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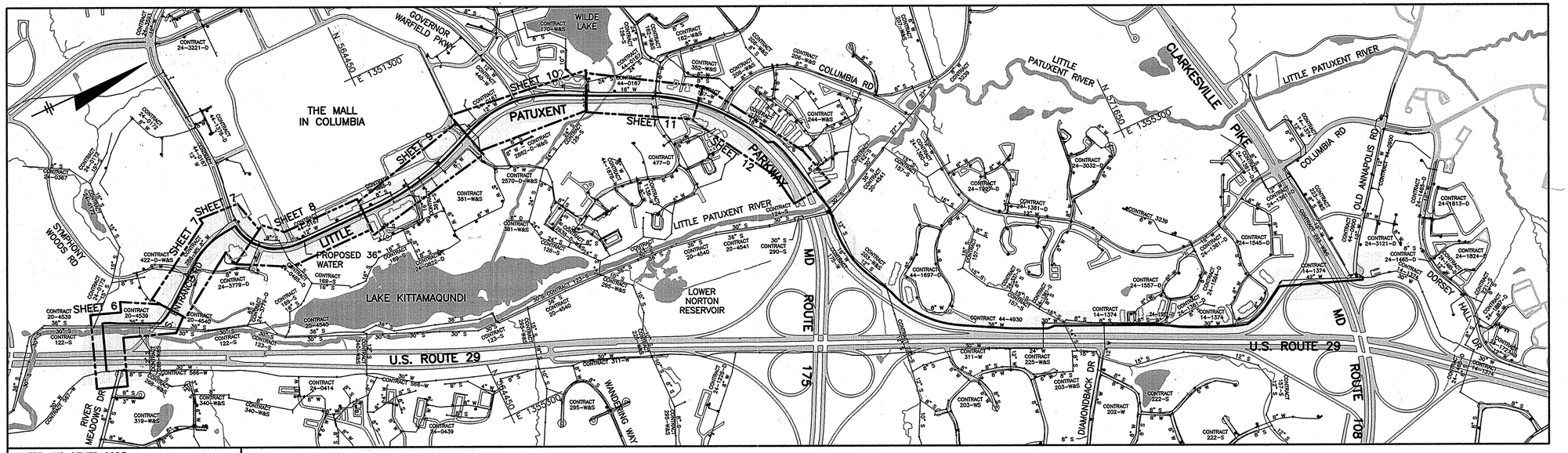
U.S. ROUTE 29 WATER TRANSMISSION MAIN: SOUTH ENTRANCE ROAD TO LITTLE PATUXENT PARKWAY

QUANTITIES					
ITEM	BID AMOUNT	UNIT	AS-BUILT AMOUNT	MATERIAL	SUPPLIER
36" WATER RJ (BY OPEN CUT METHODS)	4,781	L.F.			
36" WATER (BY OPEN CUT METHODS)	3,850	L.F.			
36" WATER RJ (BY TUNNELING METHOD)	469	L.F.			
60" ID CASING PIPE	469	L.F.			
ACCESS/BLOW-OFF MANHOLE ASSEMBLY	4	EA.			
36" RSGV	3	EA.			
AIR RELEASE MANHOLE	3	EA.			
FIRE HYDRANT ASSEMBLY	2	EA.			

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



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

VICINITY MAP
SCALE: 1" = 600'

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).

Howard Soil Conservation District — Date

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.

Signature of Developer — Date 10/1/15

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 — DATE 10/1/15
CHIEF - BUREAU OF ENGINEERING — DATE 9/30/15
CHIEF, BUREAU OF UTILITIES — DATE 10/1/15
CHIEF, UTILITY DESIGN DIVISION — DATE 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 — ROBERT JOHN DUTTA — PROFESSIONAL ENGINEER

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

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

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- XXXF

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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 DEDUCTED 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....................410-531-5533
   - 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

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS	DATE 10/1/15	CHIEF - BUREAU OF ENGINEERING	DATE 9/30/15
CHIEF, BUREAU OF UTILITIES	DATE 10/1/15	CHIEF, UTILITY DESIGN DIVISION PSD	DATE 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 — ROBERT JOHN DUDLEY — REGISTERED PROFESSIONAL ENGINEER

