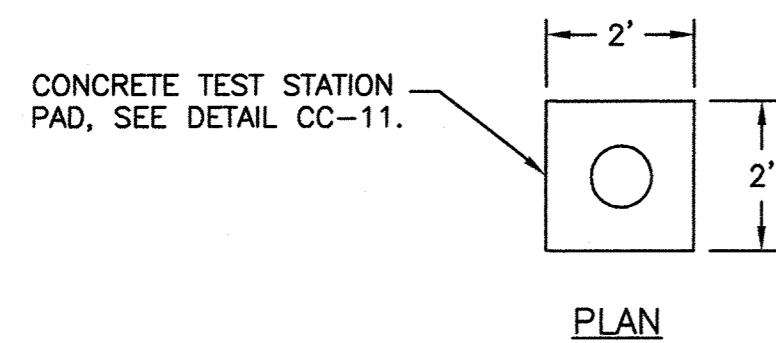
CAPITAL PROJECT: W-8296
 CONTRACT NO.: 44-4776
 ELECTION DISTRICT: 5
 HOWARD COUNTY, MARYLAND

RUSSELL CORROSION CONSULTANTS, INC.
Columbia, Maryland

RECORD DRAWINGS

SCALE AS SHOWN
SHEET 30 OF 48

FILE NO. 33498-



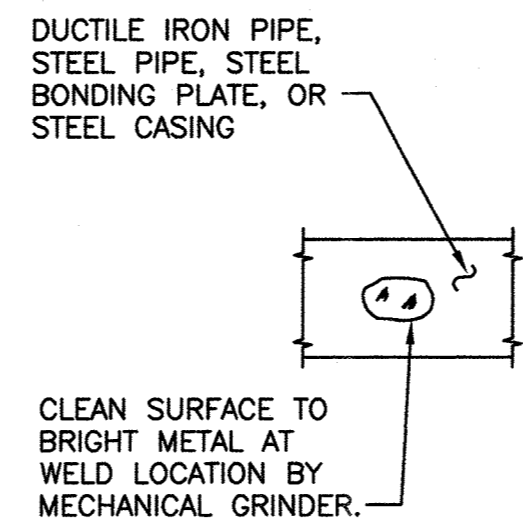
CC-4: CASING TEST STATION

Scale: None

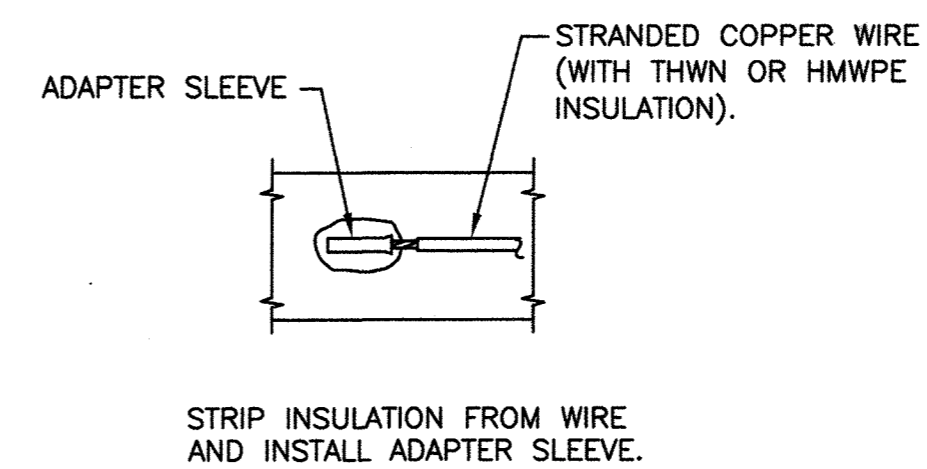
WIRING SCHEDULE					
DESCRIPTION	WIRE	TEST STATION TERMINAL	AWG WIRE SIZE	TYPE OF INSULATION	COLOR OF INSULATION
NEW WATER MAIN	A B	1 3	#8 #10	THWN THWN	BLUE BLUE
PERMANENT REFERENCE ELECTRODE	C	6	#14	HMWPE	BLACK
CASING PIPE	E F	2 5	#8 #10	THWN THWN	WHITE WHITE

NOTES:

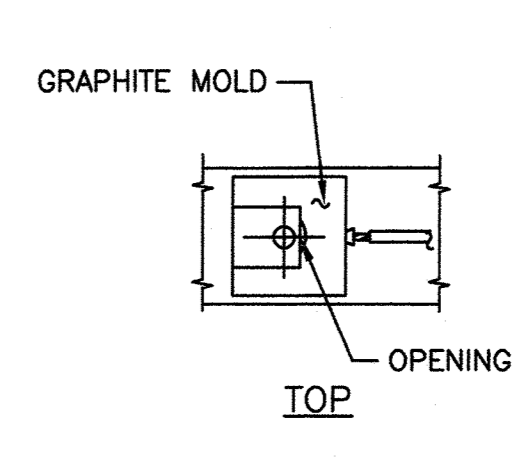
- DO NOT SET TEST STATION IN ROADWAY. PLACE TEST BOX IN NON-PAVED AREA (GRASS MEDIAN) NEXT TO ROADWAY. ROUTE ALL WIRES TO FINAL TEST BOX LOCATION.
- ALL THERMITE WELDS TO PCCP OR BAR WRAPPED CONCRETE CYLINDER PIPE TO BE PERFORMED AT STEEL BONDING PLATES, SEE DETAIL CC-7.



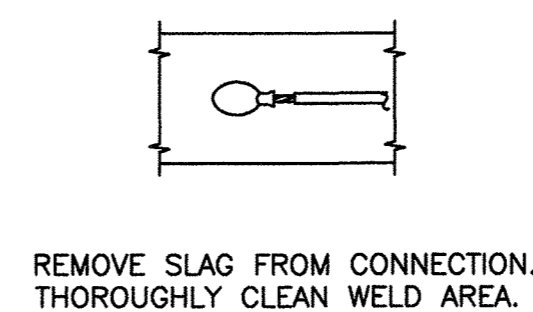
STEP 1



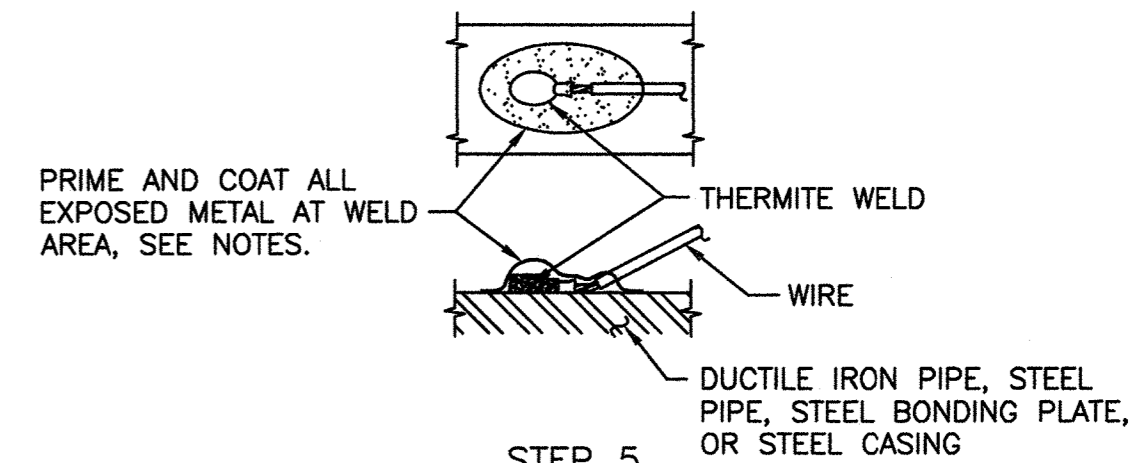
STEP 2



STEP 3



STEP 4



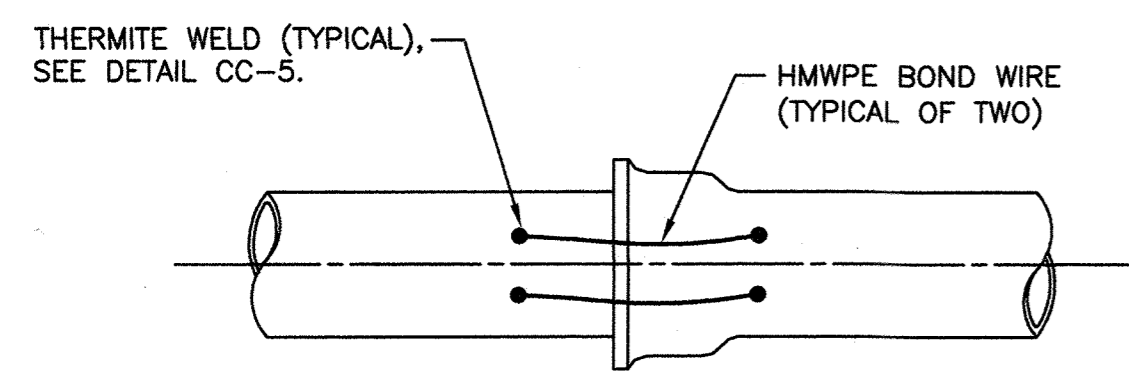
STEP 5

NOTES:

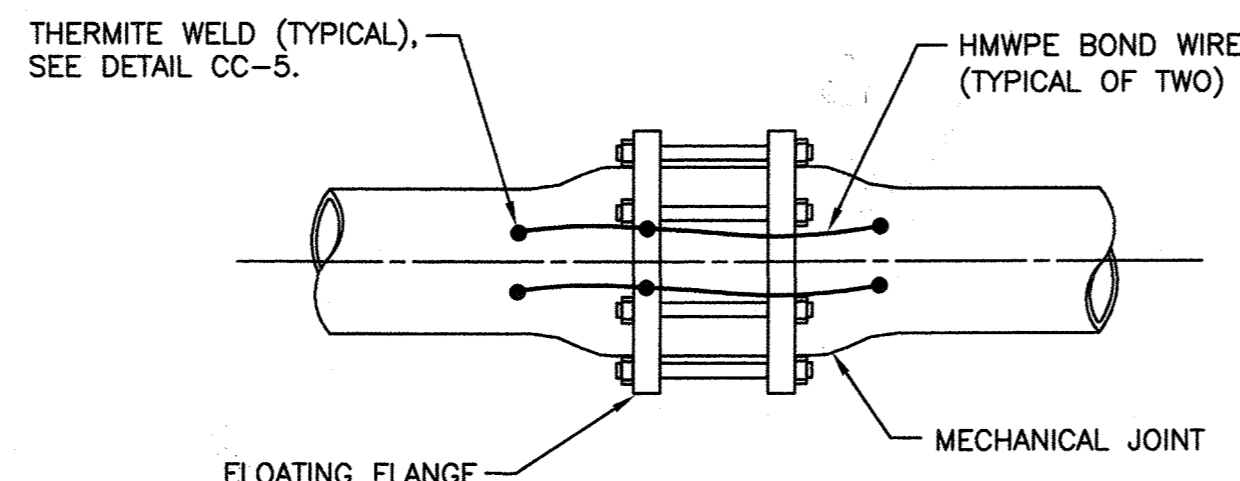
- THERMITE WELDS MADE TO DUCTILE IRON PIPE, STEEL PIPE OR CASING SHALL BE COATED WITH A PREFABRICATED ONE PIECE PLASTIC CAP FILLED WITH ELASTOMERIC MATERIAL, ROYSTON HANDY-CAP OR APPROVED EQUAL. REPAIR PIPE COATING IN ACCORDANCE WITH COATING MANUFACTURER'S RECOMMENDATIONS.
- THERMITE WELDS MADE TO THE STEEL BONDING PLATES OF PCCP OR BAR WRAPPED CONCRETE CYLINDER PIPING SHALL BE COATED WITH BRUSH APPLIED R28 MASTIC (10 MILS MINIMUM THICKNESS) OR APPROVED EQUAL. MASTIC SHALL BE DRY BEFORE THERMITE WELDS ARE COVERED OVER WITH GROUT.

CC-5: THERMITE WELD

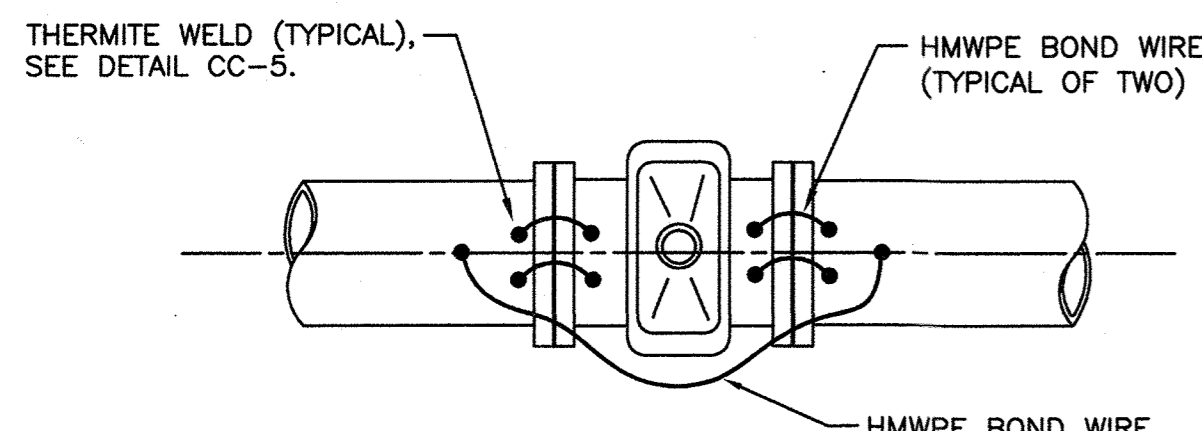
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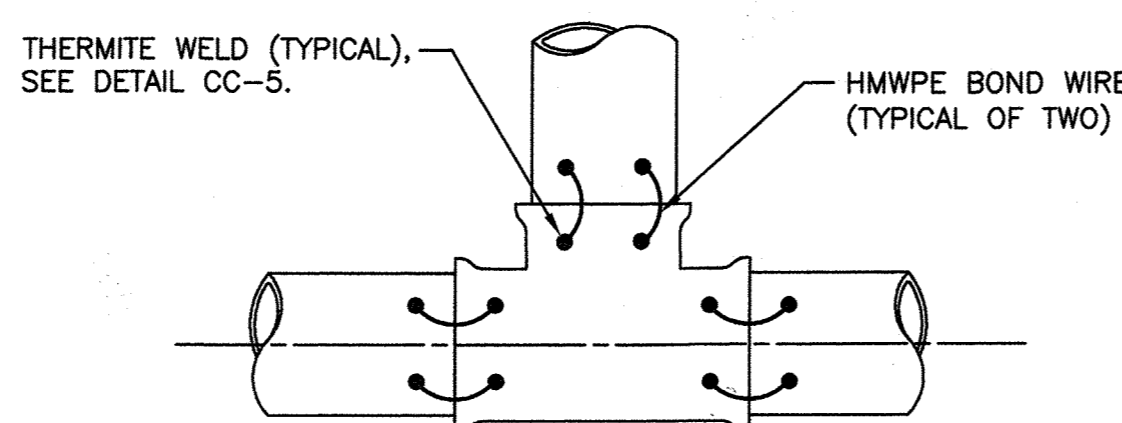
TYPICAL PIPE JOINT BOND



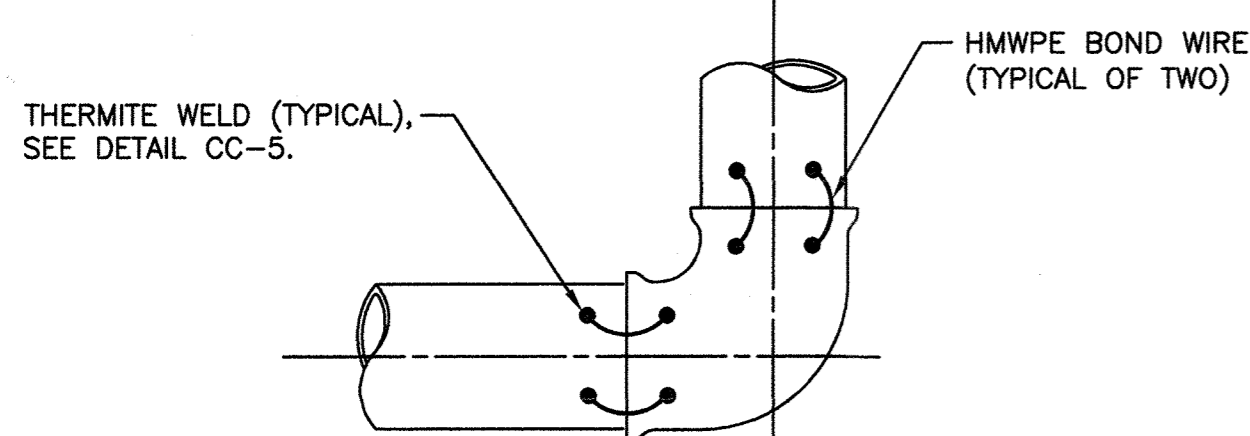
TYPICAL MECHANICAL COUPLING BOND



TYPICAL BONDING OF VALVE



TYPICAL BONDING OF TEE



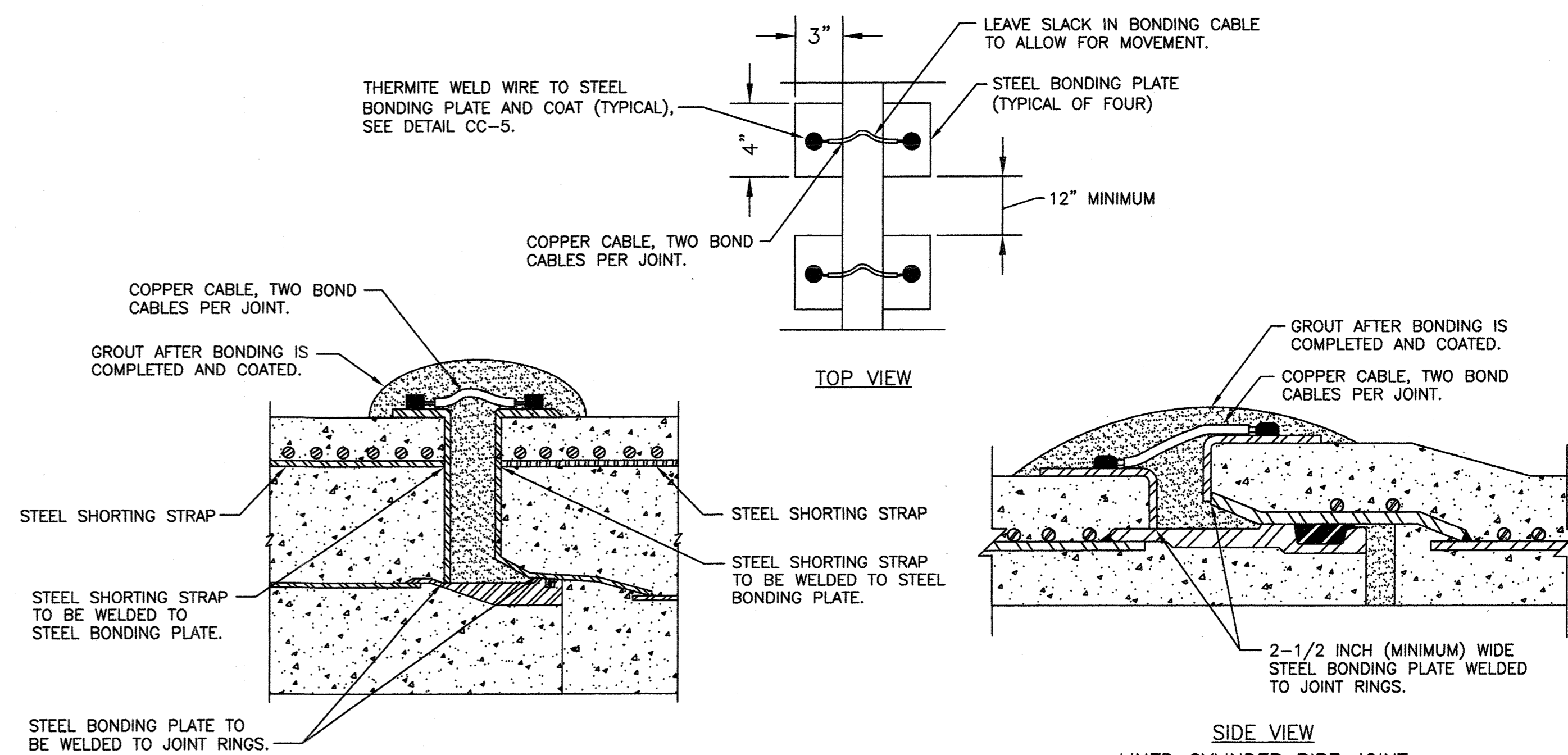
TYPICAL BONDING OF BEND, REDUCER OR SOLID SLEEVE

NOTES:

- BOND ALL JOINTS ON UNDERGROUND PIPING ASSOCIATED WITH THE WATER MAIN EXCEPT INSULATED JOINTS.
- THERMITE WELD BONDING WIRES TO TOP OF PIPE OR FITTINGS, SEE DETAIL CC-5.
- WIRE SIZE FOR BONDING JOINTS SHALL BE AS FOLLOWS:
12" & SMALLER - AWG NO. 6
16" TO 36" - AWG NO. 4
LARGER THAN 36" - AWG NO. 2
- ALL THERMITE WELDS TO PCCP OR BAR WRAPPED CONCRETE CYLINDER PIPE TO BE PERFORMED AT THE STEEL BONDING PLATES, SEE DETAIL CC-7.

CC-6: JOINT BONDING

Scale: None



NOTES:

- TWO STEEL SHORTING STRAPS REQUIRED PER PIPE SECTION FOR EMBEDDED CYLINDER PIPE. NO SHORTING STRAPS REQUIRED FOR LINED CYLINDER PIPE.
- STEEL BONDING PLATES AND STEEL SHORTING STRAPS (IF REQUIRED) TO BE INSTALLED BY PIPE MANUFACTURER DURING PIPE FABRICATION.
- BOND ALL PIPE JOINTS, INCLUDING THOSE ON PIPE, FITTINGS, VALVES, ETC., EXCEPT THOSE SPECIFIED TO BE INSULATED.
- WIRE SIZE FOR BONDING JOINTS SHALL BE AS FOLLOWS:
12" & SMALLER - AWG NO. 6
16" TO 36" - AWG NO. 4
LARGER THAN 36" - AWG NO. 2

CC-7: CONCRETE JOINT BONDING

Scale: None

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

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Director of Public Works: [Signature] 10/15/15
Date: [Signature] 10/15/15

Chief - Bureau of Engineering: Thomas R. Butler 9/26/15
Date: [Signature] 9/26/15

Chief, Utility Design Division: [Signature] P.S.D.
Date: [Signature] P.S.D.

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

Professional Engineer: [Signature]

DSN. BY: YZ
DRN. BY: JWW
CHK. BY: YZ
DATE: 9/15/2015

LR 0
BY NO. REVISION DATE

RECORD DRAWINGS 11/18

CATHODIC PROTECTION
DETAILS 2

600' SCALE MAP NO. BLOCK NO.