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

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

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

SCALE AS SHOWN

FILE NO. 33498-XXXF

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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	1352381.22
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	564181.15	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

LEGEND
(PLAN AND PROFILE SHEETS)

SIDEWALK
PAVEMENT (EDGE)
GRAVEL (EDGE)
CONCRETE (EDGE)
BUILDING
CENTERLINE
SHA THRU HIGHWAY RIGHT-OF-WAY
PROPERTY LINE/RIGHT-OF-WAY
GUARDRAIL
FENCE (WOOD)
FENCE IRON, RAIL
FENCE(CHAINLINK)
UNDG ELECTRIC LINE
UNDG TELEPHONE LINE
UNDG CABLE LINE
UNDG FIBER OPTIC LINE
OVERHEAD UTILITIES
SANITARY SEWER
STORM DRAIN
WATER MAIN
PROPOSED WATER
GAS
DITCH
STREAM
WOODLINE
BUSH
RIP-RAP DITCH
MILL AND OVERLAY
BORING LOCATION
TEST PIT LOCATION
BM #
REBAR
FLY STATION
ABANDON IN PLACE EX. WM

MAIL BOX
VENT
STORM DRAIN MH
HEADWALL/ENDWALL
DROP INLET GRATE
DROP INLET
ROAD SIGN
TELE. JUNC. BOX
UTILITY POLE
LIGHT POLE
GUY WIRE
GROUND LIGHT
ELEC. TRANSFORMER
ELEC. MH
ELEC. JUNC. BOX
SPOT ELEVATION
CABLE BOX
SAN. SEW. MH
CLEAN OUT
WATER VALVE
RSG VALVE
WATER METER
WATER MAIN VALVE VAULT
IRRIGATION VALVE
FIRE HYDRANT
GAS VENT PIPE
GAS VALVE
GAS PUMP
GAS LINE MARKER
IRON PIPE FOUND
REBAR AND CAP
TRAVERSE STATION
POINT OF CONNECTION
CORROSION PROTECTION AND CONTINUITY TESTING STATION

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

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

ABBREVIATIONS:

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

LANDSCAPING

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

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 10/1/15
CHIEF – BUREAU OF ENGINEERING — DATE 9/30/15
CHIEF, BUREAU OF UTILITIES — DATE 10/1/15
CHIEF, UTILITY DESIGN DIVISION PSP — DATE 9/30/15

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

PROFESSIONAL CERTIFICATION:
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STATE OF MARYLAND — ROBERT JOHN DUDA — PROFESSIONAL ENGINEER