US ROUTE 29 WATER TRANSMISSION MAIN
SOUTH ENTRANCE ROAD TO LITTLE PATUXENT PARKWAY

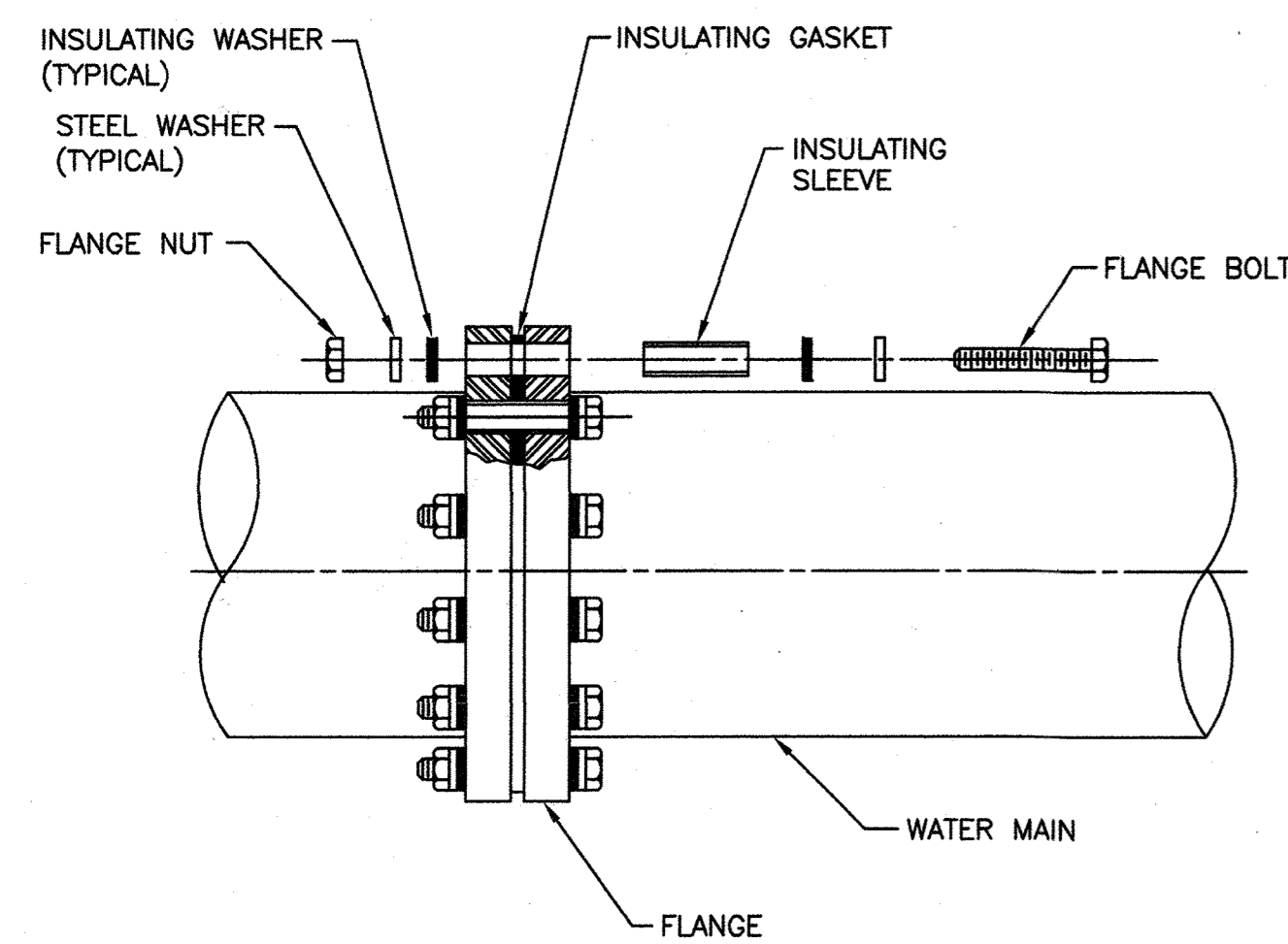
CAPITAL PROJECT: W-8296
CONTRACT NO.: 44-4776
ELECTION DISTRICT: 5
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 31 OF 48

RUSSELL CORROSION CONSULTANTS, INC.
Columbia, Maryland

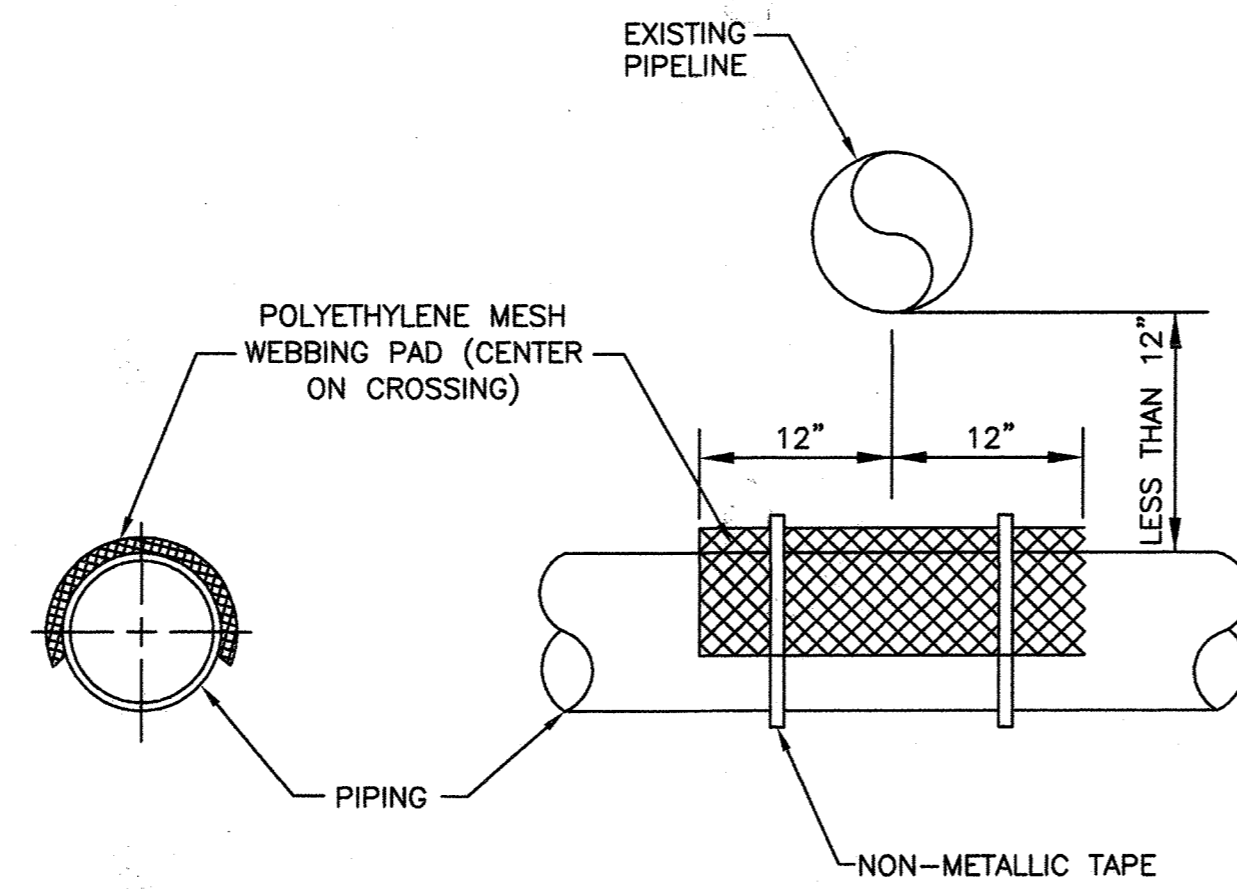
RECORD DRAWINGS

FILE NO. 33488-



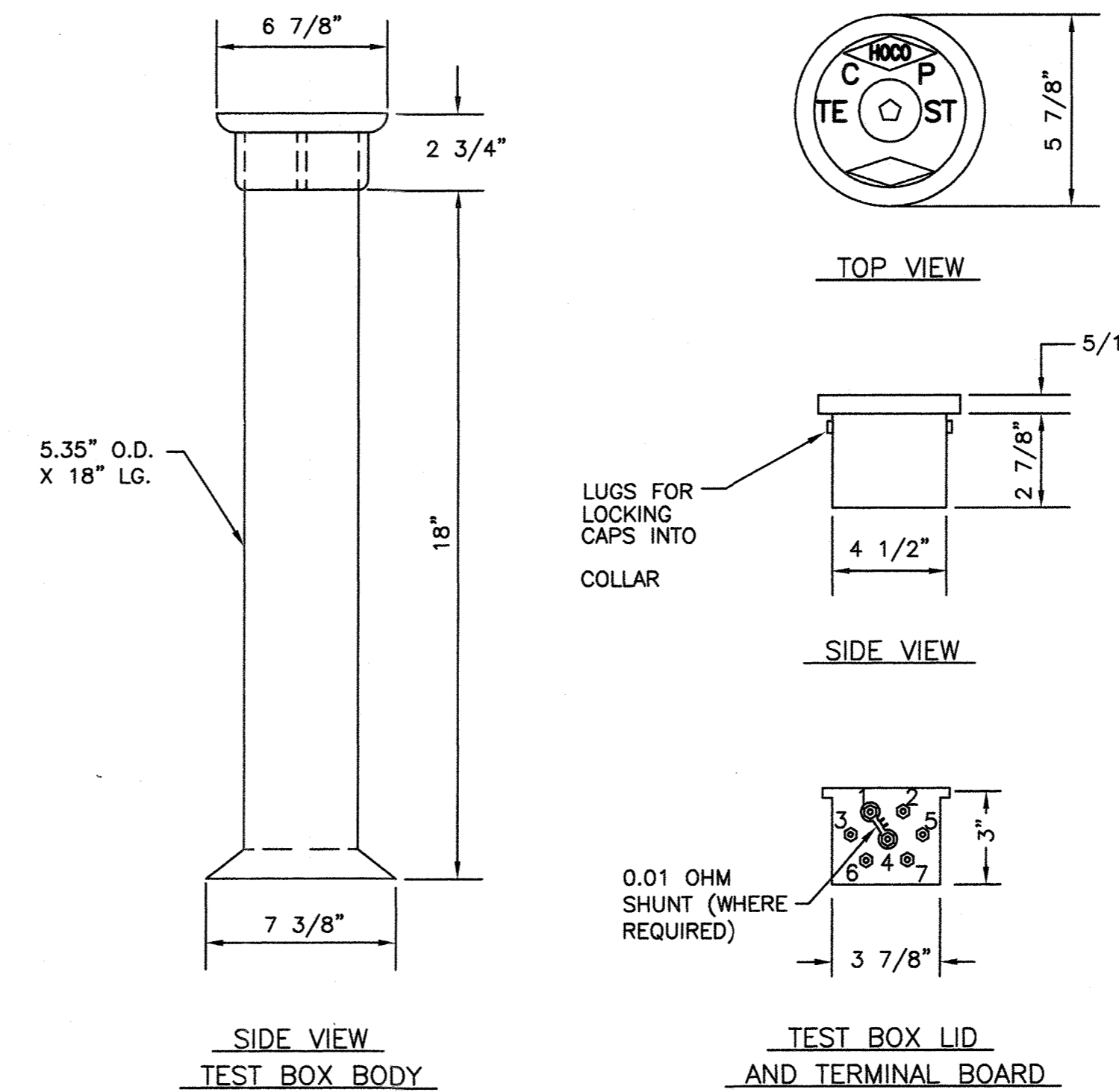
NOTE:
SEE SPECIFICATIONS FOR EXTERNAL COATING OF INSULATING FLANGE.

CC-8: INSULATING FLANGE
Scale: None

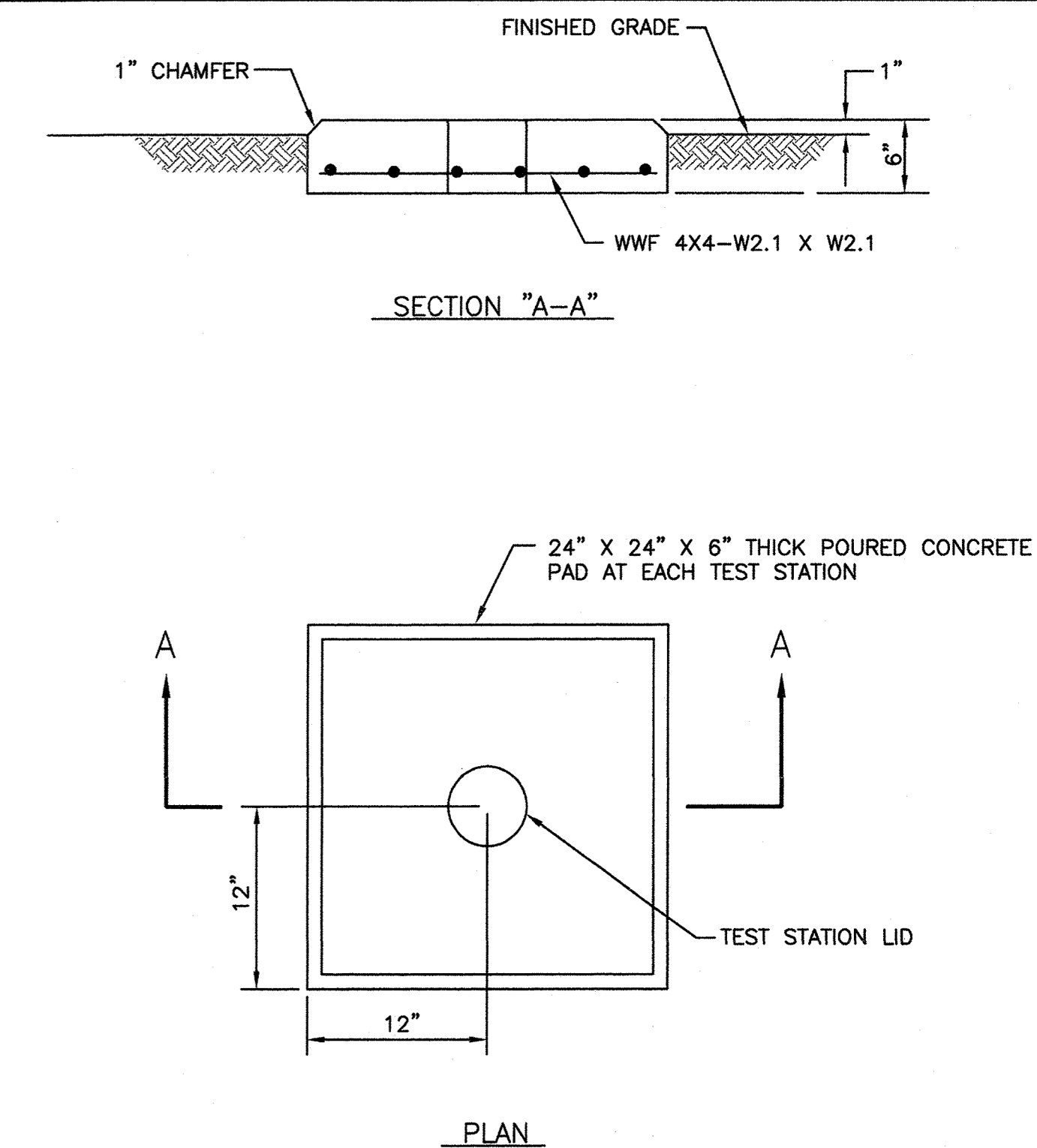


NOTE:
USE ONLY WHEN PIPES ARE LESS THAN 12" APART.

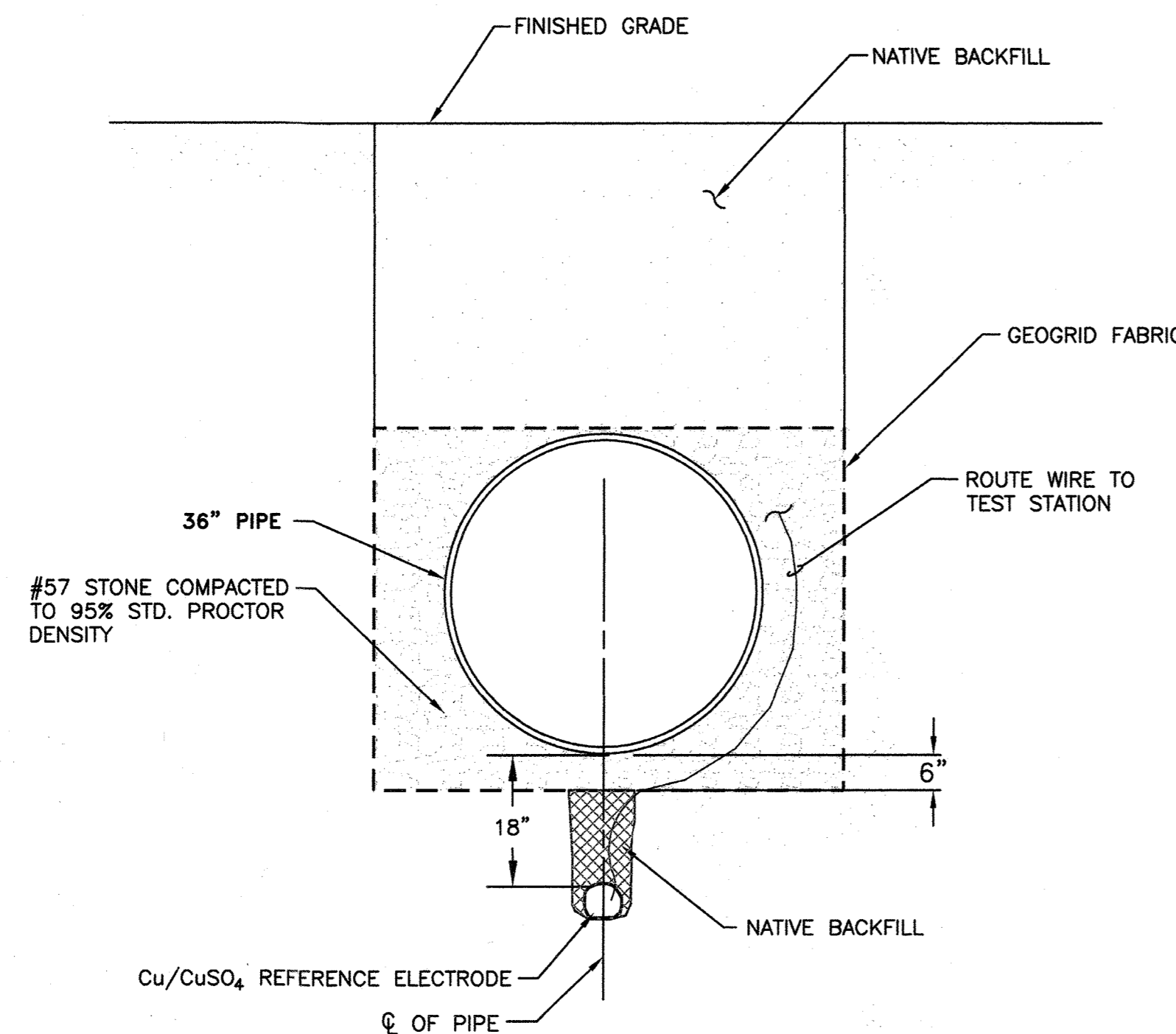
CC-9: SEPARATOR TO AVOID ELECTRICAL CONTACT
Scale: None



CC-10: TEST BOX
Scale: None



CC-11: CONCRETE TEST STATION PAD
Scale: None



NOTE:
INSTALL REFERENCE ELECTRODE IN SOIL BACKFILL. DO NOT BACKFILL REFERENCE ELECTRODE WITH SAND OR STONE.

CC-12: REFERENCE ELECTRODE PLACEMENT
Scale: None

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36" WATER MAIN TEST STATION SCHEDULE					
TEST STATION NUMBER	STATION NUMBER	TEST STATION TYPE	NUMBER OF MAGNESIUM ANODES	DETAIL NUMBER	REFERENCE ELECTRODE
TEST STATION-1	STA. 04+00	INSULATING FLANGE	0	CC-1	YES
TEST STATION-2	STA. 04+22	CASING	0	CC-5	YES
TEST STATION-3	STA. 44+94	CASING	0	CC-5	YES
TEST STATION-4	STA. 114+50	STANDARD	0	CC-2	YES
TEST STATION-5	STA. 174+00	STANDARD	0	CC-2	YES
TEST STATION-6	STA. 244+72	INSULATING FLANGE	0	CC-1	YES
TEST STATION-7	STA. 314+50	STANDARD	0	CC-2	YES
TEST STATION-8	STA. 384+00	STANDARD	0	CC-2	YES
TEST STATION-9	STA. 444+50	STANDARD	0	CC-2	YES
TEST STATION-10	STA. 514+00	STANDARD	0	CC-2	YES
TEST STATION-11	STA. 574+50	STANDARD	0	CC-2	YES
TEST STATION-12	STA. 644+00	STANDARD	0	CC-2	YES
TEST STATION-13	STA. 704+50	STANDARD	0	CC-2	YES
TEST STATION-14	STA. 764+00	IR DROP	0	CC-3	YES
TEST STATION-15	STA. 784+50	STANDARD	0	CC-2	YES
TEST STATION-16	STA. 784+00	IR DROP	0	CC-3	YES
TEST STATION-17	STA. 854+50	STANDARD	0	CC-2	YES

CC-13: TEST STATION SCHEDULE
Scale: None

RECORD DRAWINGS

RUSSELL CORROSION CONSULTANTS, INC.
Columbia, Maryland

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND
Director of Public Works: [Signature] 10/1/15
Chief - Bureau of Engineering: [Signature] 9/30/15
Chief, Utility Design Division: [Signature] 9/30/15

GOBRIEN & 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. 44991, EXPIRATION DATE 01/09/2016.

DSN. BY:	YZ
DRN. BY:	JWW
CHK. BY:	YZ
DATE:	9/15/2015
LR	2
RJD	1
BY	NO.

CATHODIC PROTECTION
DETAILS 3
RECORD DRAWINGS 11/18
ADDENDUM NO. 2 11/15
REVISION DATE

US ROUTE 29 WATER TRANSMISSION MAIN
SOUTH ENTRANCE ROAD TO LITTLE PATUXENT PARKWAY
CAPITAL PROJECT: W-8296
CONTRACT NO.: 44-4776
ELECTION DISTRICT: 5
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 32 OF 48
FILE NO. 33498-

GENERAL NOTES

1. CONTACT INFORMATION:

MALL IN COLUMBIA CONTACT
MR. RICH PUFFINBURGER
SENIOR OPERATIONS MANAGER
410-206-4895 (CELL)

CHIEF, TRAFFIC ENGINEERING DIVISION
MR. KRIS JAGARAPU P.E.
410-313-5755

MD-SHA UTILITY ENGINEER DISTRICT 7
MS. ANDREA ABEND
1-301-624-8116

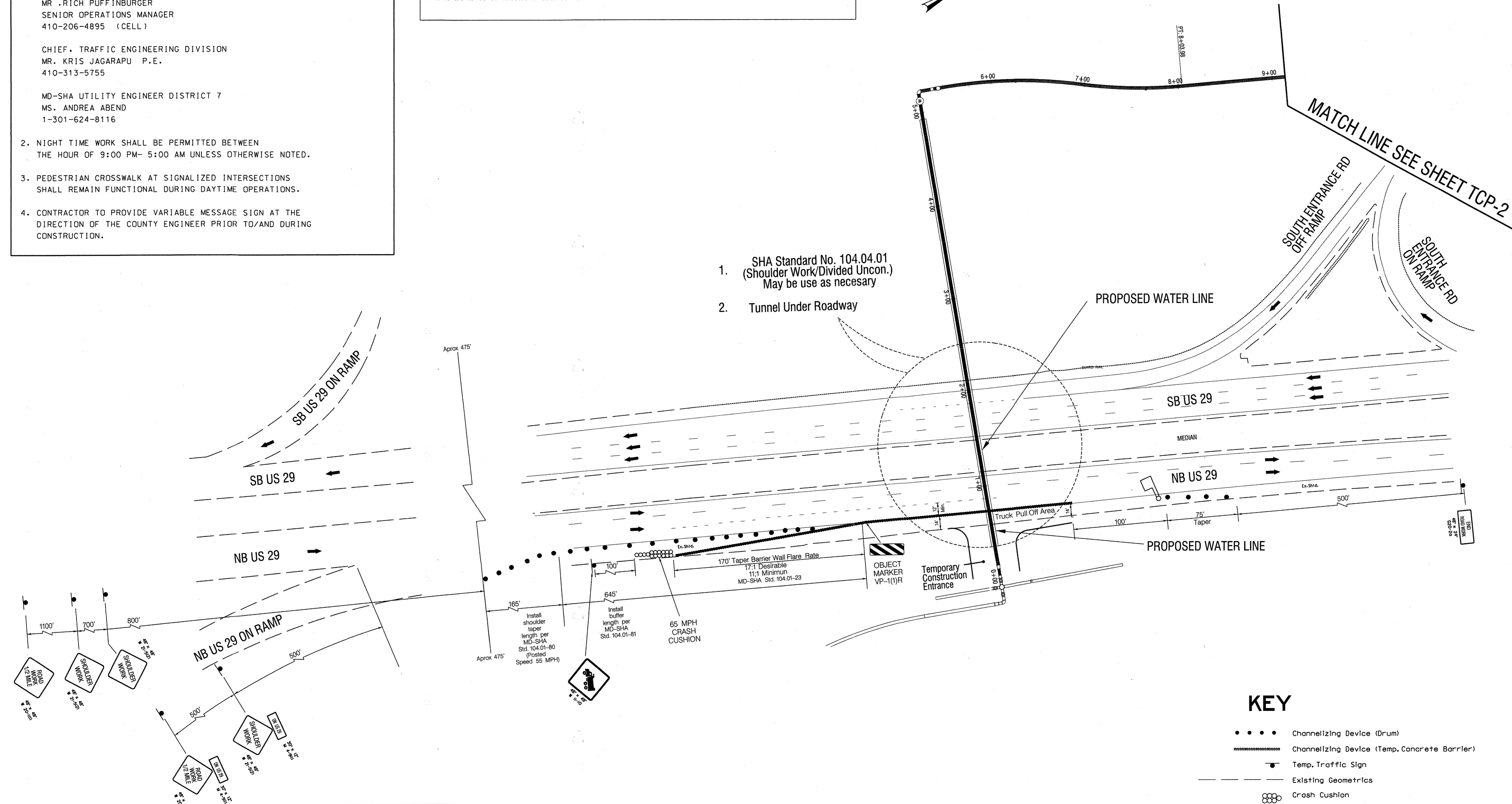
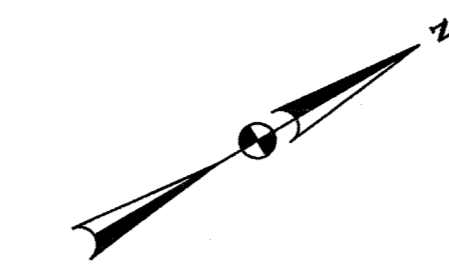
2. NIGHT TIME WORK SHALL BE PERMITTED BETWEEN THE HOUR OF 9:00 PM- 5:00 AM UNLESS OTHERWISE NOTED.

3. PEDESTRIAN CROSSWALK AT SIGNALIZED INTERSECTIONS SHALL REMAIN FUNCTIONAL DURING DAYTIME OPERATIONS.

4. CONTRACTOR TO PROVIDE VARIABLE MESSAGE SIGN AT THE DIRECTION OF THE COUNTY ENGINEER PRIOR TO/AND DURING CONSTRUCTION.

NOTE:

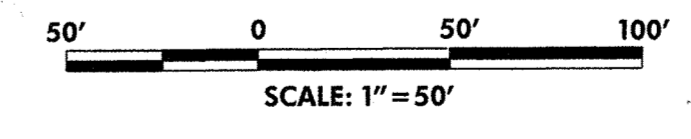
For all standards referred to on the plans the contractor must go to the Book of Standards which will have the most current version. The Book of Standards can be accessed at: <http://apps.roads.maryland.gov/businesswithsha/bizstdspecs/desmanualstdpub/publicationsonline/bhd/bookstd/index.asp>
All items are to be constructed in accordance with the current version of the referenced standard at the time of construction.