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

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

SCHEDULES, TABLES, LEGEND AND ABBREVIATIONS

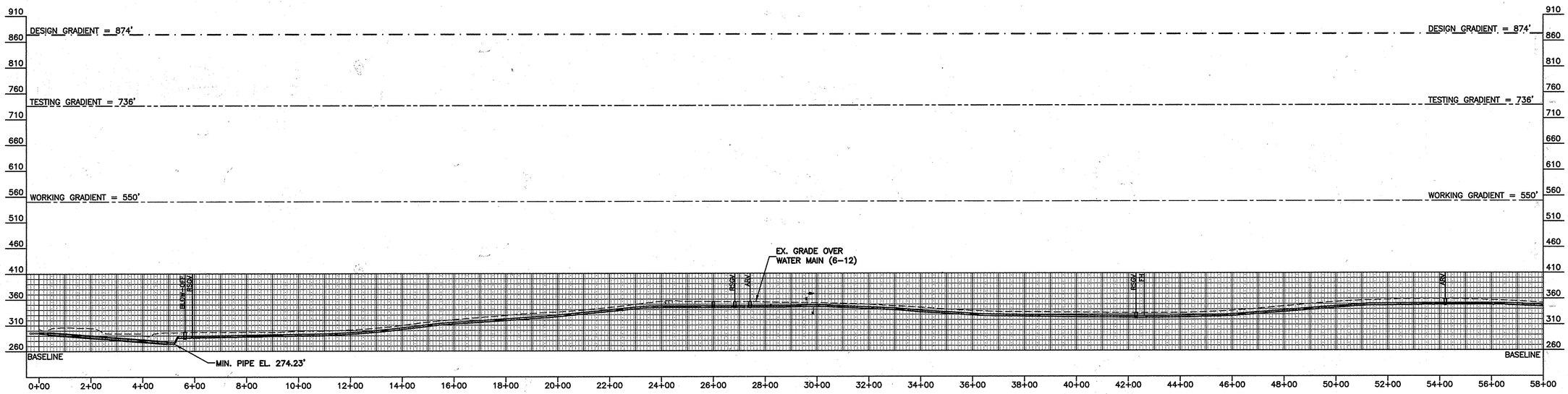
600' SCALE MAP NO. 30 BLOCK NO. 36

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

SCALE AS SHOWN

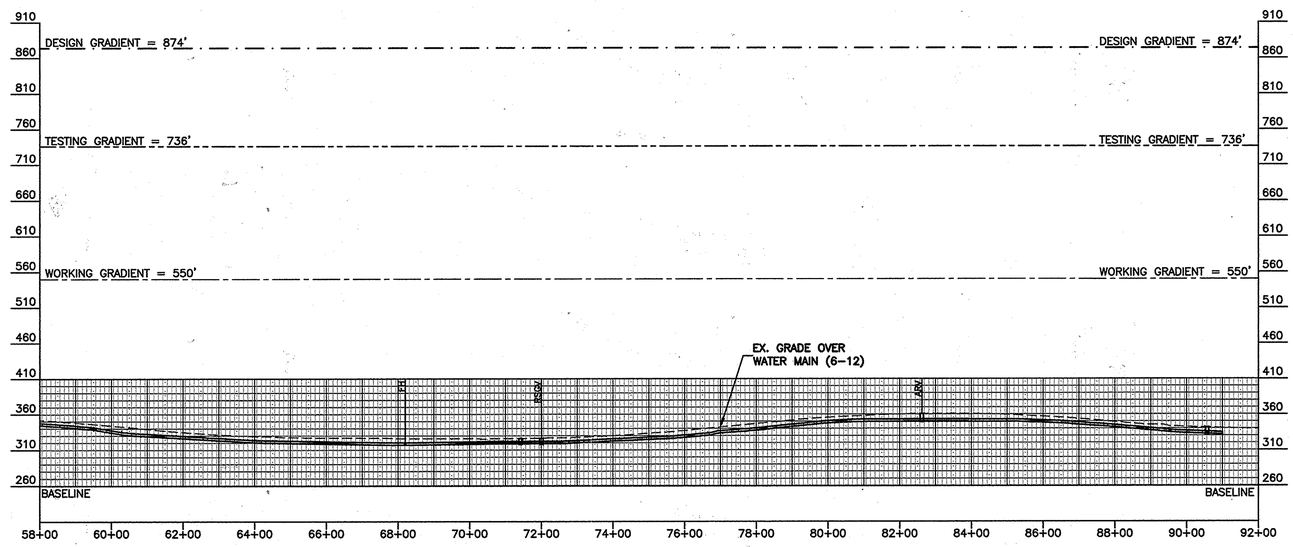
SHEET 3 OF 48

FILE NO. 33498-XXXF



HYDRAULIC PROFILE

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



HYDRAULIC PROFILE

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

GRAPHIC SCALES

VERTICAL 1"=100' 100 0 100 200

HORIZONTAL 1"=200' 200 0 200 400

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 10/1/15
CHIEF – BUREAU OF ENGINEERING — DATE 9/30/15
CHIEF, BUREAU OF UTILITIES — DATE 10/1/15
CHIEF, UTILITY DESIGN DIVISION — DATE 9/30/15

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STATE OF MARYLAND — ROBERT JOHN DUNN — REGISTERED PROFESSIONAL ENGINEER