1. SHA Standard No. 104.04.01 (Shoulder Work/Divided Uncon.) May be use as necessary
2. Tunnel Under Roadway

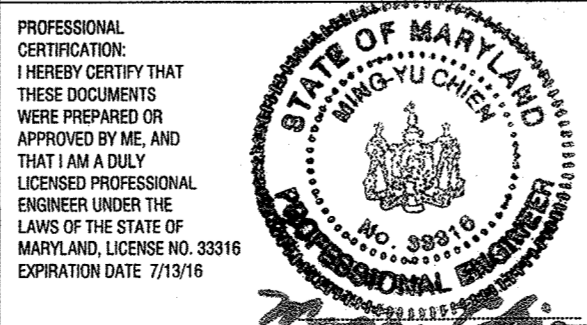
KEY

- Channellizing Device (Drum)
- Channelizing Device (Temp. Concrete Barrier)
- Temp. Traffic Sign
- Existing Geometrics
- Crash Cushion
- Flagger
- Direction of Traffic



The Traffic Group, Inc.
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9900 Franklin Square Drive
Baltimore, Maryland 21238
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PHONE: 301-731-5622



DSN. BY: F. HOECKEL				
DRN. BY: F. HOECKEL				
CHK. BY: J. DIRNDORFER				
DATE: SEPT 15, 2015	LR 0	RECORD DRAWINGS	11/18	
	BY NO.	REVISION	DATE	

600' SCALE MAP NO.		BLOCK NO.	
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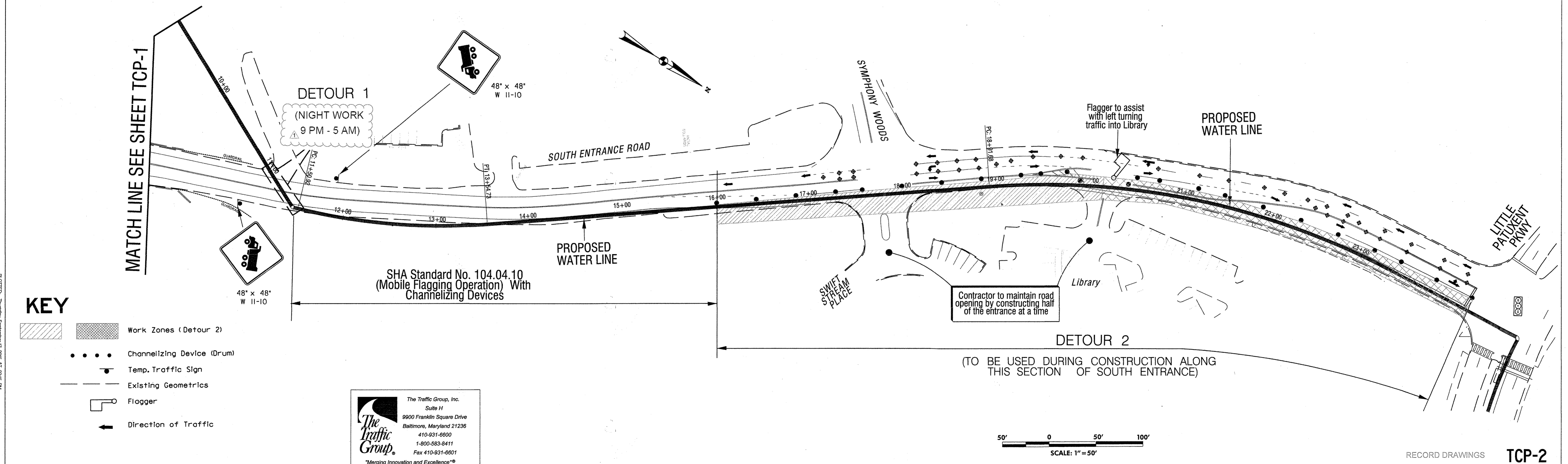
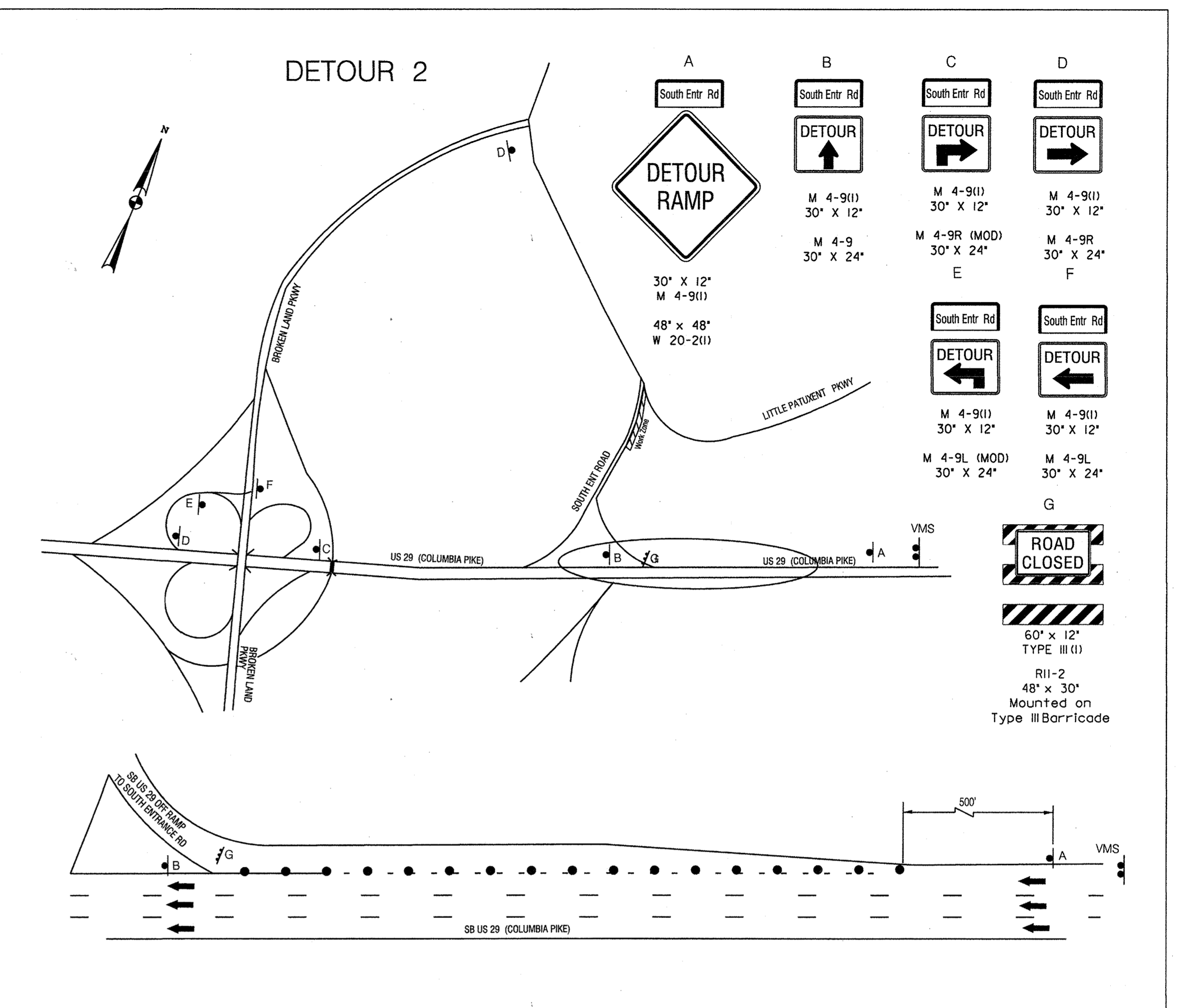
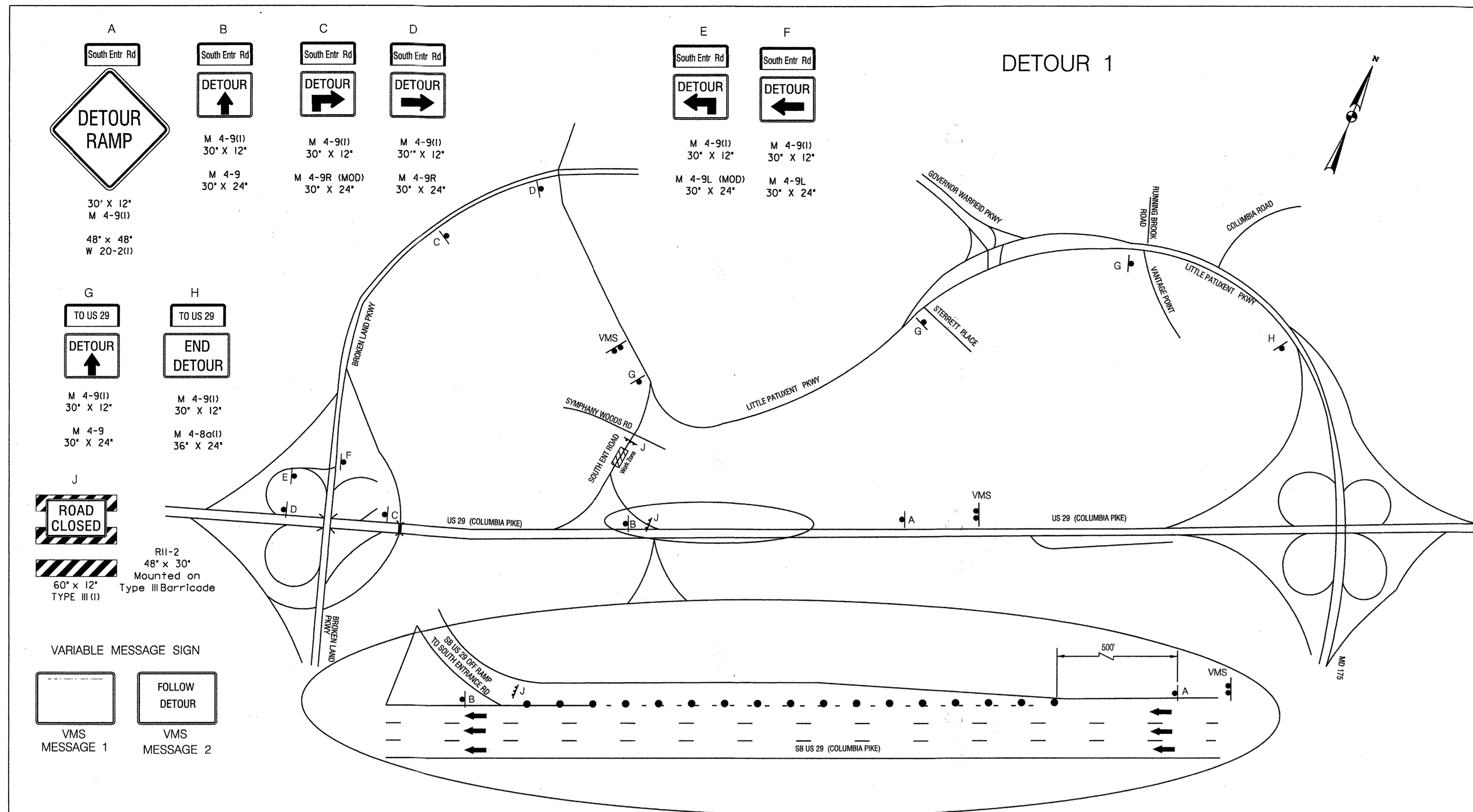
MAINTENANCE OF TRAFFIC PLAN

US ROUTE 29 WATER TRANSMISSION MAIN SOUTH ENTRANCE TO LITTLE PATUXENT PARKWAY
CAPITAL PROJECT: W-8296
CONTRACT NO.: 44-4776
ELECTION DISTRICT: 5
HOWARD COUNTY, MARYLAND

RECORD DRAWINGS
TCP-1
SCALE AS SHOWN
SHEET
33 OF 48

PLOTTED: Thursday, September 17, 2015 AT 10:01 PM
 FILE: F:\2000\3000\271\Task One - MD - 29 to Stevens Lane Plan\g12-1001_MOT-1008.dgn

DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND
 Director of Public Works: *[Signature]* 10/15
 Chief, Bureau of Engineering: *[Signature]* 9/30/15
 Chief, Utility Design Division: *[Signature]* 9/30/15
 Director of Utilities: *[Signature]* 9/30/15



DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

[Signatures]
DATE: 10/15/15
DATE: 9/21/15

O'BRIEN & GERE
4201 MITCHELLVILLE ROAD
SUITE 500
BOWIE, MD 20716
PHONE: 301-731-5822

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. 33316, EXPIRATION DATE 7/31/16

[Seal]

DSN BY: F. HOECKEL			
DRN BY: F. HOECKEL	LR 3	RECORD DRAWINGS	11/18
CHK BY: J. DIRNDORFER	LR 2	DR-1	11/16
DATE: SEPT 15, 2015	JD 1	ADDENDUM NO. 2	11/15
	BY NO.	REVISION	DATE

MAINTENANCE OF TRAFFIC PLAN

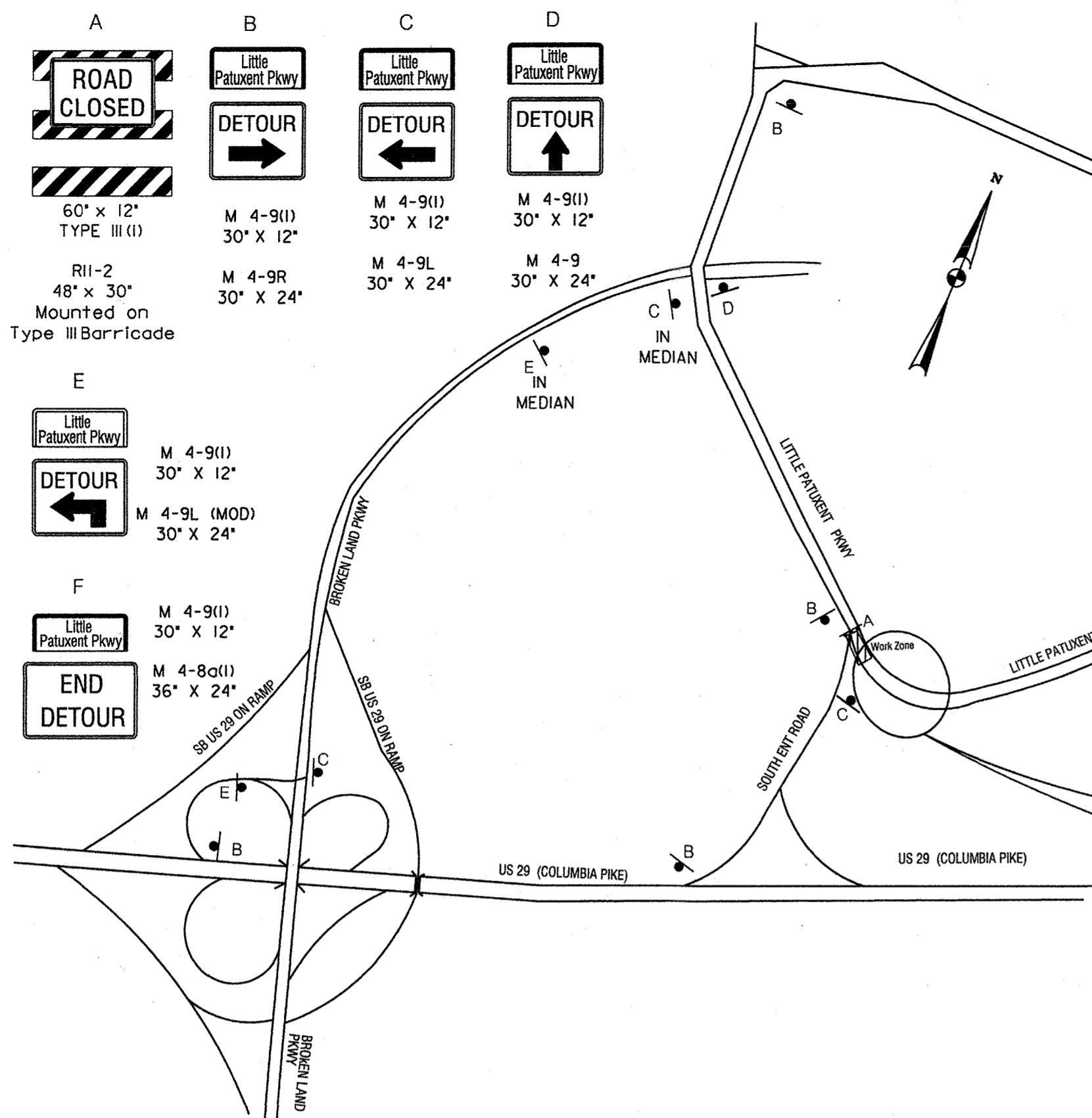
600' SCALE MAP NO. _____ BLOCK NO. _____

US ROUTE 29 WATER TRANSMISSION MAIN SOUTH ENTRANCE TO LITTLE PATUXENT PARKWAY

CAPITAL PROJECT: W-8296
CONTRACT NO.: 44-4776
ELECTION DISTRICT: 5
HOWARD COUNTY, MARYLAND

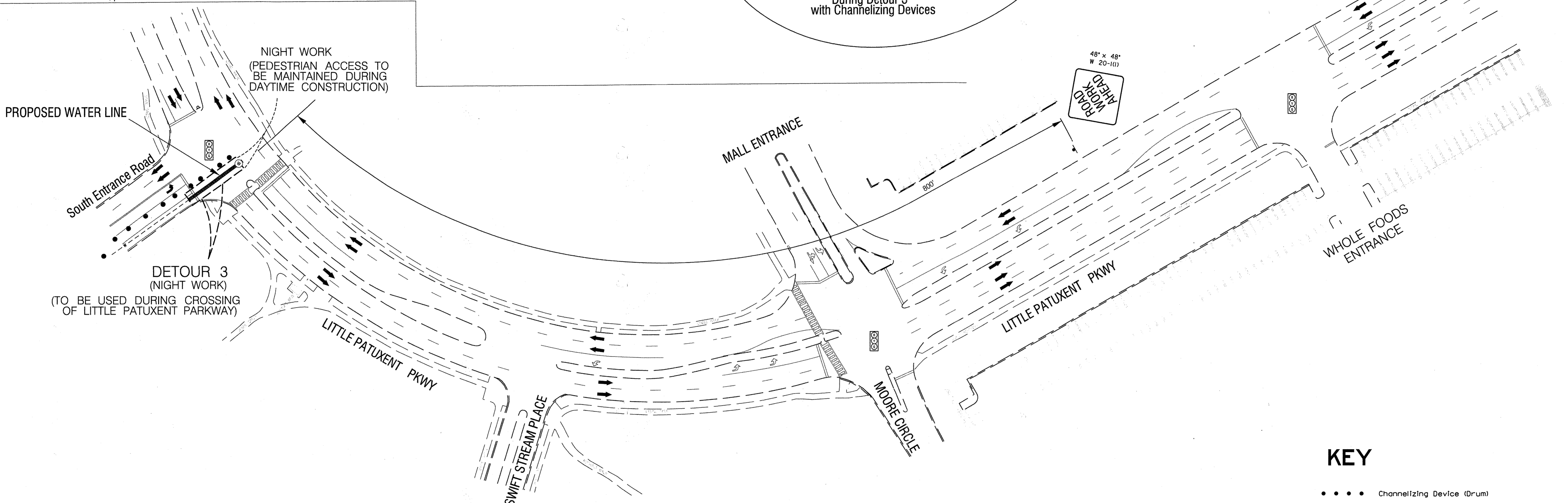
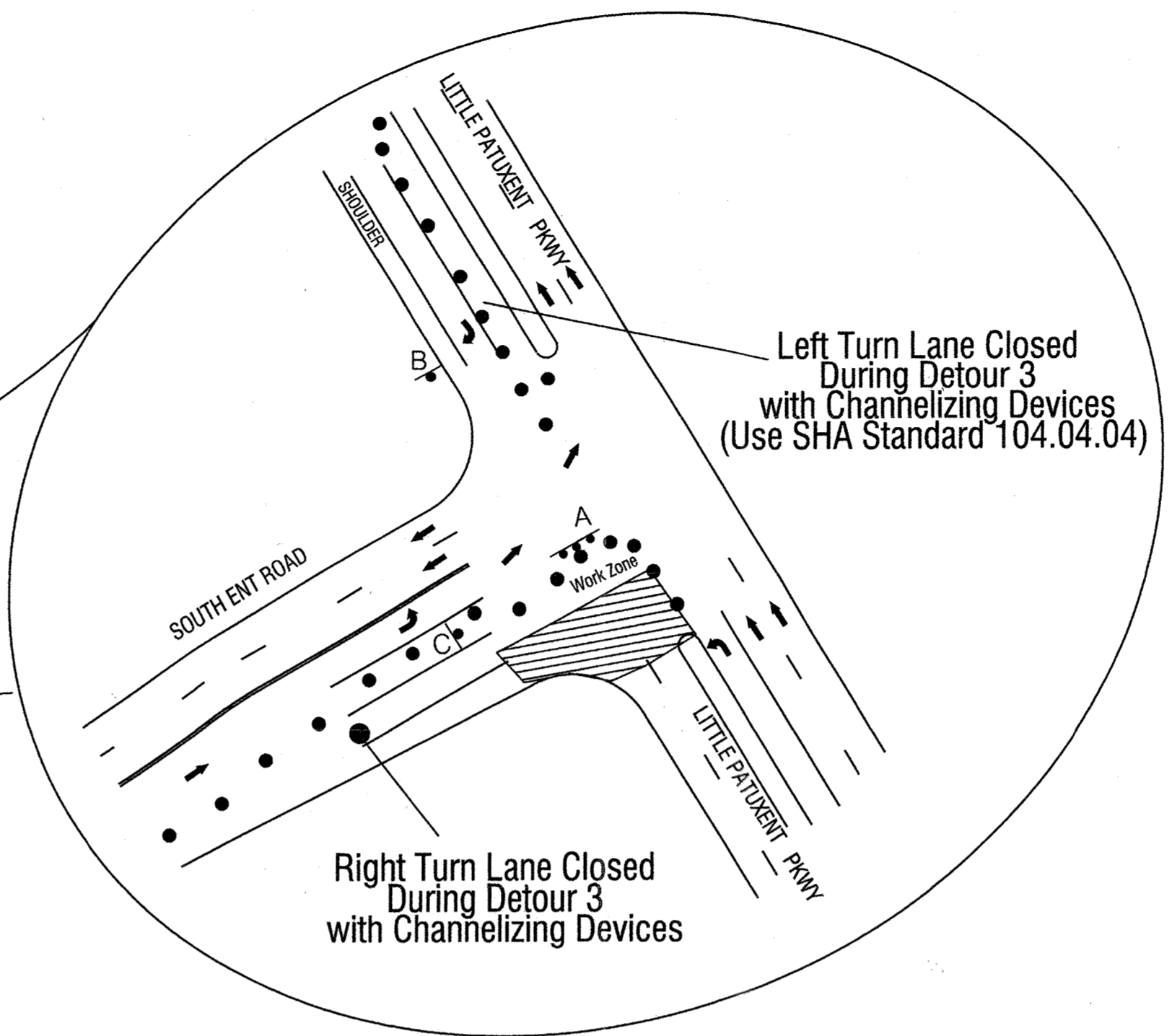
SCALE AS SHOWN
SHEET 34 OF 48

PLOTTED: Thursday, September 24, 2015 11:26:15 AM
FILE: F:\2015\09\24\TCP-2.dwg



**DETOUR 3
(NIGHT WORK)**

- A**
ROAD CLOSED
60" x 12"
TYPE III (1)
RII-2
48" x 30"
Mounted on
Type III Barricade
- B**
Little Patuxent Pkwy
DETOUR
M 4-9(1)
30" x 12"
M 4-9R
30" x 24"
- C**
Little Patuxent Pkwy
DETOUR
M 4-9(1)
30" x 12"
M 4-9L
30" x 24"
- D**
Little Patuxent Pkwy
DETOUR
M 4-9(1)
30" x 12"
M 4-9
30" x 24"
- E**
Little Patuxent Pkwy
DETOUR
M 4-9(1)
30" x 12"
M 4-9L (MOD)
30" x 24"
- F**
Little Patuxent Pkwy
END DETOUR
M 4-9(1)
30" x 12"
M 4-8ot(1)
36" x 24"



KEY

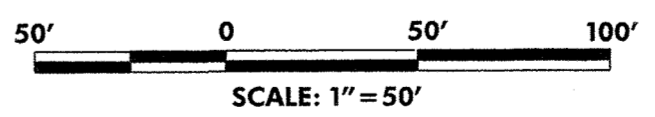
- Channelizing Device (Drum)
- Temp. Traffic Sign
- - - - Existing Geometrics
- ← Direction of Traffic

The Traffic Group, Inc.
Suite H
9900 Franklin Square Drive
Baltimore, Maryland 21236
410-931-8500
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BOWIE, MD 20716
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DRN. BY: F. HOECKEL				
CHK. BY: J. DIRNDORFER				
DATE: SEPT 15, 2015	LR 0	RECORD DRAWINGS	11/18	
	BY NO.	REVISION	DATE	



RECORD DRAWINGS **TCP-3**

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Director of Public Works: *[Signature]* 10/1/15
Chief of Bureau of Utilities: *[Signature]* 10/1/15

Chief - Bureau of Engineering: *[Signature]* 9/30/15
Chief, Utility Design Division: *[Signature]* 9/30/15