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

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

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

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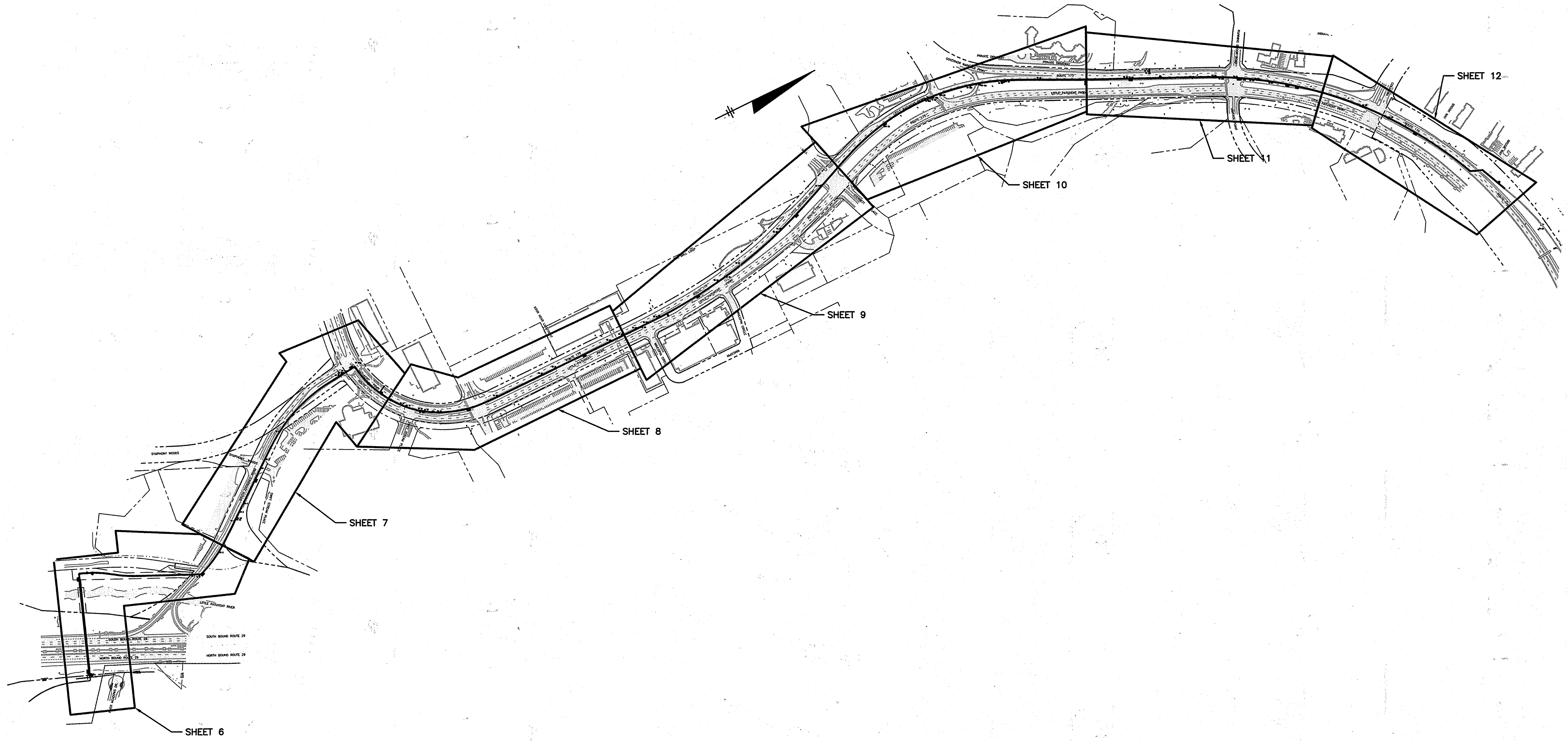

1"=250' 250 0 250 500

DEPARTMENT OF PUBLIC WORKS

HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS	DATE 10/1/15	CHIEF - BUREAU OF ENGINEERING	DATE 9/30/15
CHIEF, BUREAU OF UTILITIES	DATE 10/1/15	CHIEF, UTILITY DESIGN DIVISION	DATE 9/30/15