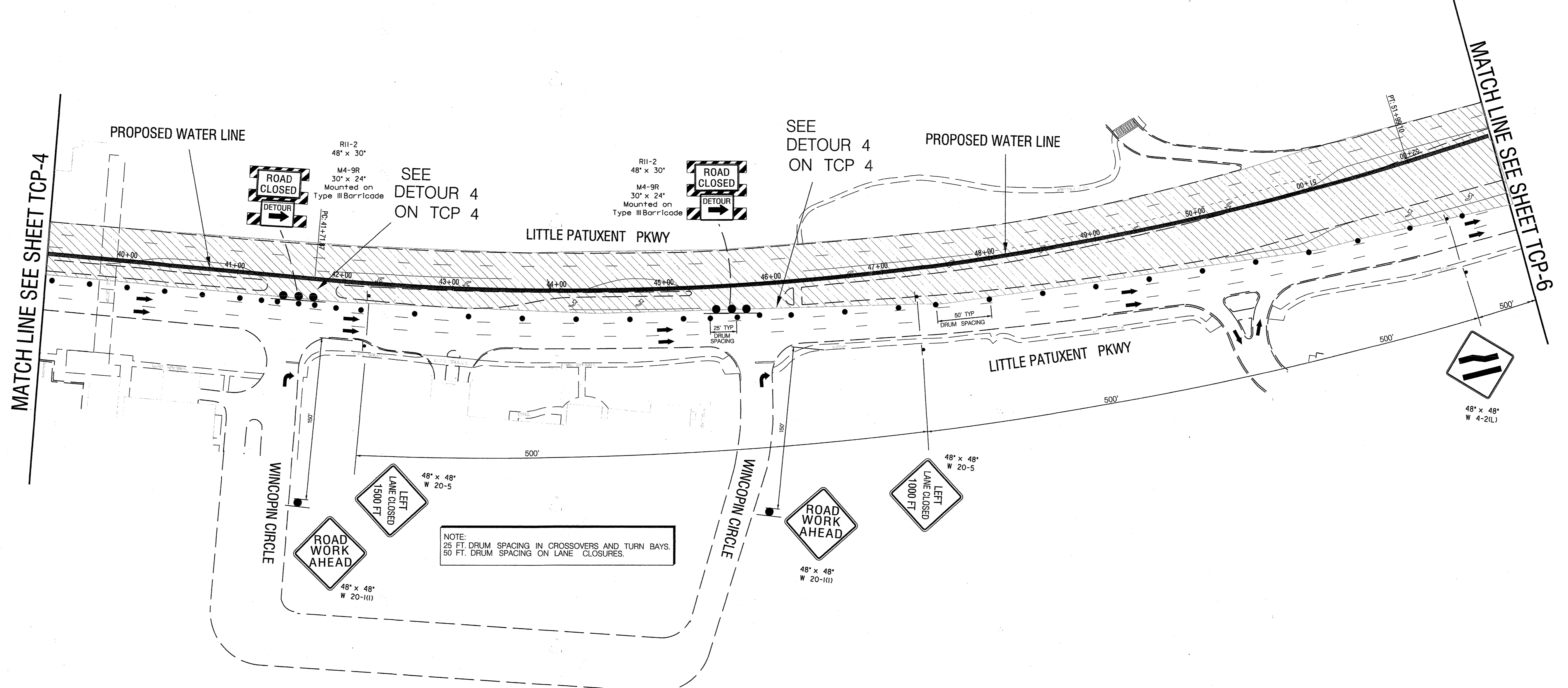
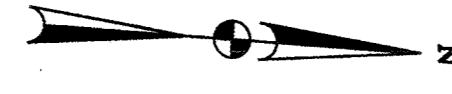
MAINTENANCE OF TRAFFIC PLAN

**US ROUTE 29 WATER TRANSMISSION MAIN
SOUTH ENTRANCE TO LITTLE PATUXENT PARKWAY**

CAPITAL PROJECT: W-8296
CONTRACT NO.: 44-4776
ELECTION DISTRICT: 5
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 35 OF 48

FILED: 11/18/15 10:00 AM 11/18/15 10:00 AM 11/18/15 10:00 AM 11/18/15 10:00 AM

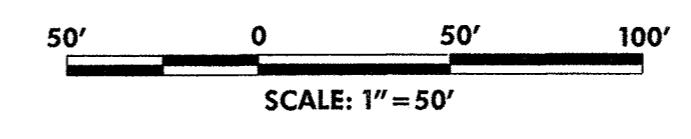


MATCH LINE SEE SHEET TCP-4

MATCH LINE SEE SHEET TCP-6

KEY

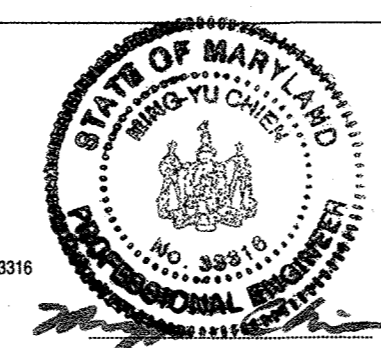
- Work Zone (Night Work)
- Channelizing Device (Drum)
- Temp. Traffic Sign
- Existing Geometrics
- Direction of Traffic



RECORD DRAWINGS **TCP-5**

The Traffic Group, Inc.
 Suite H
 9900 Franklin Square Drive
 Baltimore, Maryland 21236
 410-931-8600
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 Fax 410-931-8601
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 BOWLE, MD 20716
 PHONE: 301-731-5622



DSN. BY: F. HOECKEL				
DRN. BY: F. HOECKEL				
CHK. BY: J. DIRNDORFER				
DATE: SEPT 15, 2015	0	1	RECORD DRAWINGS	11/18
	BY	NO.	REVISION	DATE

MAINTENANCE OF TRAFFIC PLAN

600' SCALE MAP NO. _____ BLOCK NO. _____

US ROUTE 29 WATER TRANSMISSION MAIN SOUTH ENTRANCE TO LITTLE PATUXENT PARKWAY

CAPITAL PROJECT: W-8296
 CONTRACT NO.: 44-4776
 ELECTRICIAN DISTRICT: 5
 HOWARD COUNTY, MARYLAND

DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND

[Signature] 10/1/15
 DIRECTOR OF PUBLIC WORKS DATE

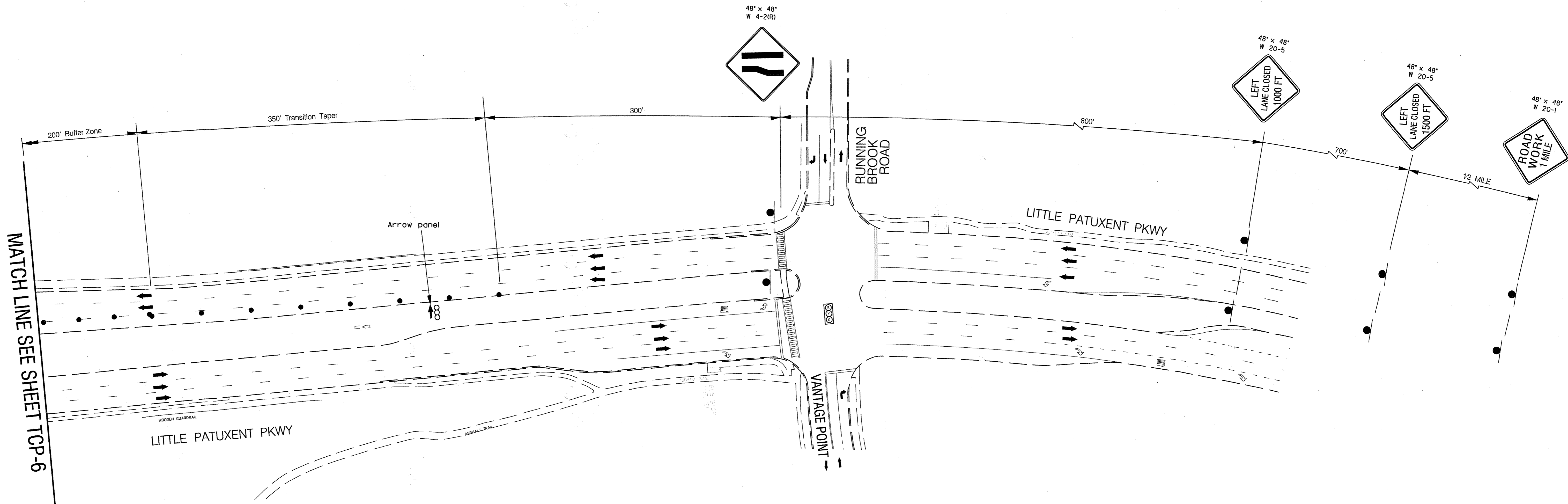
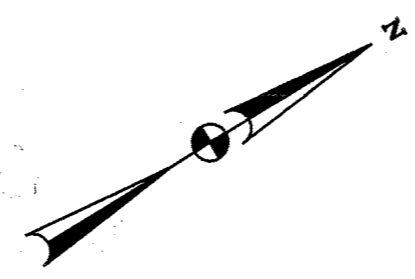
[Signature] 9/30/15
 CHIEF - BUREAU OF ENGINEERING DATE

[Signature] 10/1/15
 CHIEF BUREAU OF UTILITIES DATE

[Signature] 9/30/15
 CHIEF, UTILITY DESIGN DIVISION DATE

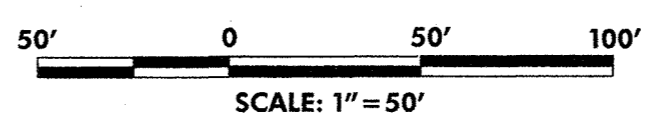
SCALE AS SHOWN
 SHEET 37 OF 48

PLOTTED: Thursday, September 17, 2015 AT 02:18 PM
 FILE: \\s001\0000\271\1\m_016_002_106 to broken Land Plan\015\TCP-005_MOT-0289.dwg



KEY

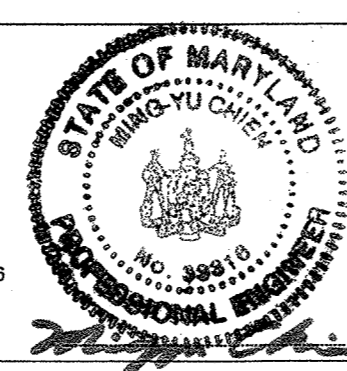
- Traffic Closure Area During Detour 6
- Channelizing Device (Drum)
- Existing Geometrics
- Direction of Traffic
- Arrow panel



RECORD DRAWINGS **TCP-7**

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 Suite H
 9900 Franklin Square Drive
 Baltimore, Maryland 21236
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 BOWIE, MD 20716
 PHONE: 301-731-5622



DSN. BY:	F. HOECKEL			
DRN. BY:	F. HOECKEL			
CHK. BY:	J. DIRNDORFER			
DATE:	SEPT 15, 2015	LR	0	RECORD DRAWINGS
		BY	NO.	REVISION
				DATE

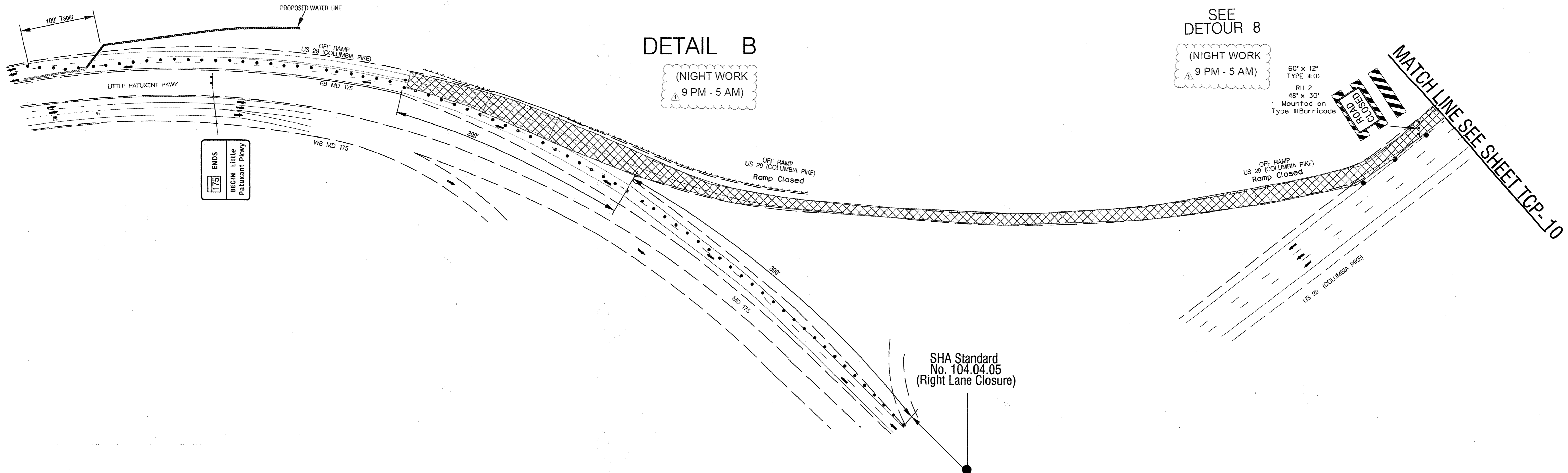
MAINTENANCE OF TRAFFIC PLAN	
600' SCALE MAP NO.	BLOCK NO.

US ROUTE 29 WATER TRANSMISSION MAIN SOUTH ENTRANCE TO LITTLE PATUXENT PARKWAY
 CAPITAL PROJECT: W-8296
 CONTRACT NO. 44-4776
 ELECTION DISTRICT: 5
 HOWARD COUNTY, MARYLAND

DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND

Director of Public Works: *[Signature]* 10/1/15
 Chief - Bureau of Engineering: *[Signature]* 9/15/15
 Chief, Utility Design Division: *[Signature]* 9/15/15
 Date: 10/1/15

PLOTTED: Thursday, September 17, 2015, 11:20:05 AM AT: C:\PS...
 FILE: I:\Projects\2015\US29\Drawings\Traffic\TCP-7.dwg
 PLOT: 11/18/15 10:00:00 AM
 PLOTTER: HP DesignJet 5000 Series



SEE
DETOUR 8
(NIGHT WORK
9 PM - 5 AM)

MATCH LINE SEE SHEET TCP-10

DETAIL B
(NIGHT WORK
9 PM - 5 AM)

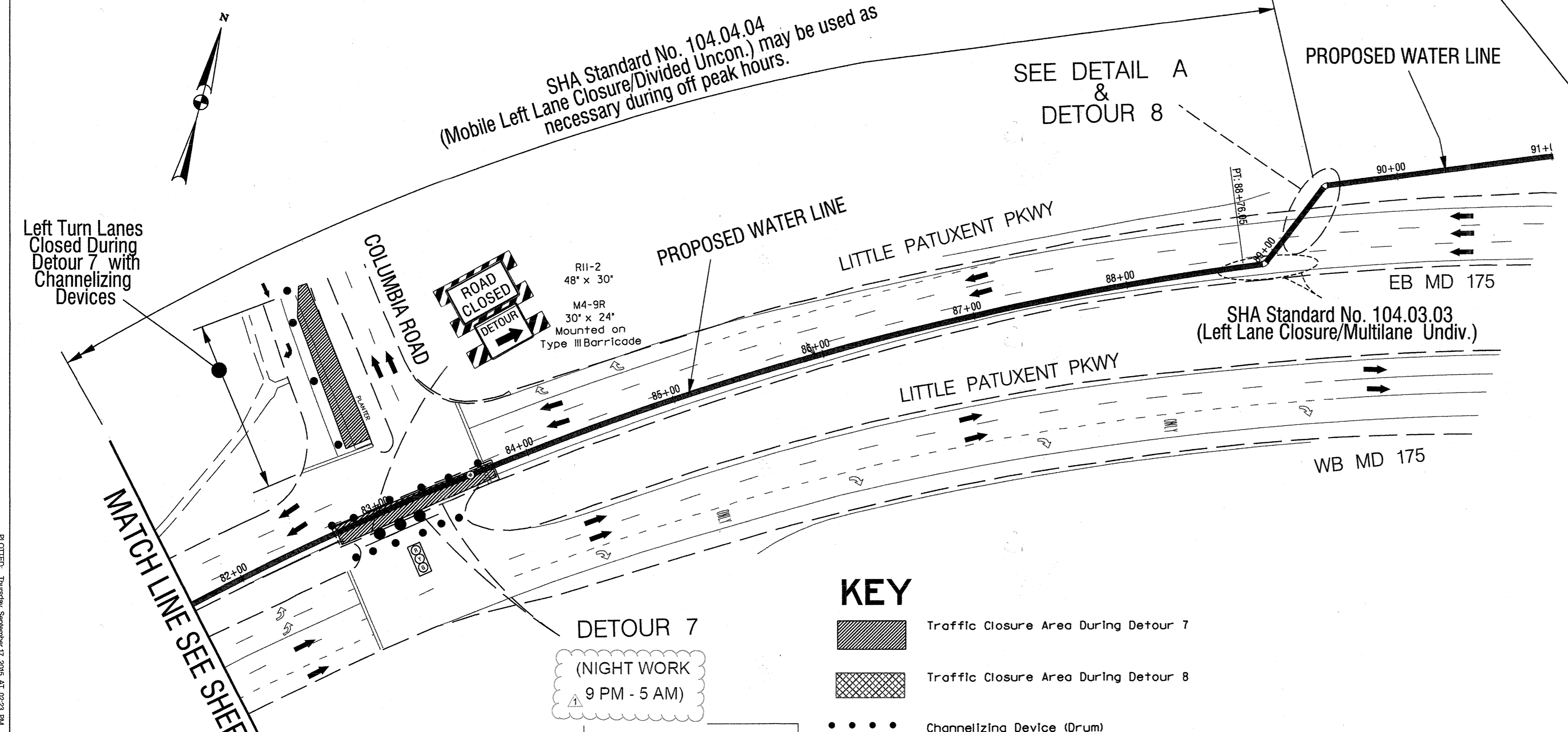
ENDS
175
BEGIN Little Patuxent Pkwy

SHA Standard
No. 104.04.05
(Right Lane Closure)

SHA Standard No. 104.04.04
(Mobile Left Lane Closure/Divided Uncon.) may be used as necessary during off peak hours.

SEE DETAIL A
&
DETOUR 8

PROPOSED WATER LINE



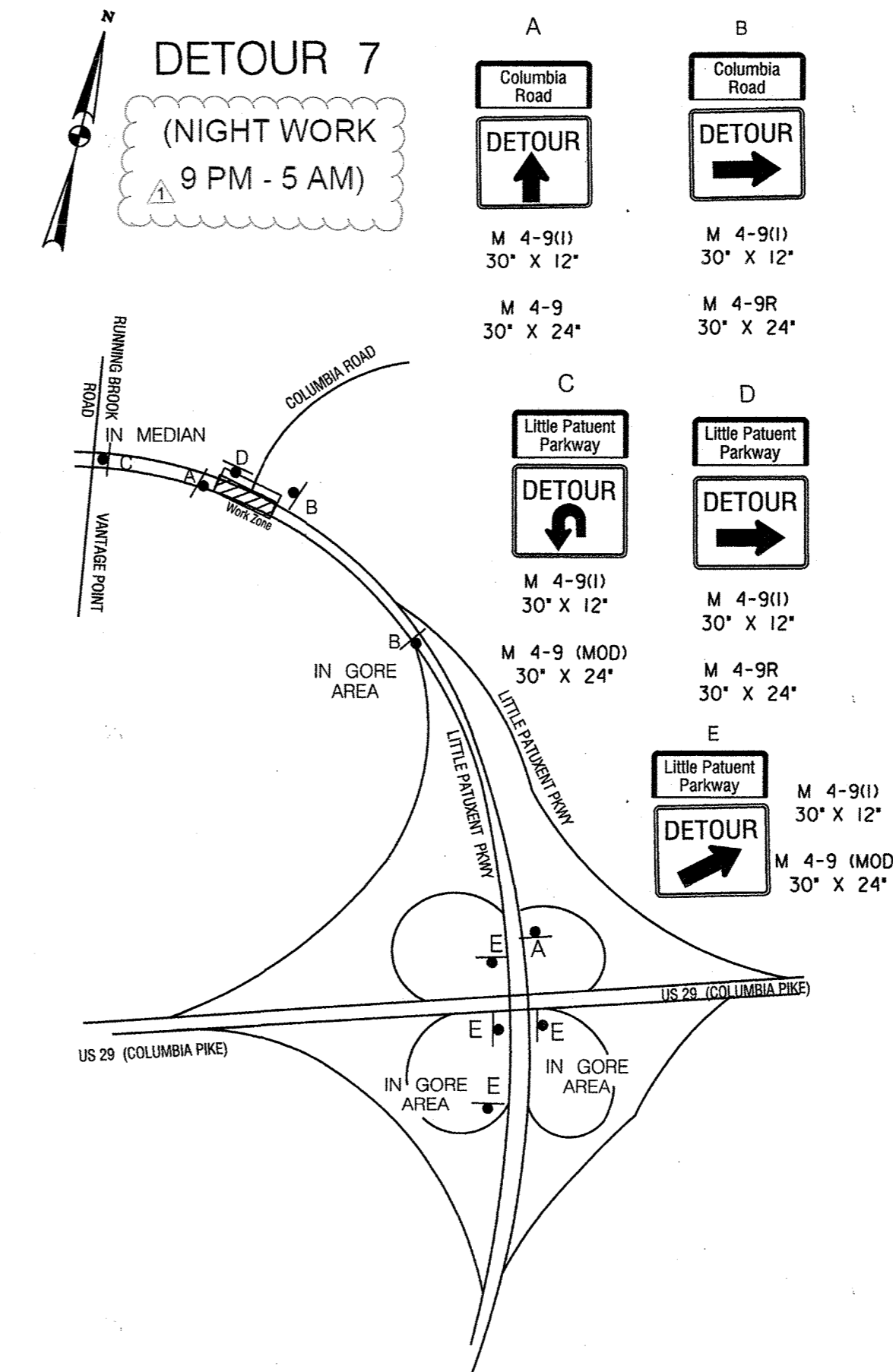
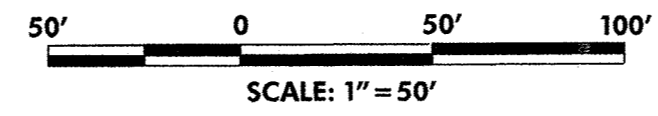
Left Turn Lanes
Closed During
Detour 7 with
Channelizing
Devices

DETOUR 7
(NIGHT WORK
9 PM - 5 AM)

SHA Standard No. 104.03.03
(Left Lane Closure/Multilane Undiv.)

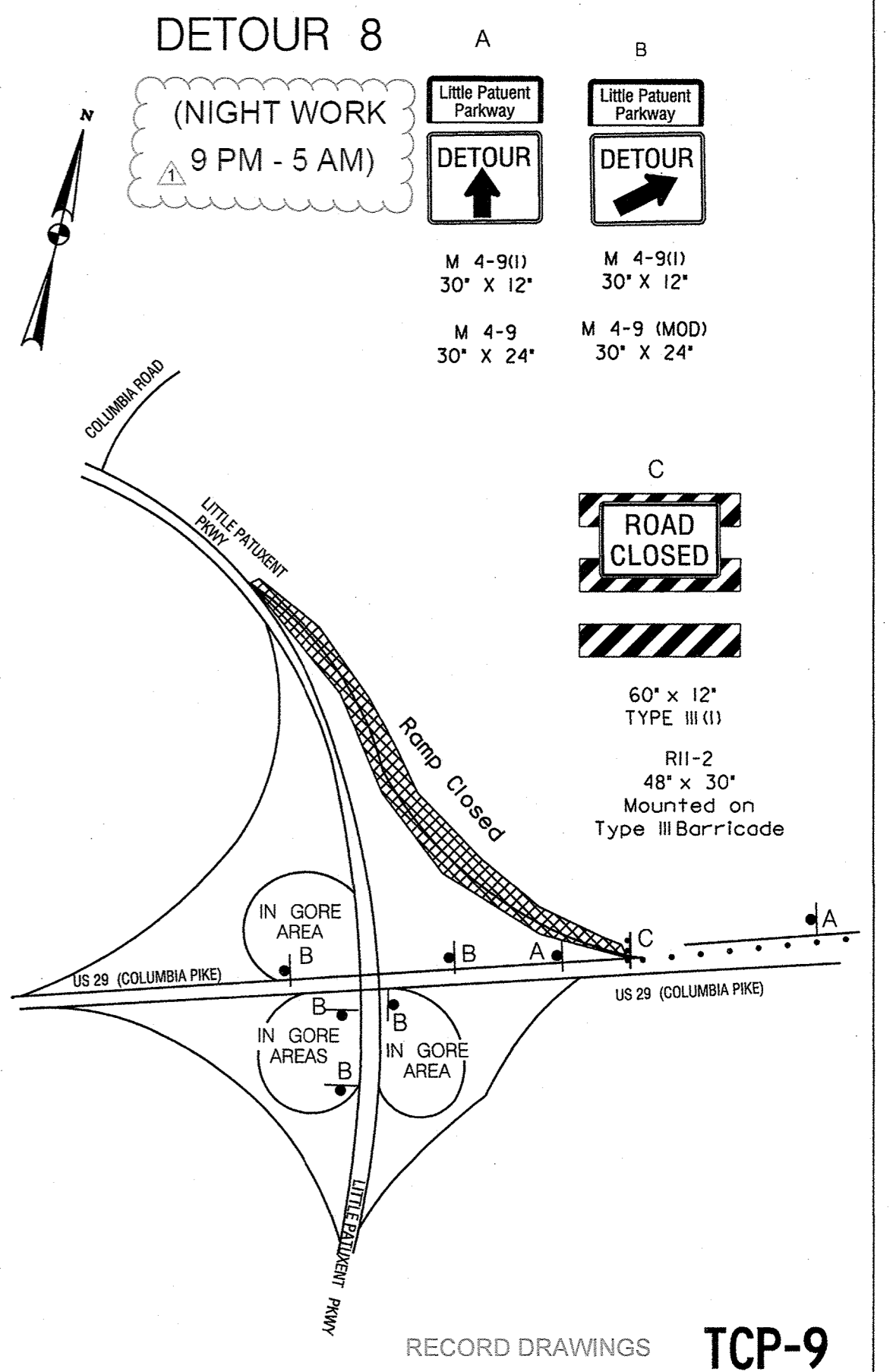
- KEY**
- Traffic Closure Area During Detour 7
 - Traffic Closure Area During Detour 8
 - Channelizing Device (Drum)
 - Temp. Traffic Sign
 - Existing Geometrics
 - Direction of Traffic

The Traffic Group, Inc.
Suite H
9900 Franklin Square Drive
Baltimore, Maryland 21238
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1-800-883-8411
Fax 410-931-8801
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DETOUR 7
(NIGHT WORK
9 PM - 5 AM)

- | | | | |
|---|-----------------------------------|---|-----------------------------------|
| A | Columbia Road
DETOUR | B | Columbia Road
DETOUR |
| | M 4-9(1)
30' x 12' | | M 4-9(1)
30' x 12' |
| | M 4-9
30' x 24' | | M 4-9R
30' x 24' |
| C | Little Patuxent Parkway
DETOUR | D | Little Patuxent Parkway
DETOUR |
| | M 4-9(1)
30' x 12' | | M 4-9(1)
30' x 12' |
| | M 4-9 (MOD)
30' x 24' | | M 4-9R
30' x 24' |
| E | Little Patuxent Parkway
DETOUR | | M 4-9(1)
30' x 12' |
| | | | M 4-9 (MOD)
30' x 24' |



DETOUR 8
(NIGHT WORK
9 PM - 5 AM)

- | | | | |
|---|--|---|-----------------------------------|
| A | Little Patuxent Parkway
DETOUR | B | Little Patuxent Parkway
DETOUR |
| | M 4-9(1)
30' x 12' | | M 4-9(1)
30' x 12' |
| | M 4-9
30' x 24' | | M 4-9 (MOD)
30' x 24' |
| C | ROAD CLOSED | | |
| | 60' x 12'
TYPE III (1) | | |
| | R11-2
48' x 30'
Mounted on
Type III Barricade | | |

RECORD DRAWINGS TCP-9

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Director of Public Works: *[Signature]* 10/1/15
Chief - Bureau of Engineering: *[Signature]* 9/24/15
Chief, Utility Design Division: *[Signature]* 9/24/15

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. 33318 EXPIRATION DATE 7/15/18

STATE OF MARYLAND
FENG-YU CHEN
Professional Engineer

DSN. BY:	F. HOECKEL		
DRN. BY:	F. HOECKEL		
CHK. BY:	J. DIRNDORFER	LR 2	RECORD DRAWINGS
DATE:	SEPT 15, 2015	JD 1	ADDENDUM NO. 2
		BY NO.	REVISION
			DATE

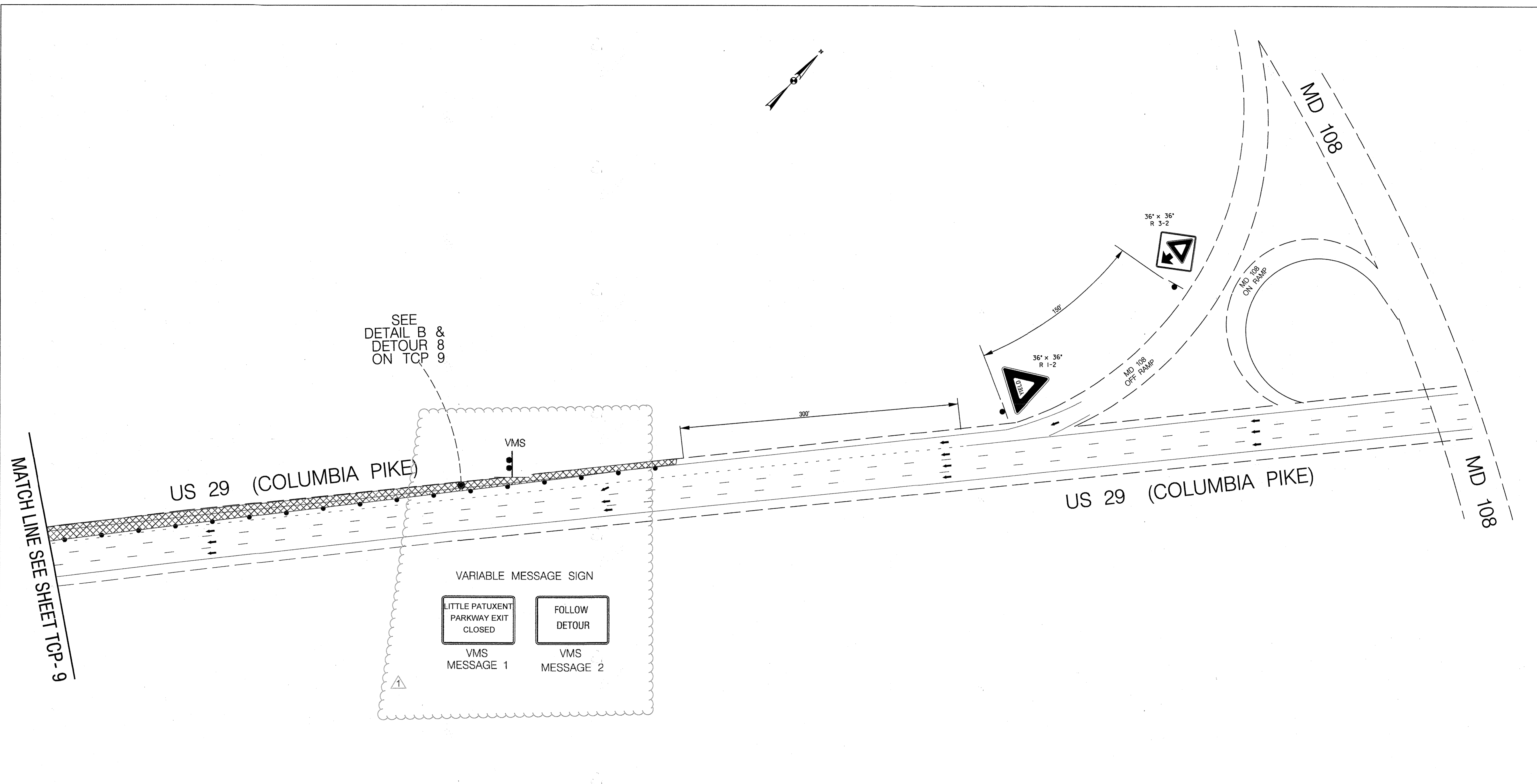
MAINTENANCE OF TRAFFIC PLAN	
600' SCALE MAP NO.	BLOCK NO.

US ROUTE 29 WATER TRANSMISSION MAIN SOUTH ENTRANCE TO LITTLE PATUXENT PARKWAY

CAPITAL PROJECT: W-8296
CONTRACT NO.: 44-4776
ELECTION DISTRICT: 5
HOWARD COUNTY, MARYLAND

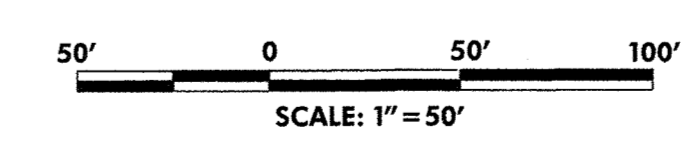
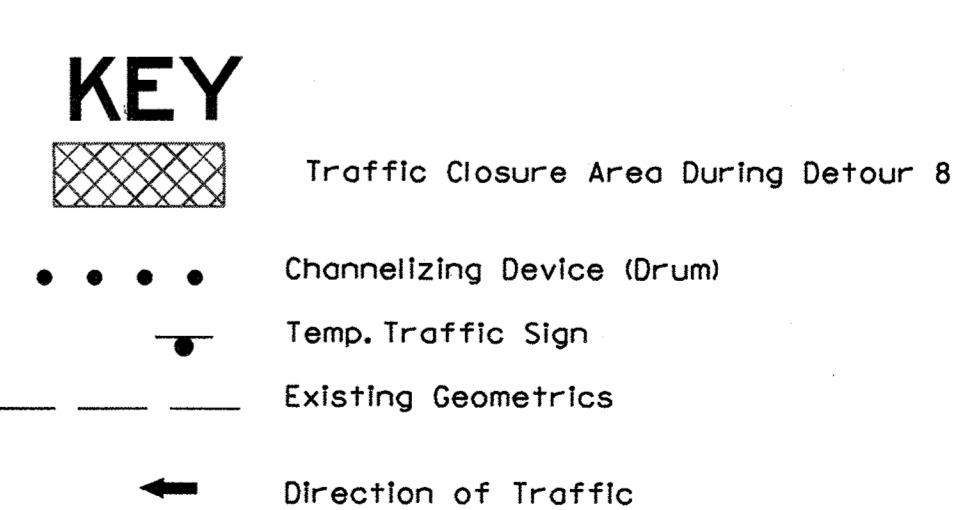
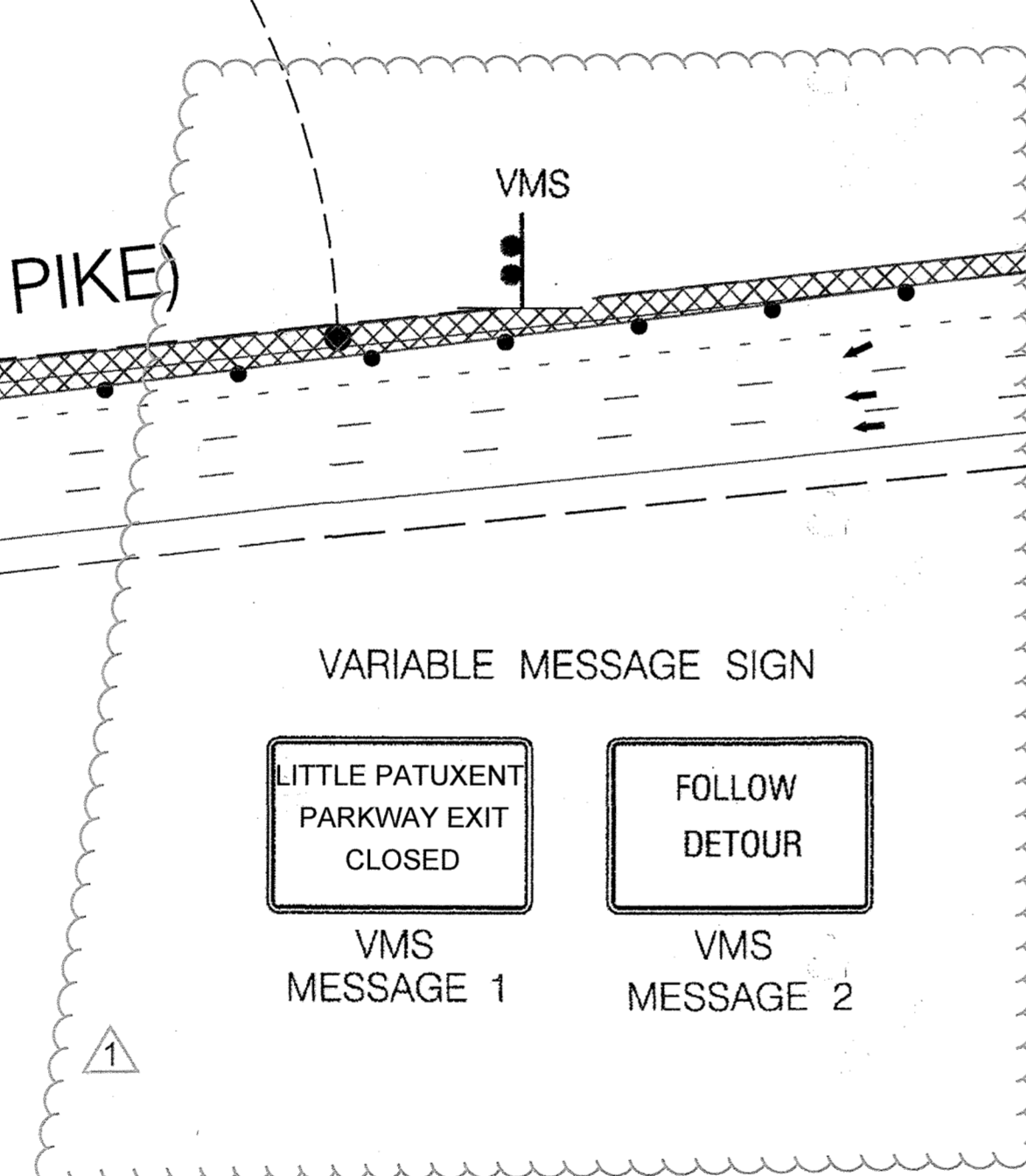
SCALE AS SHOWN
SHEET 41 OF 48

PLOTTED: Thursday, September 17, 2015, AT 8:23 AM
 FILE: P:\PROJECTS\2015\1509\15090000\15090000.dwg - MDL - User: brian.lane



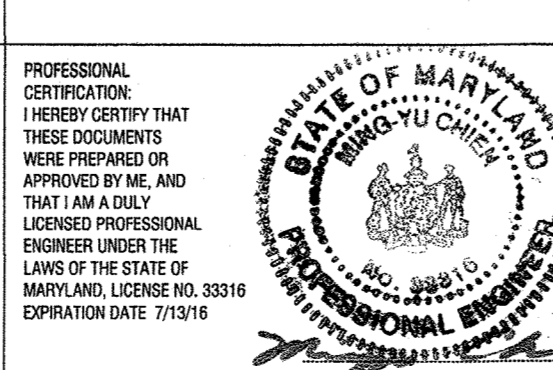
MATCH LINE SEE SHEET TCP-9

SEE
DETAIL B &
DETOUR
ON TCP
8
9



The Traffic Group, Inc.
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4201 MITCHELLVILLE ROAD
SUITE 500
BOWIE, MD 20716
PHONE: 301-731-5622



DSN. BY:	F. HOECKEL		
DRN. BY:	F. HOECKEL		
CHK. BY:	J. DIRNDORFER		
DATE:	SEPT 15, 2015		
BY	NO.	REVISION	DATE
	LR 2	RECORD DRAWINGS	11/18
	JD 1	ADDENDUM NO. 2	11/15

MAINTENANCE OF TRAFFIC PLAN

600' SCALE MAP NO. _____ BLOCK NO. _____

RECORD DRAWINGS **TCP-10**

**US ROUTE 29 WATER TRANSMISSION MAIN
SOUTH ENTRANCE TO LITTLE PATUXENT PARKWAY**

CAPITAL PROJECT: W-8296
CONTRACT NO.: 44-4776
ELECTION DISTRICT: 5
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 42 OF 48

PLOTTED: Thursday, September 17, 2015 AT 12:22 PM
FILE: I:\Projects\2015\TCP-10\Drawings\150917\150917.dwg
PLOT: 150917.dwg to 150917.dwg
PLOTTER: HP DesignJet 2450

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

[Signature] 10/1/15
DIRECTOR OF PUBLIC WORKS DATE

[Signature] 9/23/15
CHIEF - BUREAU OF ENGINEERING DATE

[Signature] 10/1/15
CHIEF, UTILITY DESIGN DIVISION DATE

[Signature] 9/23/15
PSD DATE

PROJECT DESCRIPTION
GENERAL

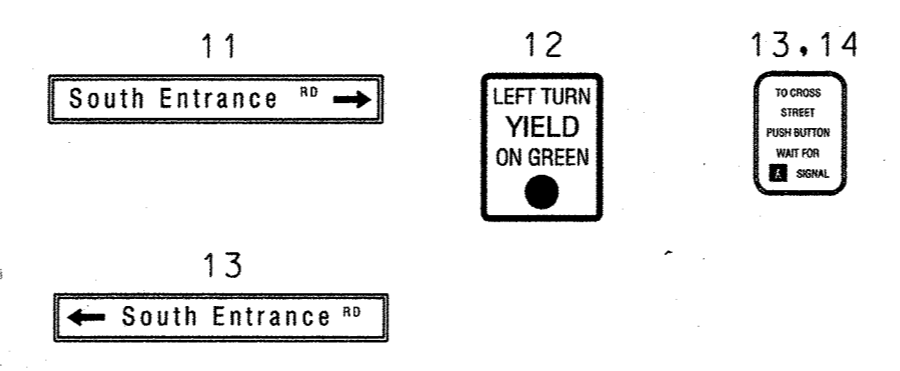
THIS PROJECT INVOLVES THE INSTALLATION OF A NEW VIDEO DETECTION CAMERA FOR THE NORTHBOUND DIRECTION OF LITTLE PATUXENT PARKWAY. THE EXISTING SIGNAL LOCATED IN HOWARD COUNTY TO REMAIN IN THE SAME OPERATION. LITTLE PATUXENT PARKWAY IS CONSIDERED TO RUN IN A NORTH/SOUTH DIRECTION.

EQUIPMENT LIST

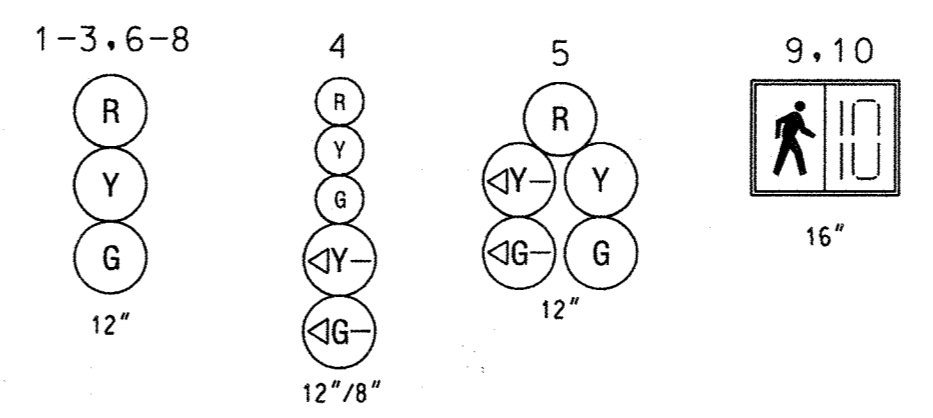
EQUIPMENT TO BE FURNISHED AND/OR INSTALLED BY THE CONTRACTOR.

QUANTITY	LF/UNITS	DESCRIPTION
LUMP SUM	LS	MAINTENANCE OF TRAFFIC MOBILIZATION
1	EA	VIDEO DETECTOR CAMERA (TERRA) (BY OTHERS, N.I.C.)
375	LF	VIDEO DETECTOR CAMERA CABLE (BY OTHERS, N.I.C.)

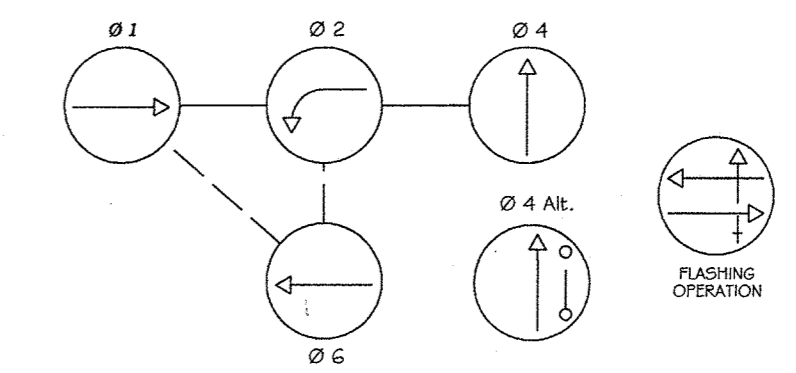
EXISTING SIGNS



EXISTING SIGNALS

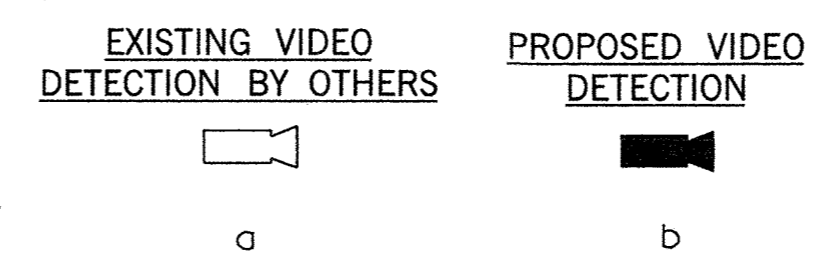


EXISTING NEMA PHASING

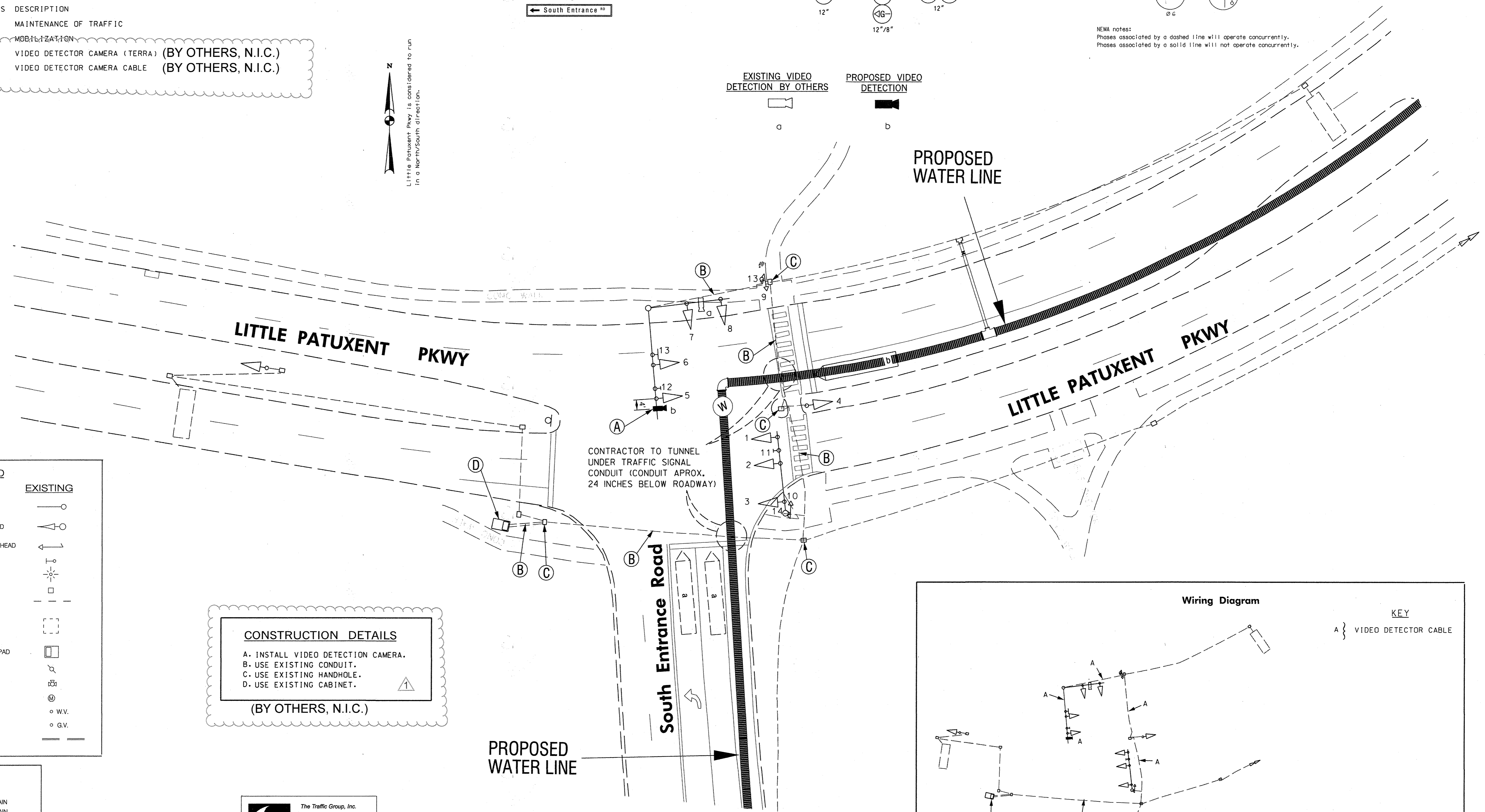


NEMA notes:
Phases associated by a dashed line will operate concurrently.
Phases associated by a solid line will not operate concurrently.

North Arrow
Little Patuxent Pkwy is considered to run in a North/South direction.