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

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

KEY MAP

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 5 OF 48

FILE NO. 33498-XXXF

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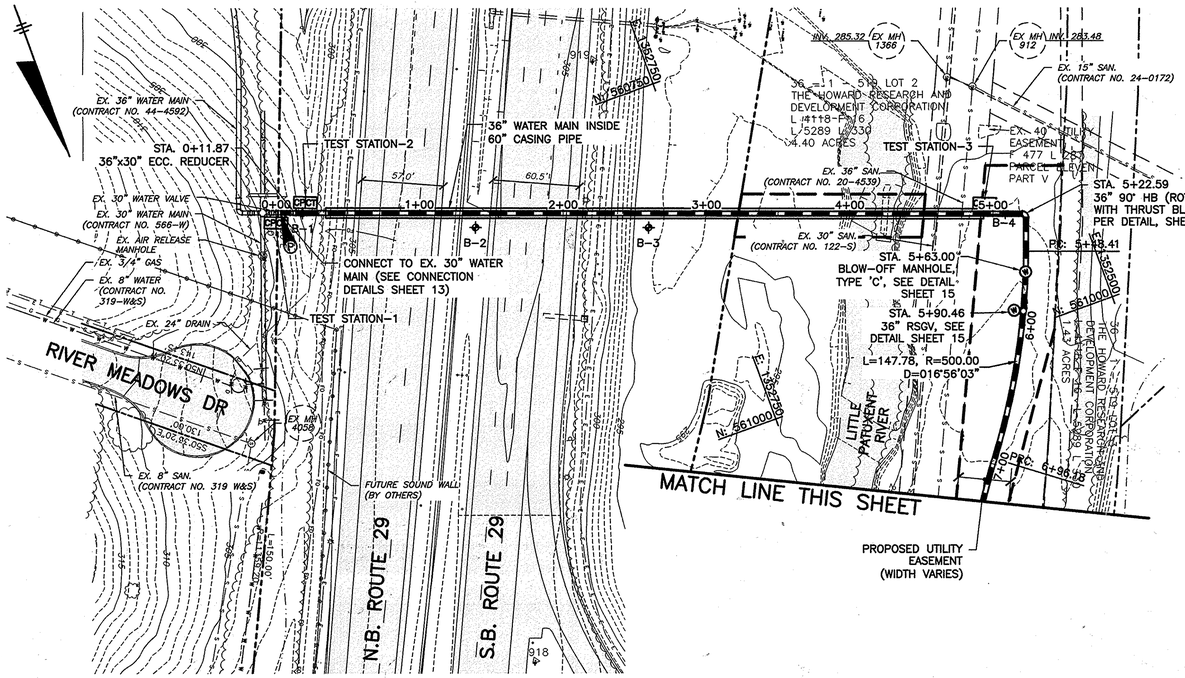
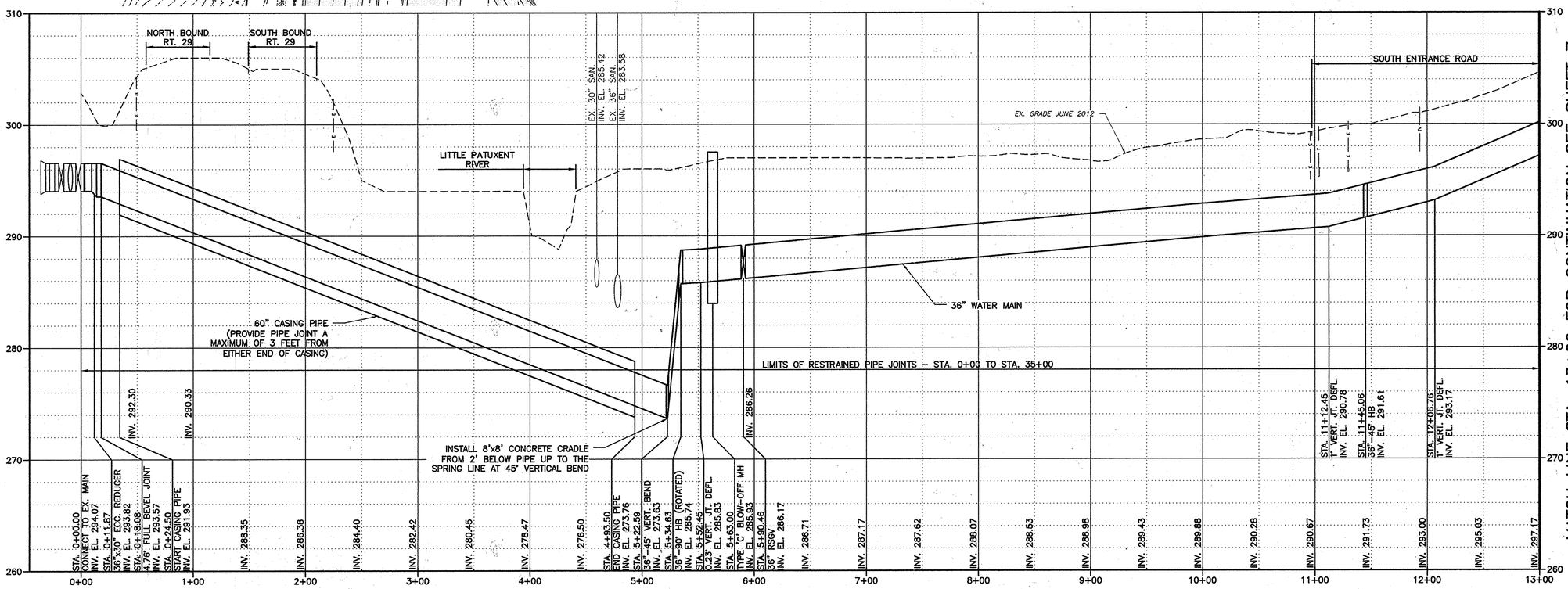
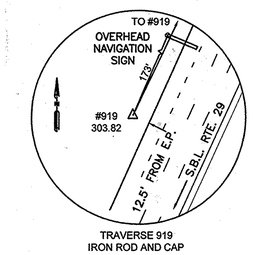
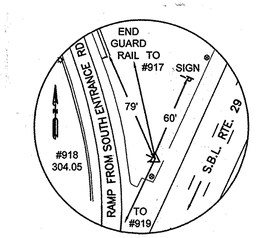


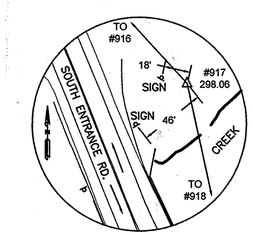




TRAVERSE 919
IRON ROD AND CAP



TRAVERSE 918
IRON ROD AND CAP



TRAVERSE 917
IRON ROD AND CAP

GRAPHIC SCALES

VERTICAL 1"=5' 5 0 5 10

HORIZONTAL 1"=50' 50 0 50 100

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 10/1/15
CHIEF - BUREAU OF ENGINEERING — DATE 9/30/15
CHIEF, BUREAU OF UTILITIES — DATE 10/1/15
CHIEF, UTILITY DESIGN DIVISION PSD — DATE 9/30/15

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STATE OF MARYLAND — ROBERT JOHN DISTELZWEIG — PROFESSIONAL ENGINEER

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

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

PLAN AND PROFILE
STA. 0+00 TO 13+00

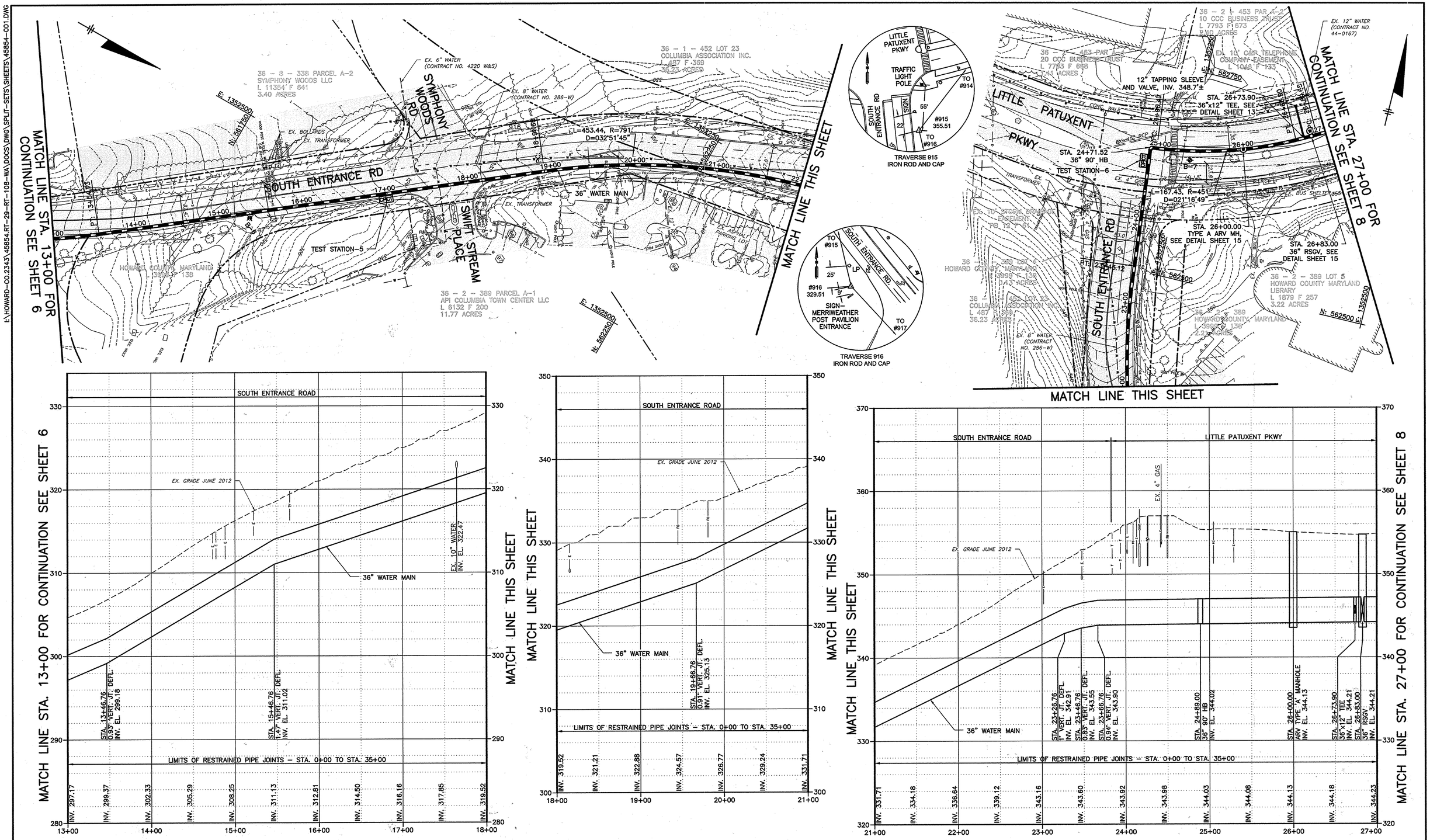
600' SCALE MAP NO. 30 BLOCK NO. 36

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 6 OF 48

FILE NO. 33498-XXXF



GRAPHIC SCALES

VERTICAL 1"=5' 5 0 5 10

HORIZONTAL 1"=50' 50 0 50 100

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 10/1/15
CHIEF – BUREAU OF ENGINEERING — DATE 9/30/15
CHIEF, BUREAU OF UTILITIES — DATE 10/1/15
CHIEF, UTILITY DESIGN DIVISION — DATE 9/30/15