PROPOSED WATER LINE



CONTRACTOR TO TUNNEL UNDER TRAFFIC SIGNAL CONDUIT (CONDUIT APPROX. 24 INCHES BELOW ROADWAY)

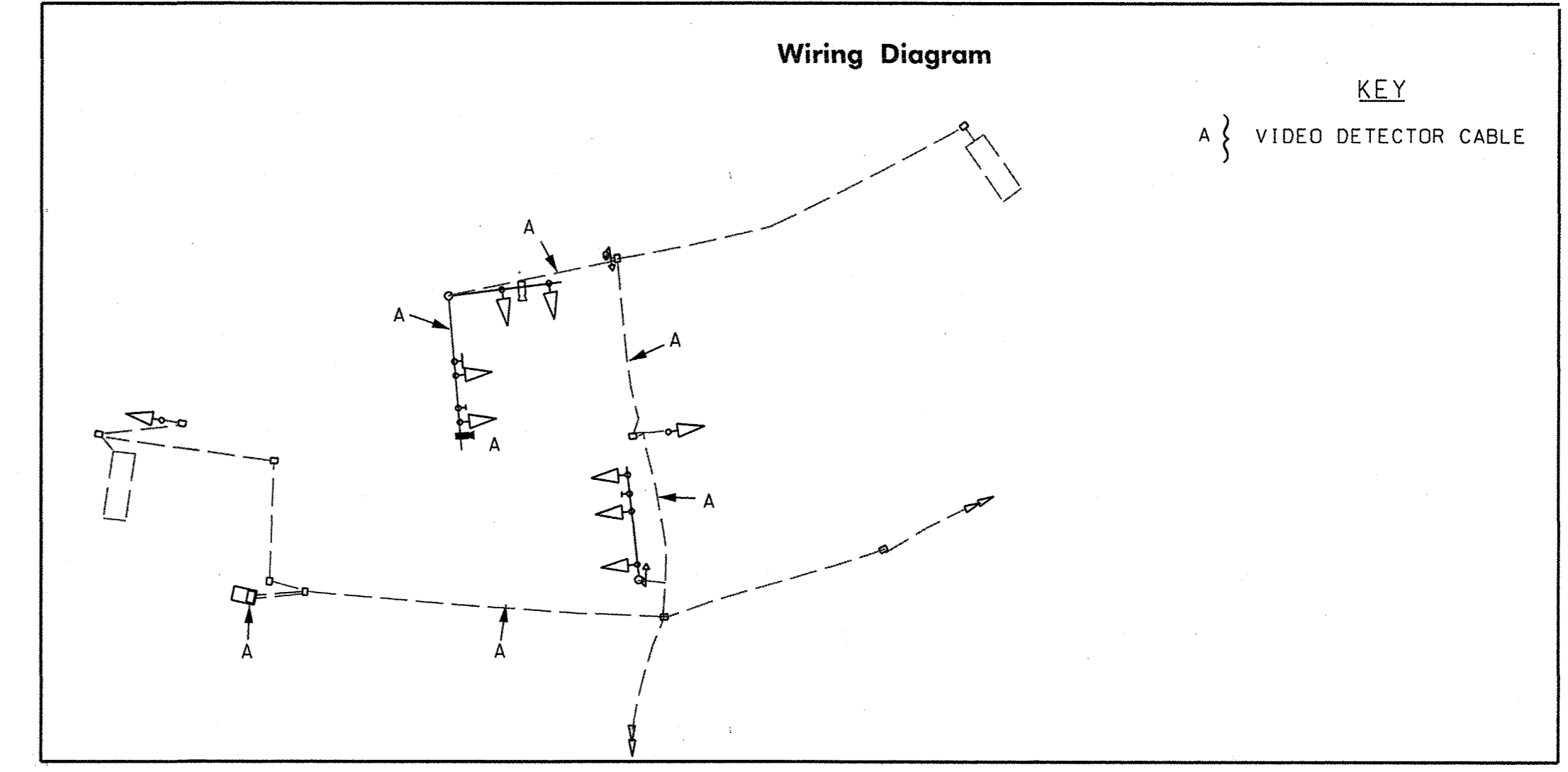
CONSTRUCTION DETAILS
(BY OTHERS, N.I.C.)

- A. INSTALL VIDEO DETECTION CAMERA.
- B. USE EXISTING CONDUIT.
- C. USE EXISTING HANDHOLE.
- D. USE EXISTING CABINET.

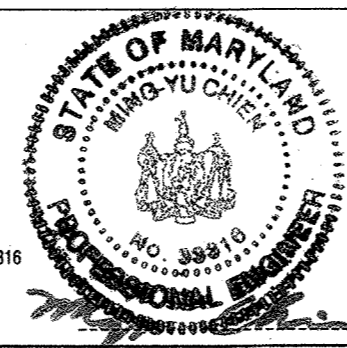
LEGEND

PROPOSED	EXISTING
MAST ARM	TRAFFIC SIGNAL HEAD
PEDESTRIAN SIGNAL HEAD	SIGN
STREET LIGHT	STREET LIGHT
HANDBOX	CONDUIT
LOOP DETECTOR	CONTROLLER WITH PAD
WOOD POLE	FIRE HYDRANT
MANHOLE	MANHOLE
W.V. WATER VALVE	G.V. GAS VALVE
G.V. GAS VALVE	GEOMETRICS

G	G	GAS MAIN
W	W	WATER MAIN
S	S	SEWER MAIN
D	D	STORM DRAIN
TV	TV	CABLE TELEVISION
E	E	ELECTRIC CABLES
T	T	TELEPHONE CABLES
A	A	AERIAL CABLES



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DSN. BY:	FJH		
DRN. BY:	FJH		
CHK. BY:	JD	LR 2 RECORD DRAWINGS	11/18
DATE:	SEPT 15, 2015	JD 1 ADDENDUM NO. 2	11/15
BY:	NO.	REVISION	DATE

TRAFFIC SIGNAL
Little Patuxent Parkway
at
South Entrance Road

US ROUTE 29 WATER TRANSMISSION MAIN
SOUTH ENTRANCE TO LITTLE PATUXENT PARKWAY

CAPITAL PROJECT: W-8296
CONTRACT NO.: 44-4776
ELECTION DISTRICT: 5
HOWARD COUNTY, MARYLAND

SCALE:
1"=20'
SHEET
43 OF 48

RECORD DRAWINGS

PLOTTED: Thursday, September 17, 2015 at 09:09 PM
 File: "I:\Projects\2015\29 Water Transmission Main\29 Water Transmission Main.dwg" and "I:\Projects\2015\29 Water Transmission Main\29 Water Transmission Main.dwg"

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Director of Public Works: *John A. Kelly* 10/1/15
 Chief, Bureau of Engineering: *Marcus B. Butler* 9/23/15
 Chief, Utility Design Division: *David J. ...* 9/21/15

PROJECT DESCRIPTION
GENERAL

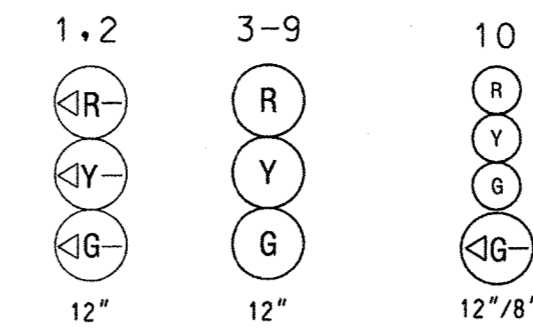
THIS PROJECT INVOLVES THE INSTALLATION OF A NEW VIDEO DETECTION CAMERA AN LOOP DETECTION FOR THE NORTHBOUND DIRECTION OF LITTLE PATUXENT PARKWAY. THE EXISTING SIGNAL LOCATED IN HOWARD COUNTY TO REMAIN IN THE SAME OPERATION. LITTLE PATUXENT PARKWAY IS CONSIDERED TO RUN IN A NORTH/ SOUTH DIRECTION.

EQUIPMENT LIST

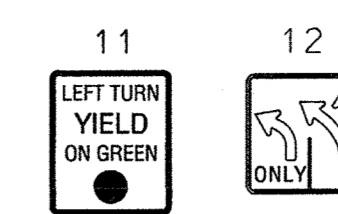
EQUIPMENT TO BE FURNISHED AND/OR INSTALLED BY THE CONTRACTOR.

QUANTITY	LF	UNITS	DESCRIPTION	
LUMP SUM	LS		MAINTENANCE OF TRAFFIC	
LUMP SUM	LS		MOBILIZATION	
1	EA		VIDEO DETECTOR CAMERA (TERRA)	(BY OTHERS, N.I.C.)
140	LF		VIDEO DETECTOR CAMERA CABLE	(BY OTHERS, N.I.C.)
1	EA		VIDEO DETECTION INTERFACE PANEL	(BY OTHERS, N.I.C.)
85	LF		SAWCUT FOR SIGNAL LOOP DETECTOR	(BY OTHERS, N.I.C.)
265	LF		LOOP DETECTOR WIRE ENCASED IN FLEXIBLE TUBING	(BY OTHERS, N.I.C.)
815	LF		2-CONDUCTOR (ALUMINUM SHIELDED) CABLE	(BY OTHERS, N.I.C.)

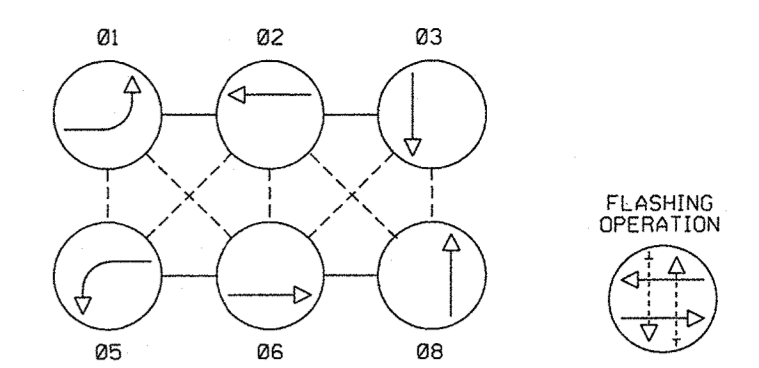
EXISTING SIGNALS



EXISTING SIGNS



EXISTING NEMA PHASING



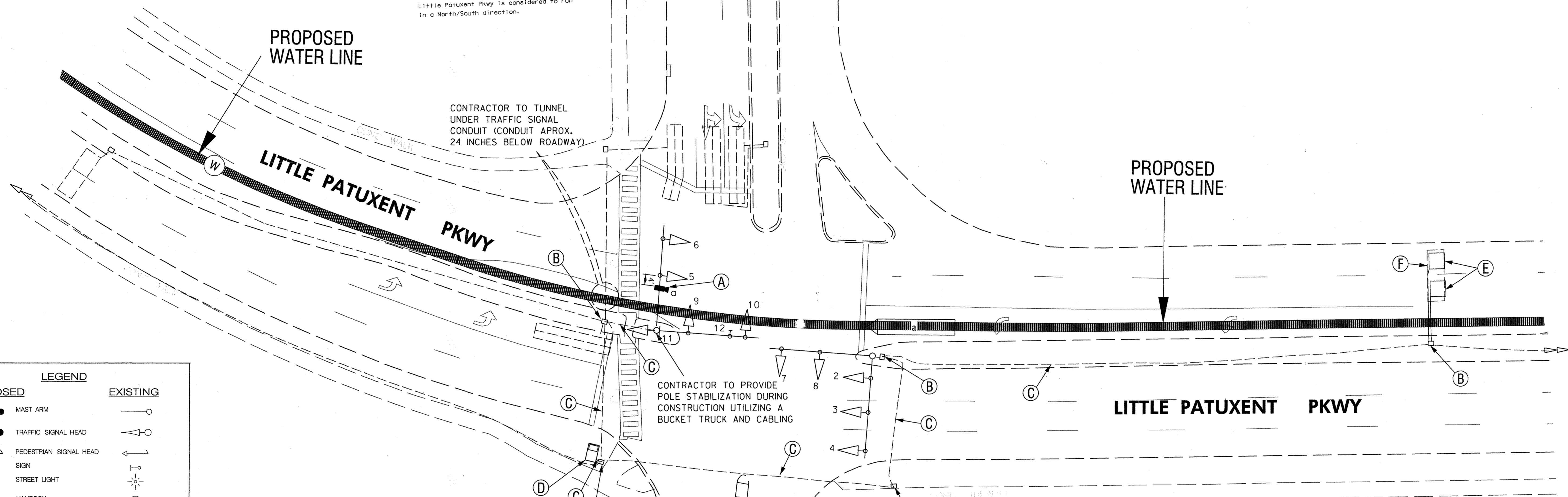
NEMA notes:
Phases associated by a dashed line will operate concurrently.
Phases associated by a solid line will not operate concurrently.

MALL ENTRANCE

PROPOSED VIDEO DETECTION



Little Patuxent Pkwy is considered to run in a North/South direction.



CONTRACTOR TO TUNNEL UNDER TRAFFIC SIGNAL CONDUIT (CONDUIT APPROX. 24 INCHES BELOW ROADWAY)

CONTRACTOR TO PROVIDE POLE STABILIZATION DURING CONSTRUCTION UTILIZING A BUCKET TRUCK AND CABLING

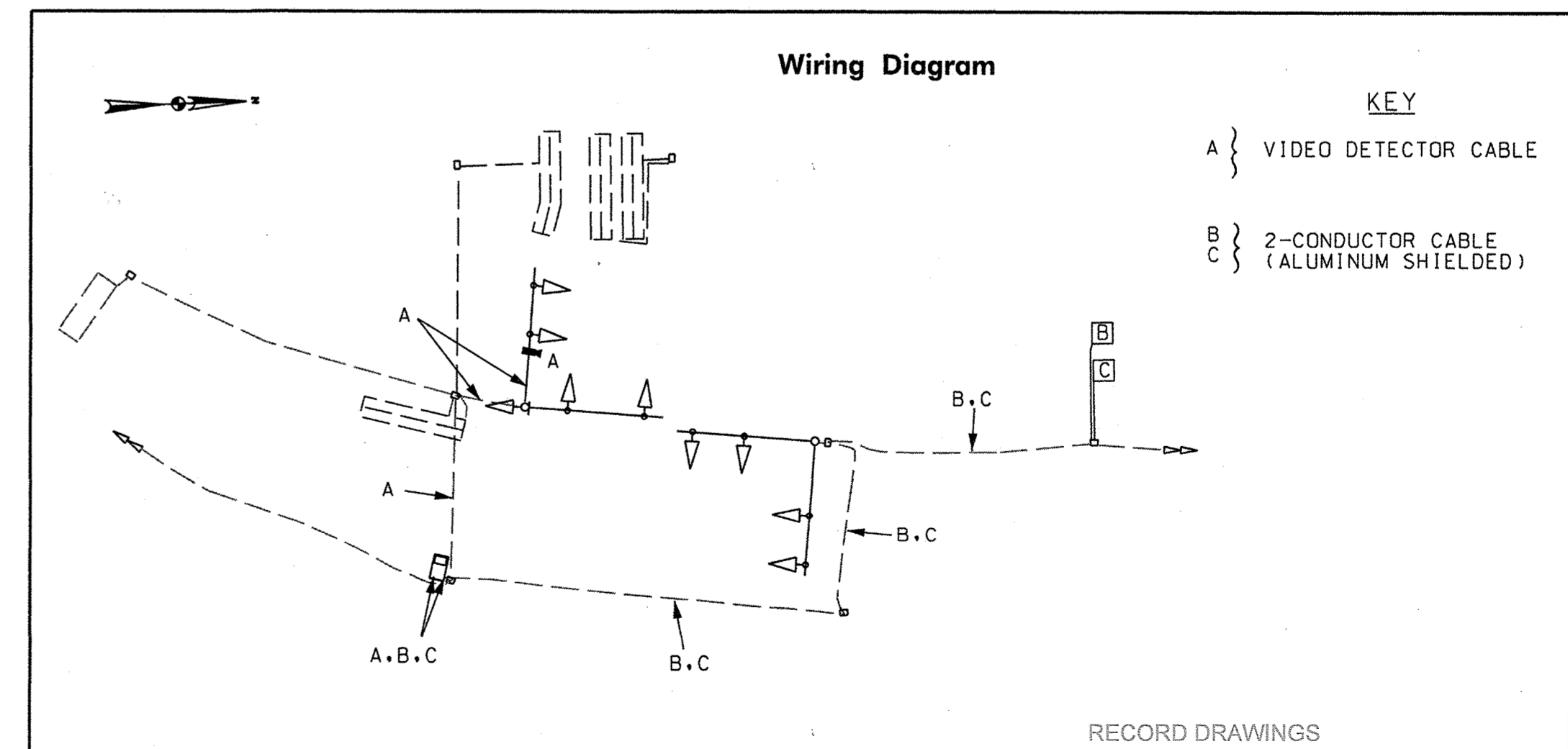
LEGEND

PROPOSED	EXISTING
MAST ARM	TRAFFIC SIGNAL HEAD
PEDESTRIAN SIGNAL HEAD	SIGN
STREET LIGHT	HANDBOX
CONDUIT	CONDUIT
LOOP DETECTOR	CONTROLLER WITH PAD
WOOD POLE	FIRE HYDRANT
MANHOLE	MANHOLE
W.V. WATER VALVE	G.V. GAS VALVE
G.V. GAS VALVE	GEOMETRICS

CONSTRUCTION DETAILS

- A. INSTALL VIDEO DETECTION.
- B. USE EXISTING HANDHOLE.
- C. USE EXISTING CONDUIT.
- D. USE EXISTING CABINET/CONTROLLER.
- E. INSTALL 6 FT. X 6 FT. LOOP DETECTOR (4TURNS).
- F. ABANDON EXISTING VEHICLE DETECTION.

(BY OTHERS, N.I.C.)



RECORD DRAWINGS

G	G	GAS MAIN
W	W	WATER MAIN
S	S	SEWER MAIN
D	D	STORM DRAIN
TV	TV	CABLE TELEVISION
E	E	ELECTRIC CABLES
T	T	TELEPHONE CABLES
A	A	AERIAL CABLES

The Traffic Group, Inc.
Suite H
6900 Franklin Square Drive
Baltimore, Maryland 21236
410-931-6800
1-800-583-8411
Fax 410-931-6801
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DSN. BY:	FJH		
DRN. BY:	FJH		
CHK. BY:	JJD	LR 0	RECORD DRAWINGS
DATE:	SEPT 15, 2015		11/15
BY:	NO.	REVISION	DATE

TRAFFIC SIGNAL
Little Patuxent Parkway
at
Moors Circle

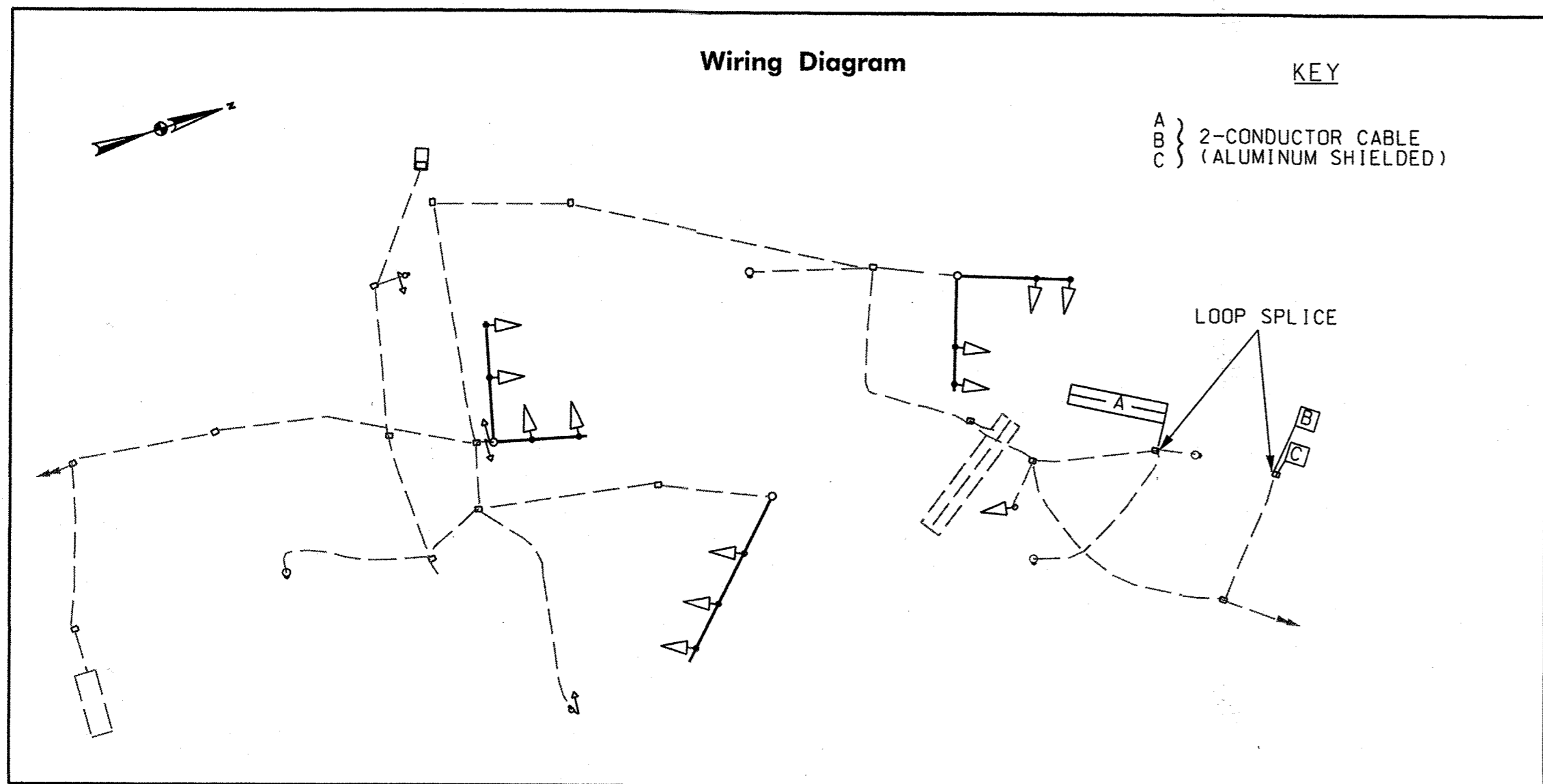
US ROUTE 29 WATER TRANSMISSION MAIN
SOUTH ENTRANCE TO LITTLE PATUXENT PARKWAY

CAPITAL PROJECT: W-8296
CONTRACT NO. 44-4776
ELECTION DISTRICT: X
HOWARD COUNTY, MARYLAND

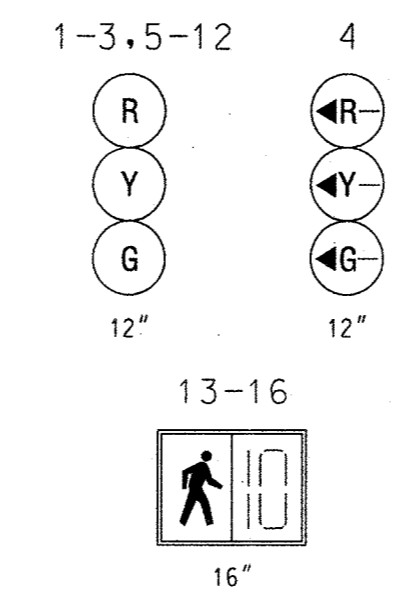
SCALE:
1"=20'
SHEET
44 OF 48

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

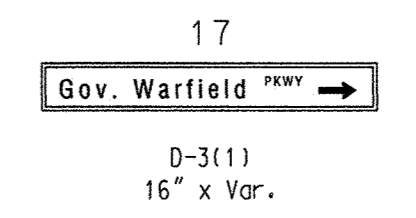
Director of Public Works: *Joseph A. ...* 10/15/15
Chief - Bureau of Engineering: *Thomas B. ...* 9/30/15
Chief - Bureau of Utilities: *Mark ...* 10/15/15
Chief, Utility Design Division: *...* 9/30/15



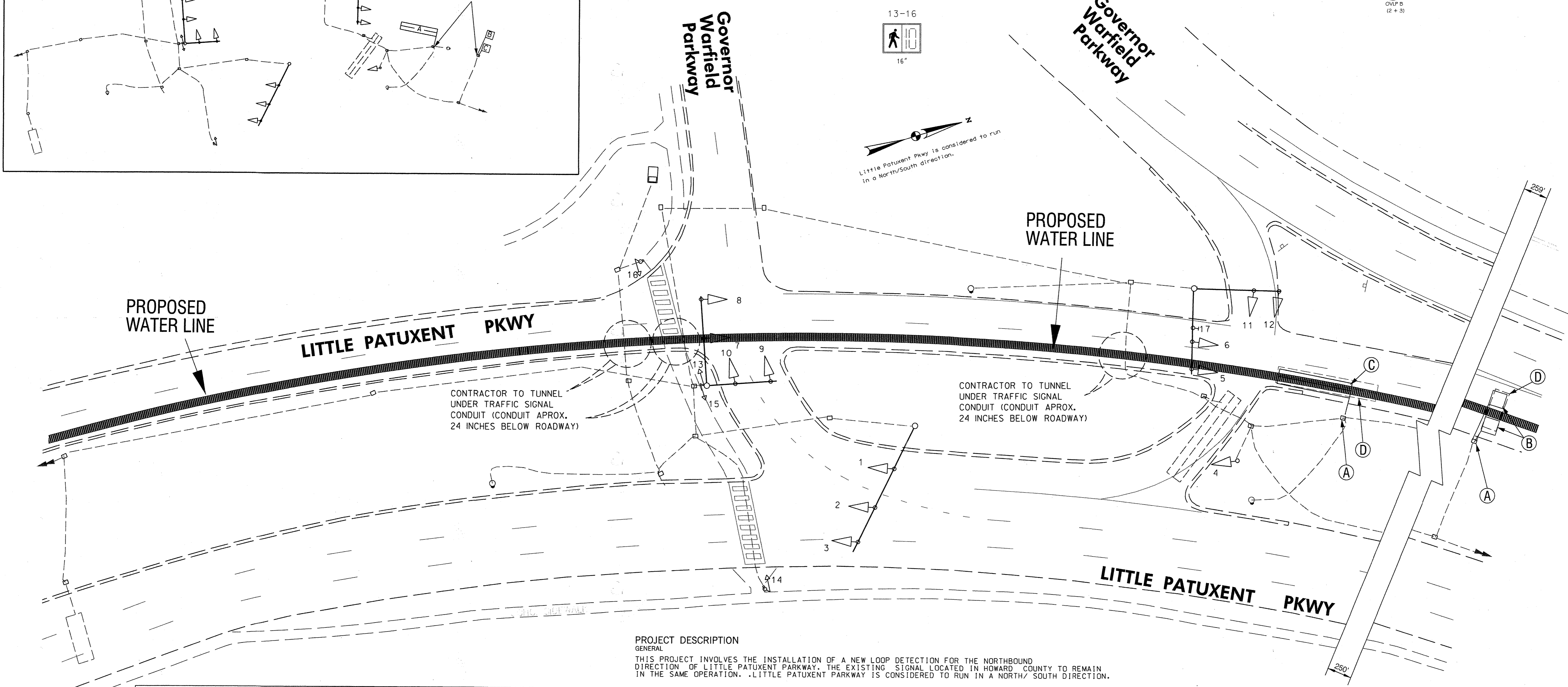
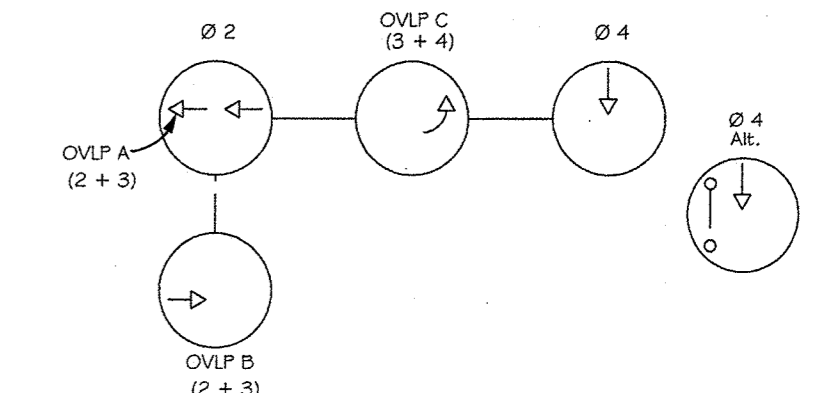
EXISTING SIGNALS



EXISTING SIGNS



EXISTING NEMA PHASING



PROJECT DESCRIPTION

GENERAL
 THIS PROJECT INVOLVES THE INSTALLATION OF A NEW LOOP DETECTOR FOR THE NORTHBOUND DIRECTION OF LITTLE PATUXENT PARKWAY. THE EXISTING SIGNAL LOCATED IN HOWARD COUNTY TO REMAIN IN THE SAME OPERATION. LITTLE PATUXENT PARKWAY IS CONSIDERED TO RUN IN A NORTH/ SOUTH DIRECTION.

EQUIPMENT LIST

EQUIPMENT TO BE FURNISHED AND/OR INSTALLED BY THE CONTRACTOR.

QUANTITY	LF/UNITS	DESCRIPTION
LUMP SUM	LS	MAINTENANCE OF TRAFFIC
LUMP SUM	LS	MOBILIZATION
175	LF	SAWCUT FOR SIGNAL LOOP DETECTOR (BY OTHERS, N.I.C.)
575	LF	LOOP DETECTOR WIRE ENCASED IN FLEXIBLE TUBING (BY OTHERS, N.I.C.)
3	EA	LOOP DETECTOR SPLICE (BY OTHERS, N.I.C.)

CONSTRUCTION DETAILS

A. USE EXISTING HANDHOLE SPLICE EXISTING ALUMINIUM SHIELD CABLE TO NEW LOOP DETECTOR WIRE.

B. INSTALL 6 FT. X 6 FT. LOOP DETECTOR (4TURNS).

C. INSTALL 6 FT. X 30 FT. QUADRAPOLE LOOP DETECTOR (3-6-3 TURNS).

D. ABANDON EXISTING VEHICLE DETECTION.

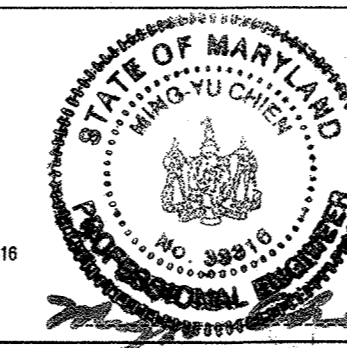
(BY OTHERS, N.I.C.)

LEGEND

PROPOSED	EXISTING	PROPOSED	EXISTING
[Symbol] STREET LIGHT	[Symbol] STREET LIGHT	[Symbol] MAST ARM	[Symbol] MAST ARM
[Symbol] HANDBOX	[Symbol] HANDBOX	[Symbol] TRAFFIC SIGNAL HEAD	[Symbol] TRAFFIC SIGNAL HEAD
[Symbol] CONDUIT	[Symbol] CONDUIT	[Symbol] PEDESTRIAN SIGNAL HEAD	[Symbol] PEDESTRIAN SIGNAL HEAD
[Symbol] LOOP DETECTOR	[Symbol] LOOP DETECTOR	[Symbol] SIGN	[Symbol] SIGN
[Symbol] CONTROLLER WITH PAD	[Symbol] CONTROLLER WITH PAD	[Symbol] STREET LIGHT	[Symbol] STREET LIGHT
[Symbol] WOOD POLE	[Symbol] WOOD POLE	[Symbol] HANDBOX	[Symbol] HANDBOX
[Symbol] FIRE HYDRANT	[Symbol] FIRE HYDRANT		
[Symbol] MAN-HOLE	[Symbol] MAN-HOLE		
[Symbol] W.V. WATER VALVE	[Symbol] W.V. WATER VALVE		
[Symbol] G.V. GAS VALVE	[Symbol] G.V. GAS VALVE		
[Symbol] GEOMETRICS	[Symbol] GEOMETRICS		

- G - GAS MAIN
- W - WATER MAIN
- S - SEWER MAIN
- D - STORM DRAIN
- TV - CABLE TELEVISION
- E - ELECTRIC CABLES
- T - TELEPHONE CABLES
- A - AERIAL CABLES

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 410-931-6600
 1-800-583-8411
 Fax 410-931-6601
 "Merging Innovation and Excellence"



DSN. BY: FJH			
DRN. BY: FJH			
CHK. BY: JUD			
DATE: SEPT 15, 2015			
LR 2	RECORD DRAWINGS		11/18
JD 1	ADDENDUM NO. 2		11/15
BY NO.	REVISION		DATE

TRAFFIC SIGNAL
 Little Patuxent Parkway
 at
 Governor Warfield Parkway

US ROUTE 29 WATER TRANSMISSION MAIN
 SOUTH ENTRANCE TO LITTLE PATUXENT PARKWAY

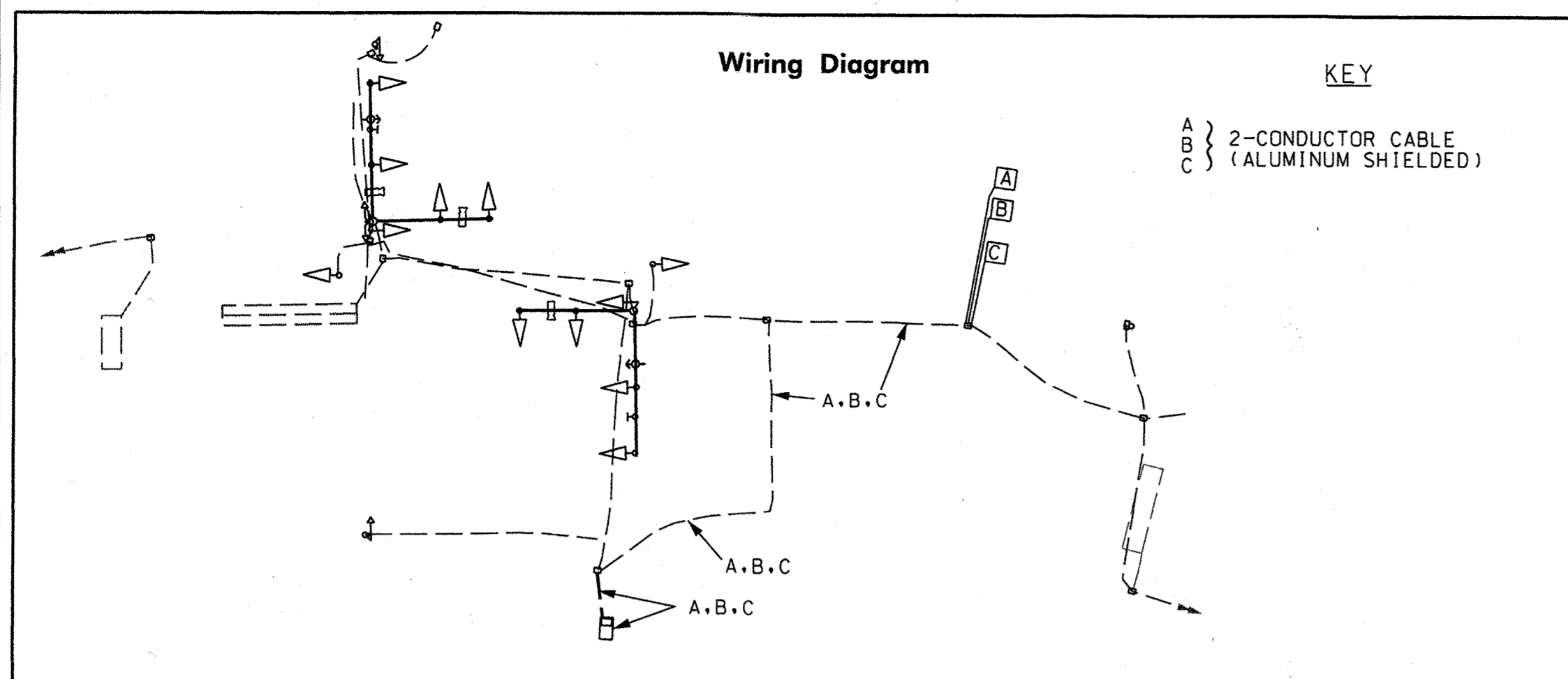
CAPITAL PROJECT: W-8296
 CONTRACT NO.: 44-4776
 ELECTION DISTRICT: 5
 HOWARD COUNTY, MARYLAND

DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND

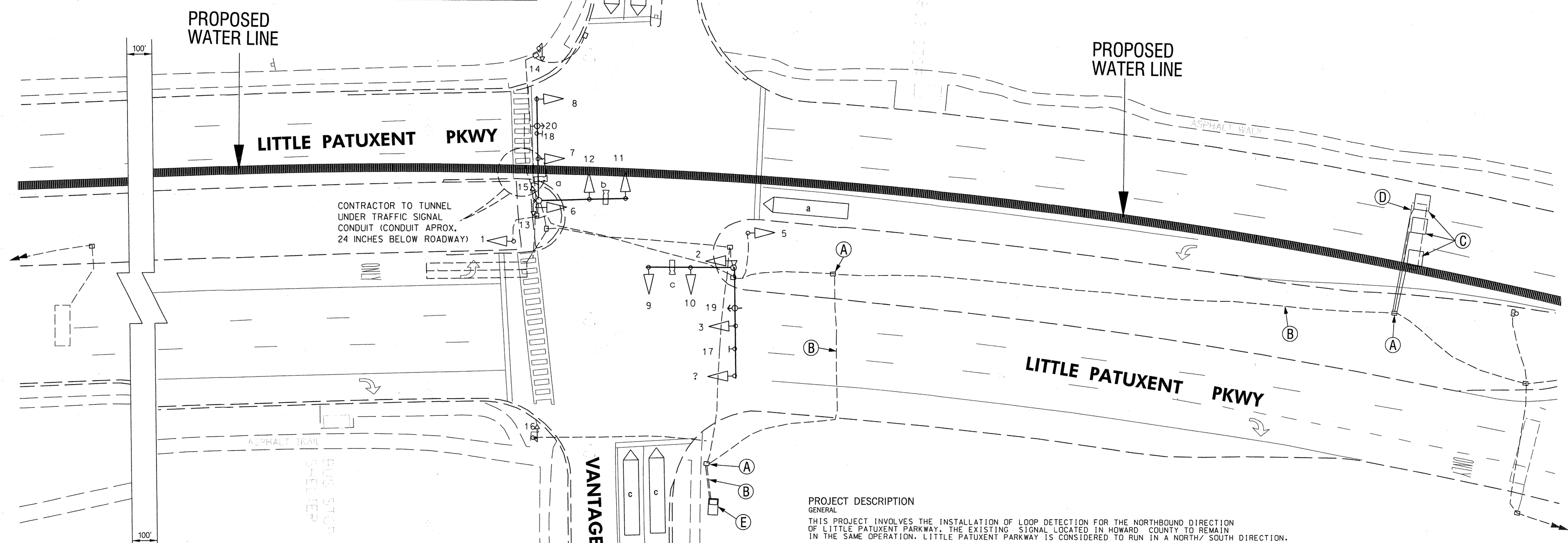
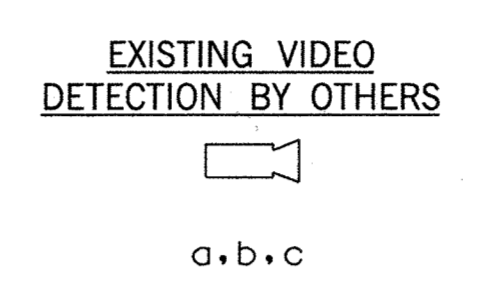
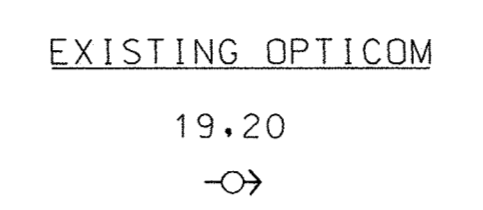
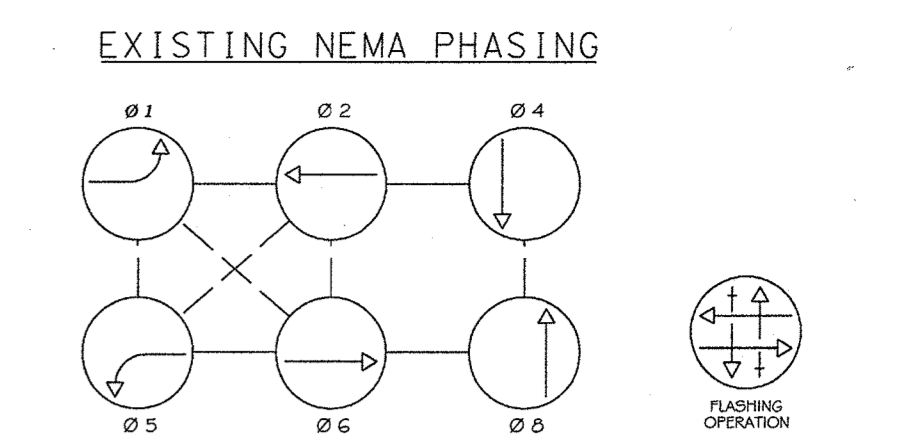
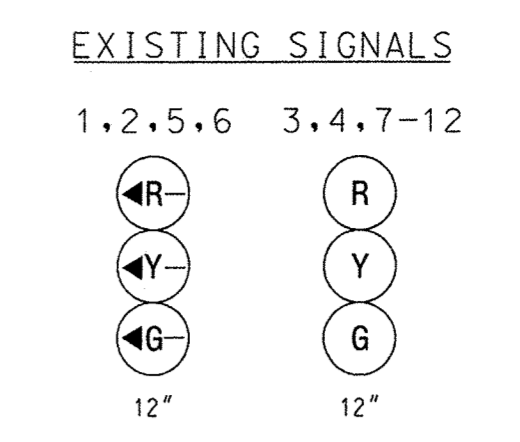
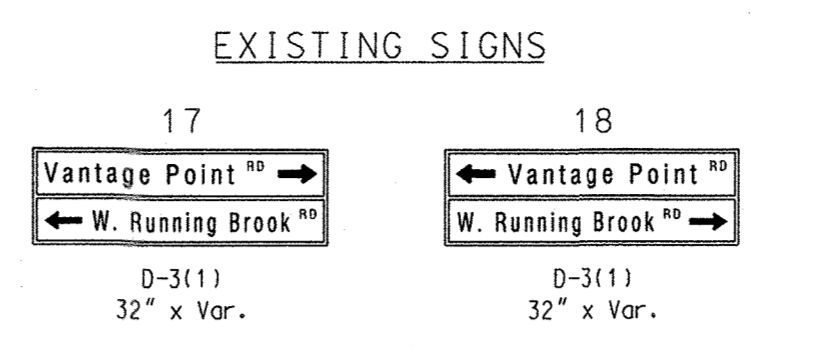
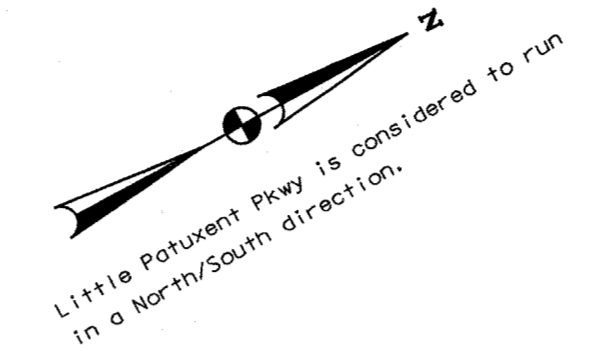
Director of Public Works: [Signature] 10/1/15
 Chief, Bureau of Engineering: [Signature] 9/30/15
 Chief, Utility Design Division: [Signature] 9/30/15

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

PROJECT: "Howard County Dept. of Public Works" FILE: P:\0000\0000\0000\0000.dwg - MD 100 to Brown Land Hwy/25 - MD 100, WARFIELD PARKWAY/29



**WEST RUNNING
BROOK ROAD**



PROJECT DESCRIPTION
GENERAL

THIS PROJECT INVOLVES THE INSTALLATION OF LOOP DETECTION FOR THE NORTHBOUND DIRECTION OF LITTLE PATUXENT PARKWAY. THE EXISTING SIGNAL LOCATED IN HOWARD COUNTY TO REMAIN IN THE SAME OPERATION. LITTLE PATUXENT PARKWAY IS CONSIDERED TO RUN IN A NORTH/SOUTH DIRECTION.

EQUIPMENT LIST

EQUIPMENT TO BE FURNISHED AND/OR INSTALLED BY THE CONTRACTOR.

QUANTITY	LF	UNITS	DESCRIPTION
LUMP SUM	LS		MAINTENANCE OF TRAFFIC
LUMP SUM	LS		MOBILIZATION
200	LF		SAWCUT FOR SIGNAL LOOP DETECTOR (BY OTHERS, N.I.C.)
30	LF		LOOP DETECTOR WIRE ENCASED IN FLEXIBLE TUBING (BY OTHERS, N.I.C.)
00	LF		2-CONDUCTOR (ALUMINUM SHIELDED) CABLE (BY OTHERS, N.I.C.)

CONSTRUCTION DETAILS

- A. USE EXISTING HANDHOLE
 - B. USE EXISTING CONDUIT.
 - C. INSTALL 6 FT. X 6 FT. LOOP DETECTOR (4TURNS).
 - D. ABANDON EXISTING VEHICLE DETECTION.
 - E. USE EXISTING CABINET.
- (BY OTHERS, N.I.C.)

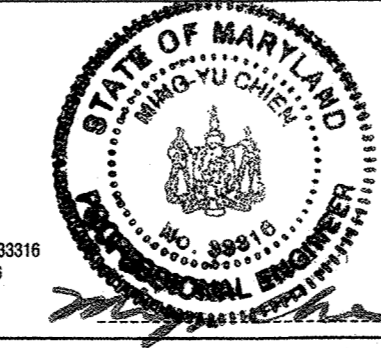
LEGEND

PROPOSED	EXISTING	PROPOSED	EXISTING

- G — G — GAS MAIN
- W — W — WATER MAIN
- S — S — SEWER MAIN
- D — D — STORM DRAIN
- TV — TV — CABLE TELEVISION
- E — E — ELECTRIC CABLES
- T — T — TELEPHONE CABLES
- A — A — AERIAL CABLES

The Traffic Group, Inc.
 Suite H
 9900 Franklin Square Drive
 Baltimore, Maryland 21236
 410-931-6600
 1-800-583-8411
 Fax 410-931-6601
 "Merging Innovation and Excellence"

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



DSN BY: FJH			
DRN BY: FJH			
CHK BY: JJD	LR 2	RECORD DRAWINGS	11/18
	JD 1	ADDENDUM NO. 2	11/15
DATE: SEPT 15, 2015	BY NO.	REVISION	DATE

TRAFFIC SIGNAL
 Little Patuxent Parkway
 at
 Vantage Point Rd/ West Running Brook Rd

US ROUTE 29 WATER TRANSMISSION MAIN
 SOUTH ENTRANCE TO LITTLE PATUXENT PARKWAY

CAPITAL PROJECT: W-8296
 CONTRACT NO. 44-4776
 ELECTION DISTRICT: 5
 HOWARD COUNTY, MARYLAND

SCALE:
1"=20'

SHEET
47 OF 48

PLANNED THROUGH SUBMITTAL OF THIS AT 10:00 AM
 FILED IN PROJECT ROOM 1100, 1100 W. 100' TO SOUTH LANE PARKWAY AND 175' VANTAGE POINT PLANNING BROOKROAD

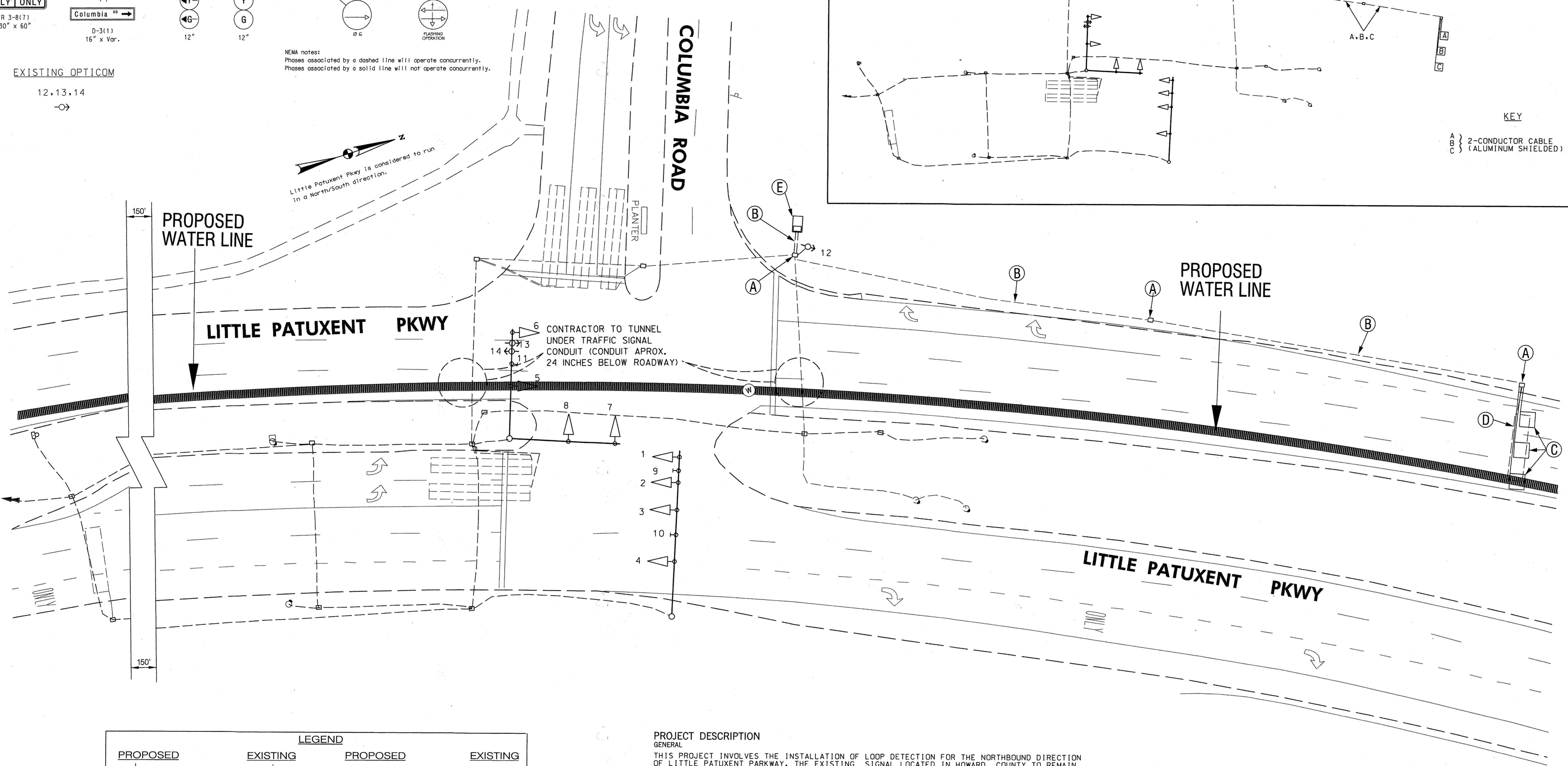
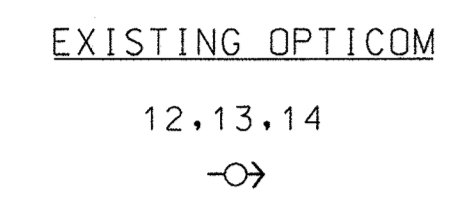
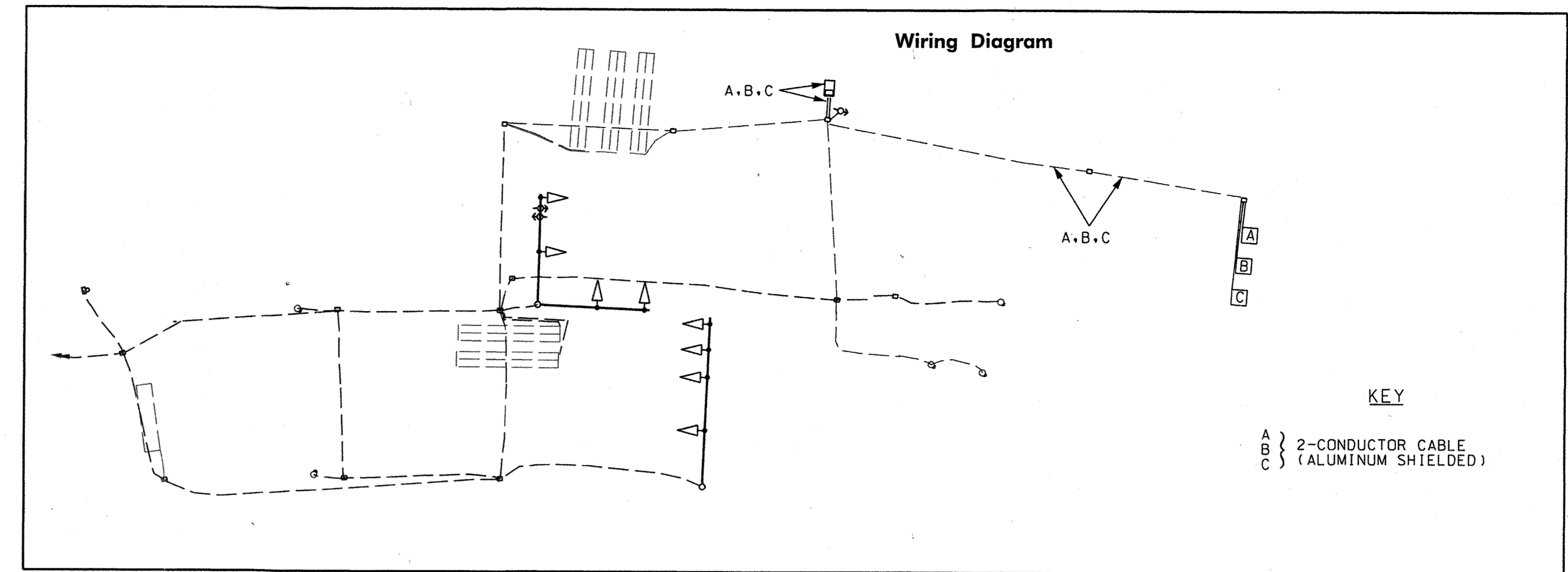
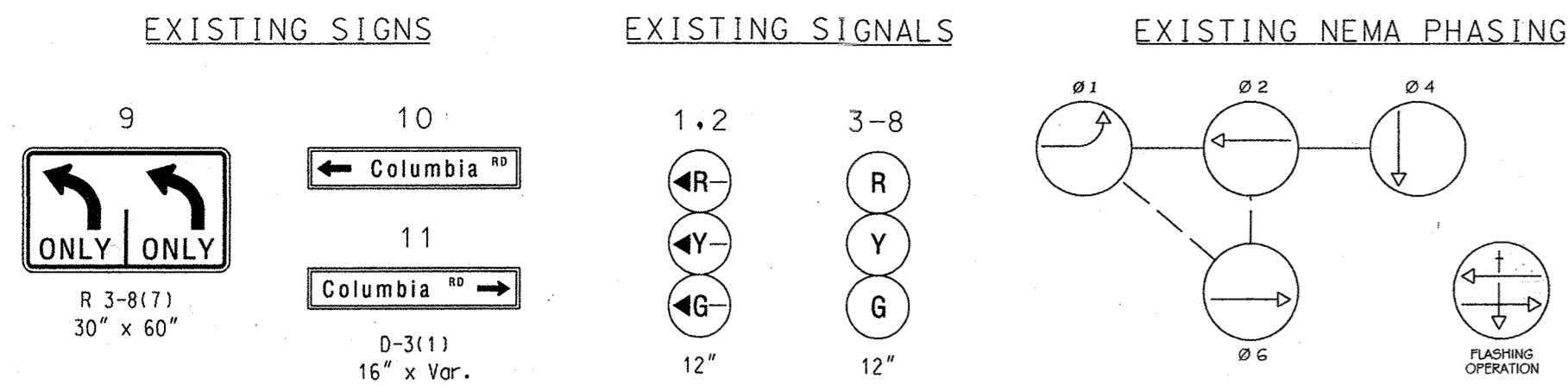
DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS DATE: 10/15/15

 CHIEF - BUREAU OF ENGINEERING DATE: 9/20/15

 CHIEF, UTILITY DESIGN DIVISION DATE: 9/20/15

RECORD DRAWINGS



LEGEND

PROPOSED	EXISTING	PROPOSED	EXISTING
☼ STREET LIGHT	☼ STREET LIGHT	— MAST ARM	— MAST ARM
■ HANDBOX	□ HANDBOX	⬆ TRAFFIC SIGNAL HEAD	⬆ TRAFFIC SIGNAL HEAD
— CONDUIT	— CONDUIT	⬆ PEDESTRIAN SIGNAL HEAD	⬆ PEDESTRIAN SIGNAL HEAD
□ LOOP DETECTOR	□ LOOP DETECTOR	☼ STREET LIGHT	☼ STREET LIGHT
☼ CONTROLLER WITH PAD	☼ CONTROLLER WITH PAD	■ HANDBOX	□ HANDBOX
☼ WOOD POLE	☼ WOOD POLE		
☼ FIRE HYDRANT	☼ FIRE HYDRANT		
⊙ MANHOLE	⊙ MANHOLE		
⊙ W.V. WATER VALVE	⊙ W.V. WATER VALVE		
⊙ G.V. GAS VALVE	⊙ G.V. GAS VALVE		
— GEOMETRICS	— GEOMETRICS		

PROJECT DESCRIPTION
GENERAL
THIS PROJECT INVOLVES THE INSTALLATION OF LOOP DETECTION FOR THE NORTHBOUND DIRECTION OF LITTLE PATUXENT PARKWAY. THE EXISTING SIGNAL LOCATED IN HOWARD COUNTY TO REMAIN IN THE SAME OPERATION. LITTLE PATUXENT PARKWAY IS CONSIDERED TO RUN IN A NORTH/ SOUTH DIRECTION.

EQUIPMENT LIST
EQUIPMENT TO BE FURNISHED AND/OR INSTALLED BY THE CONTRACTOR.

QUANTITY	LF/UNITS	DESCRIPTION
LUMP SUM	LS	MAINTENANCE OF TRAFFIC
LUMP SUM	LS	MOBILIZATION
200	LF	SAWCUT FOR SIGNAL LOOP DETECTOR (BY OTHERS, N.I.C.)
530	LF	LOOP DETECTOR WIRE ENCASED IN FLEXIBLE TUBING (BY OTHERS, N.I.C.)
325	LF	2-CONDUCTOR (ALUMINUM SHIELDED) CABLE (BY OTHERS, N.I.C.)

CONSTRUCTION DETAILS

A. USE EXISTING HANDBOLE
B. USE EXISTING CONDUIT.
C. INSTALL 6 FT. X 6 FT. LOOP DETECTOR (4TURNS).
D. ABANDON EXISTING VEHICLE DETECTION.
E. USE EXISTING CABINET.

(BY OTHERS, N.I.C.)

PROJECTED: November, September 27, 2015 AT 02:00 PM
FILE: C:\projects\2015\150101\150101.dwg
DATE: 11/15/15
DRAWN BY: JLD
CHECKED BY: JLD
SCALE: 1"=20'

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Director of Public Works: *[Signature]* DATE: 11/15/15
Chief, Bureau of Utilities: *[Signature]* DATE: 11/15/15

Chief, Bureau of Engineering: *[Signature]* DATE: 9/21/15
Chief, Utility Design Division: *[Signature]* DATE: 9/21/15

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. 33316, EXPIRATION DATE 7/31/16.

[Signature]
Professional Engineer

DSN BY: FJH			
DRN BY: FJH			
CHK BY: JJD	LR 2	RECORD DRAWINGS	11/18
DATE: SEPT 15, 2015	JD 1	ADDENDUM NO. 2	11/15
	BY NO.	REVISION	DATE

TRAFFIC SIGNAL
Little Patuxent Parkway
at
Columbia Road

600' SCALE MAP NO. _____ BLOCK NO. _____

US ROUTE 29 WATER TRANSMISSION MAIN
SOUTH ENTRANCE TO LITTLE PATUXENT PARKWAY

CAPITAL PROJECT: W-8296
CONTRACT NO.: 44-4776
ELECTION DISTRICT: 5
HOWARD COUNTY, MARYLAND

SCALE:
1"=20'

SHEET
48 OF 48

RECORD DRAWINGS

Piping & Corrosion Specialties, Inc. 8371 Jumpers Hole Rd. Millersville, Maryland 21108 Baltimore (410) 544-3232 • Fax (410) 544-1800 • Toll Free (800) 660-5907 Website: www.pipingandcorrosion.com	Customer: Marona Construction Company Job Name: US Rte 29 Water Transmission Main Job #: CP-3230 Date: 4/10/2018 Drawn By: Zachary Wishbow
	1) #8 Blue THN (New Transmission Main) 2) #8 White THN (New Transmission Main) 3) #10 Blue THN (New Transmission Main) 4) open 5) #10 White THN (New Transmission Main) 6) #14 Yellow HMWPE (CuCuSO4 PRE) 7) open
TERMINAL BOARD WIRING SCHEMATIC 	
NOTES: Insulating Flange Test Station 0+00, TS #1 GPS: N 39.2063016 W -76.8563886	
(SCALE 1" = 25') 	

Piping & Corrosion Specialties, Inc. 8371 Jumpers Hole Rd. Millersville, Maryland 21108 Baltimore (410) 544-3232 • Fax (410) 544-1800 • Toll Free (800) 660-5907 Website: www.pipingandcorrosion.com	Customer: Marona Construction Company Job Name: US Rte 29 Water Transmission Main Job #: CP-3230 Date: 4/10/2018 Drawn By: Zachary Wishbow
	1) #8 Blue THN (New Transmission Main) 2) #8 White THN (Casing Pipe) 3) #10 Blue THN (New Transmission Main) 4) open 5) #10 White THN (Casing Pipe) 6) #14 Yellow HMWPE (CuCuSO4 PRE) 7) open
TERMINAL BOARD WIRING SCHEMATIC 	
NOTES: Casing Test Station 0+22, TS #2 GPS: N 39.2063104 W -76.8564828	
(SCALE 1" = 25') 	

Piping & Corrosion Specialties, Inc. 8371 Jumpers Hole Rd. Millersville, Maryland 21108 Baltimore (410) 544-3232 • Fax (410) 544-1800 • Toll Free (800) 660-5907 Website: www.pipingandcorrosion.com	Customer: Marona Construction Company Job Name: US Rte 29 Water Transmission Main Job #: CP-3230 Date: 4/16/2018 Drawn By: Zachary Wishbow
	1) #8 Blue THN (New Transmission Main) 2) #8 White THN (Casing Pipe) 3) #10 Blue THN (New Transmission Main) 4) open 5) #10 White THN (Casing Pipe) 6) #14 Yellow HMWPE (CuCuSO4 PRE) 7) open
TERMINAL BOARD WIRING SCHEMATIC 	
NOTES: Casing Test Station 4+94, TS #3 GPS: N 39.20688721 W -76.8579711	
(SCALE 1" = 25') 	

Piping & Corrosion Specialties, Inc. 8371 Jumpers Hole Rd. Millersville, Maryland 21108 Baltimore (410) 544-3232 • Fax (410) 544-1800 • Toll Free (800) 660-5907 Website: www.pipingandcorrosion.com	Customer: Marona Construction Company Job Name: US Rte 29 Water Transmission Main Job #: CP-3230 Date: 4/16/2018 Drawn By: Zachary Wishbow
	1) #8 Blue THN (New Transmission Main) 2) open 3) #10 Blue THN (New Transmission Main) 4) open 5) open 6) #14 Yellow HMWPE (CuCuSO4 PRE) 7) open
TERMINAL BOARD WIRING SCHEMATIC 	
NOTES: Standard Test Station 11+50, TS #4 GPS: N 39.2083394 W -76.8570022	
(SCALE 1" = 10') 	

Piping & Corrosion Specialties, Inc. 8371 Jumpers Hole Rd. Millersville, Maryland 21108 Baltimore (410) 544-3232 • Fax (410) 544-1800 • Toll Free (800) 660-5907 Website: www.pipingandcorrosion.com	Customer: Marona Construction Company Job Name: US Rte 29 Water Transmission Main Job #: CP-3230 Date: 4/16/2018 Drawn By: Zachary Wishbow
	1) #8 Blue THN (New Transmission Main) 2) open 3) #10 Blue THN (New Transmission Main) 4) open 5) open 6) #14 Yellow HMWPE (CuCuSO4 PRE) 7) open
TERMINAL BOARD WIRING SCHEMATIC 	
NOTES: Standard Test Station 17+00, TS #5 GPS: N 39.2098220 W -76.8582895	
(SCALE 1" = 5') 	

Piping & Corrosion Specialties, Inc. 8371 Jumpers Hole Rd. Millersville, Maryland 21108 Baltimore (410) 544-3232 • Fax (410) 544-1800 • Toll Free (800) 660-5907 Website: www.pipingandcorrosion.com	Customer: Marona Construction Company Job Name: US Rte 29 Water Transmission Main Job #: CP-3230 Date: 4/10/2018 Drawn By: Zachary Wishbow
	1) #8 Blue THN (New Transmission Main) 2) #8 White THN (New Transmission Main) 3) #10 Blue THN (New Transmission Main) 4) open 5) #10 White THN (New Transmission Main) 6) #14 Yellow HMWPE (CuCuSO4 PRE) 7) open
TERMINAL BOARD WIRING SCHEMATIC 	
NOTES: Insulating Flange Test Station 24+72, TS #6 GPS: N 39.2113046 W -76.8592187	
(SCALE 1" = 5') 	

Piping & Corrosion Specialties, Inc. 8371 Jumpers Hole Rd. Millersville, Maryland 21108 Baltimore (410) 544-3232 • Fax (410) 544-1800 • Toll Free (800) 660-5907 Website: www.pipingandcorrosion.com	Customer: Marona Construction Company Job Name: US Rte 29 Water Transmission Main Job #: CP-3230 Date: 4/16/2018 Drawn By: Zachary Wishbow
	1) #8 Blue THN (New Transmission Main) 2) open 3) #10 Blue THN (New Transmission Main) 4) open 5) open 6) #14 Yellow HMWPE (CuCuSO4 PRE) 7) open
TERMINAL BOARD WIRING SCHEMATIC 	
NOTES: Standard Test Station 31+50, TS #7 GPS: N 39.2126892 W -76.8576724	
(SCALE 1" = 5') 	

Piping & Corrosion Specialties, Inc. 8371 Jumpers Hole Rd. Millersville, Maryland 21108 Baltimore (410) 544-3232 • Fax (410) 544-1800 • Toll Free (800) 660-5907 Website: www.pipingandcorrosion.com	Customer: Marona Construction Company Job Name: US Rte 29 Water Transmission Main Job #: CP-3230 Date: 4/16/2018 Drawn By: Zachary Wishbow
	1) #8 Blue THN (New Transmission Main) 2) open 3) #10 Blue THN (New Transmission Main) 4) open 5) open 6) #14 Yellow HMWPE (CuCuSO4 PRE) 7) open
TERMINAL BOARD WIRING SCHEMATIC 	
NOTES: Standard Test Station 38+00, TS #8 GPS: N 39.2144832 W -76.8576217	
(SCALE 1" = 5') 	

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS ACTING UNDER THE DIRECTION OF A LICENSED ENGINEER, TO ALTER THIS DOCUMENT.

NOTE: THIS INFORMATION WAS PROVIDED BY MORONA CONSTRUCTION COMPANY AND WAS NOT PART OF THE ORIGINAL CONTRACT DOCUMENTS

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND			
DIRECTOR OF PUBLIC WORKS	DATE	CHIEF - BUREAU OF ENGINEERING	DATE
CHIEF, BUREAU OF UTILITIES	DATE	CHIEF, UTILITY DESIGN DIVISION	DATE

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

DSN. BY:	GLF				
DRN. BY:	RPW				
CHK. BY:	RJD				
DATE:	11/20/18	LR	0	RECORD DRAWINGS	11/18
		BY	NO.	REVISION	DATE

CATHODE PROTECTION TEST STATION LOCATIONS	
600' SCALE MAP NO. W&S: 24, 30	BLOCK NO.

U.S. ROUTE 29 WATER TRANSMISSION MAIN
SOUTH ENTRANCE ROAD TO LITTLE PATUXENT PARKWAY
 CAPITAL PROJECT: W-8296
 CONTRACT NO.: 44-4776
 ELECTION DISTRICT NO. 5
 HOWARD COUNTY, MARYLAND

Piping & Corrosion Specialties, Inc. 8371 Jumpers Hole Rd. Millersville, Maryland 21108 Baltimore (410) 544-3232 • Fax (410) 544-1000 • Toll Free (800) 660-5907 Website: www.pipingandcorrosion.com		Customer: Marona Construction Company Job Name: US Rte 29 Water Transmission Main Job #: CP-3230 Date: 4/19/2018 Drawn By: Kirk Johnson	
TERMINAL BOARD WIRING SCHEMATIC 		1) #8 Blue THN (New Transmission Main) 2) open 3) #10 Blue THN (New Transmission Main) 4) open 5) open 6) #14 Yellow HMWPE (CuCuSO4 PRE) 7) open	
NOTES: Standard Test Station 44+50, TS #9 GPS: N 39.216243 W -76.857646			
(SCALE 1" = 2') 			

Piping & Corrosion Specialties, Inc. 8371 Jumpers Hole Rd. Millersville, Maryland 21108 Baltimore (410) 544-3232 • Fax (410) 544-1000 • Toll Free (800) 660-5907 Website: www.pipingandcorrosion.com		Customer: Marona Construction Company Job Name: US Rte 29 Water Transmission Main Job #: CP-3230 Date: 4/19/2018 Drawn By: Kirk Johnson	
TERMINAL BOARD WIRING SCHEMATIC 		1) #8 Blue THN (New Transmission Main) 2) open 3) #10 Blue THN (New Transmission Main) 4) open 5) open 6) #14 Yellow HMWPE (CuCuSO4 PRE) 7) open	
NOTES: Standard Test Station 51+00, TS #10 GPS: N 39.218027 W -76.858244			
(SCALE 1" = 10') 			

Piping & Corrosion Specialties, Inc. 8371 Jumpers Hole Rd. Millersville, Maryland 21108 Baltimore (410) 544-3232 • Fax (410) 544-1000 • Toll Free (800) 660-5907 Website: www.pipingandcorrosion.com		Customer: Marona Construction Company Job Name: US Rte 29 Water Transmission Main Job #: CP-3230 Date: 4/19/2018 Drawn By: Kirk Johnson	
TERMINAL BOARD WIRING SCHEMATIC 		1) #8 Blue THN (New Transmission Main) 2) open 3) #10 Blue THN (New Transmission Main) 4) open 5) open 6) #14 Yellow HMWPE (CuCuSO4 PRE) 7) open	
NOTES: Standard Test Station 57+50, TS #11 GPS: N 39.219653 W -76.858985			
(SCALE 1" = 15') 			

Piping & Corrosion Specialties, Inc. 8371 Jumpers Hole Rd. Millersville, Maryland 21108 Baltimore (410) 544-3232 • Fax (410) 544-1000 • Toll Free (800) 660-5907 Website: www.pipingandcorrosion.com		Customer: Marona Construction Company Job Name: US Rte 29 Water Transmission Main Job #: CP-3230 Date: 4/19/2018 Drawn By: Kirk Johnson	
TERMINAL BOARD WIRING SCHEMATIC 		1) #8 Blue THN (New Transmission Main) 2) open 3) #10 Blue THN (New Transmission Main) 4) open 5) open 6) #14 Yellow HMWPE (CuCuSO4 PRE) 7) open	
NOTES: Standard Test Station 64+00, TS #12 GPS: N 39.221380 W -76.858740			
(SCALE 1" = 10') 			

Piping & Corrosion Specialties, Inc. 8371 Jumpers Hole Rd. Millersville, Maryland 21108 Baltimore (410) 544-3232 • Fax (410) 544-1000 • Toll Free (800) 660-5907 Website: www.pipingandcorrosion.com		Customer: Marona Construction Company Job Name: US Rte 29 Water Transmission Main Job #: CP-3230 Date: 4/19/2018 Drawn By: Kirk Johnson	
TERMINAL BOARD WIRING SCHEMATIC 		1) #8 Blue THN (New Transmission Main) 2) open 3) #10 Blue THN (New Transmission Main) 4) open 5) open 6) #14 Yellow HMWPE (CuCuSO4 PRE) 7) open	
NOTES: Standard Test Station 70+50, TS #13 GPS: N 39.222887 W -76.857784			
(SCALE 1" = 10') 			

Piping & Corrosion Specialties, Inc. 8371 Jumpers Hole Rd. Millersville, Maryland 21108 Baltimore (410) 544-3232 • Fax (410) 544-1000 • Toll Free (800) 660-5907 Website: www.pipingandcorrosion.com		Customer: Marona Construction Company Job Name: US Rte 29 Water Transmission Main Job #: CP-3230 Date: 4/19/2018 Drawn By: Kirk Johnson	
TERMINAL BOARD WIRING SCHEMATIC 		1) #8 Blue THN (New Transmission Main) 2) open 3) #10 Blue THN (New Transmission Main) 4) open 5) open 6) #14 Yellow HMWPE (CuCuSO4 PRE) 7) open	
NOTES: IR Test Station 76+00, TS #14 GPS: N 39.224371 W -76.856819			
(SCALE 1" = 10') 			

Piping & Corrosion Specialties, Inc. 8371 Jumpers Hole Rd. Millersville, Maryland 21108 Baltimore (410) 544-3232 • Fax (410) 544-1000 • Toll Free (800) 660-5907 Website: www.pipingandcorrosion.com		Customer: Marona Construction Company Job Name: US Rte 29 Water Transmission Main Job #: CP-3230 Date: 4/19/2018 Drawn By: Kirk Johnson	
TERMINAL BOARD WIRING SCHEMATIC 		1) #8 Blue THN (New Transmission Main) 2) open 3) #10 Blue THN (New Transmission Main) 4) open 5) open 6) #14 Yellow HMWPE (CuCuSO4 PRE) 7) open	
NOTES: Standard Test Station 78+50, TS #15 GPS: N 39.224931 W -76.856363			
(SCALE 1" = 10') 			

Piping & Corrosion Specialties, Inc. 8371 Jumpers Hole Rd. Millersville, Maryland 21108 Baltimore (410) 544-3232 • Fax (410) 544-1000 • Toll Free (800) 660-5907 Website: www.pipingandcorrosion.com		Customer: Marona Construction Company Job Name: US Rte 29 Water Transmission Main Job #: CP-3230 Date: 4/19/2018 Drawn By: Kirk Johnson	
TERMINAL BOARD WIRING SCHEMATIC 		1) #8 Blue THN (New Transmission Main) 2) #8 White THN (New transmission main) 3) #10 Blue THN (New Transmission Main) 4) open 5) #10 White THN (New transmission main) 6) #14 Yellow HMWPE (CuCuSO4 PRE) 7) open	
NOTES: IR Test Station 79+00, TS #16 GPS: N 39.225019 W -76.856279			
(SCALE 1" = 10') 			

Piping & Corrosion Specialties, Inc. 8371 Jumpers Hole Rd. Millersville, Maryland 21108 Baltimore (410) 544-3232 • Fax (410) 544-1000 • Toll Free (800) 660-5907 Website: www.pipingandcorrosion.com		Customer: Marona Construction Company Job Name: US Rte 29 Water Transmission Main Job #: CP-3230 Date: 4/19/2018 Drawn By: Kirk Johnson	
TERMINAL BOARD WIRING SCHEMATIC 		1) #8 Blue THN (New Transmission Main) 2) open 3) #10 Blue THN (New Transmission Main) 4) open 5) open 6) #14 Yellow HMWPE (CuCuSO4 PRE) 7) open	
NOTES: Standard Test Station 85+50, TS #17 GPS: N 39.226216 W -76.854549			
(SCALE 1" = 10') 			

NOTE:
 THIS INFORMATION WAS PROVIDED BY MORONA
 CONSTRUCTION COMPANY AND WAS NOT PART
 OF THE ORIGINAL CONTRACT DOCUMENTS

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS ACTING UNDER THE
 DIRECTION OF A LICENSED ENGINEER, TO ALTER THIS DOCUMENT.

RECORD DRAWINGS

DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS	DATE	CHIEF - BUREAU OF ENGINEERING	DATE
CHIEF, BUREAU OF UTILITIES	DATE	CHIEF, UTILITY DESIGN DIVISION	DATE

O'BRIEN & GERE

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

DSN. BY:	GLF			
DRN. BY:	RPW			
CHK. BY:	RJD			
DATE:	11/18	LR	0	REVISION
		BY	NO.	REVISION

**CATHODE PROTECTION
 TEST STATION LOCATIONS**

600' SCALE MAP NO. W&S: 24, 30 BLOCK NO. _____

**U.S. ROUTE 29 WATER TRANSMISSION MAIN
 SOUTH ENTRANCE ROAD TO LITTLE PATUXENT PARKWAY**

CAPITAL PROJECT: W-8296
 CONTRACT NO.: 44-4776
 ELECTION DISTRICT NO. 5
 HOWARD COUNTY, MARYLAND

SCALE
 AS
 SHOWN

SHEET
 48B OF 48