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STATE OF MARYLAND — ROBERT JOHN DILLA — PROFESSIONAL ENGINEER

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

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

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

FILE NO. 33498–XXXF

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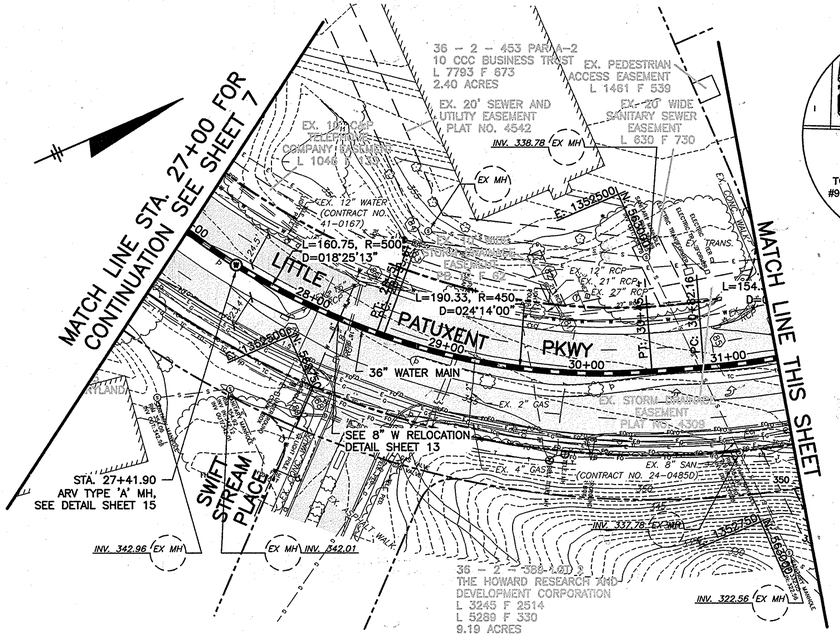
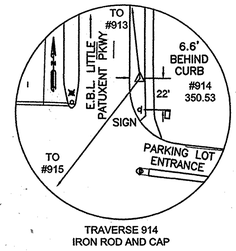
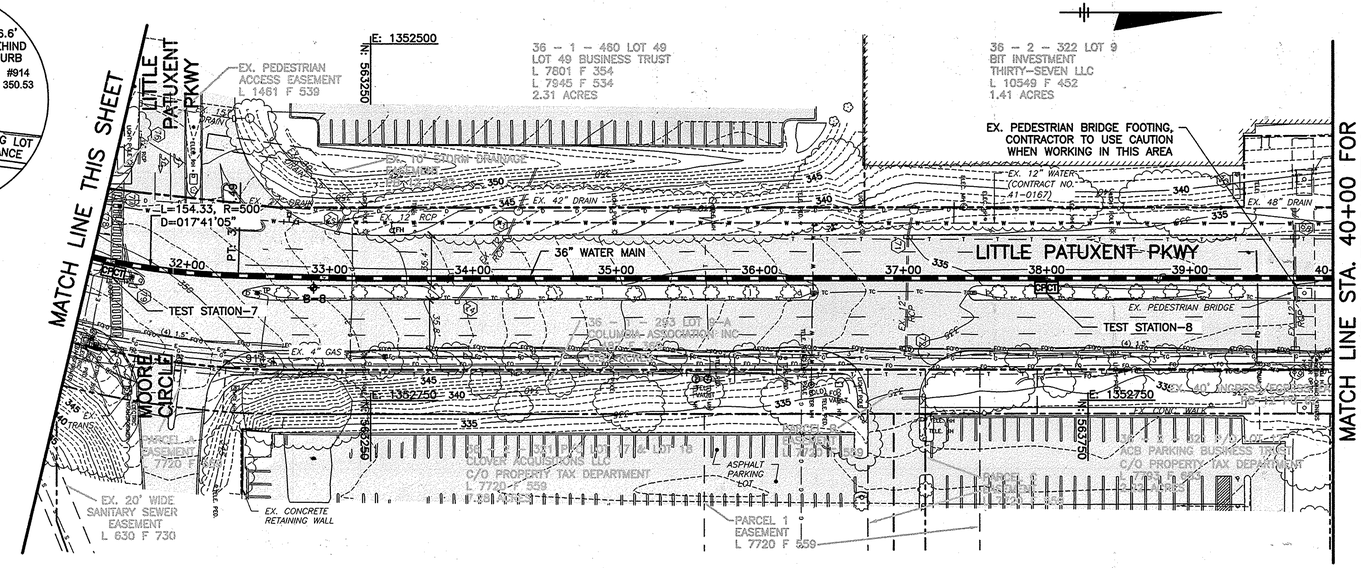
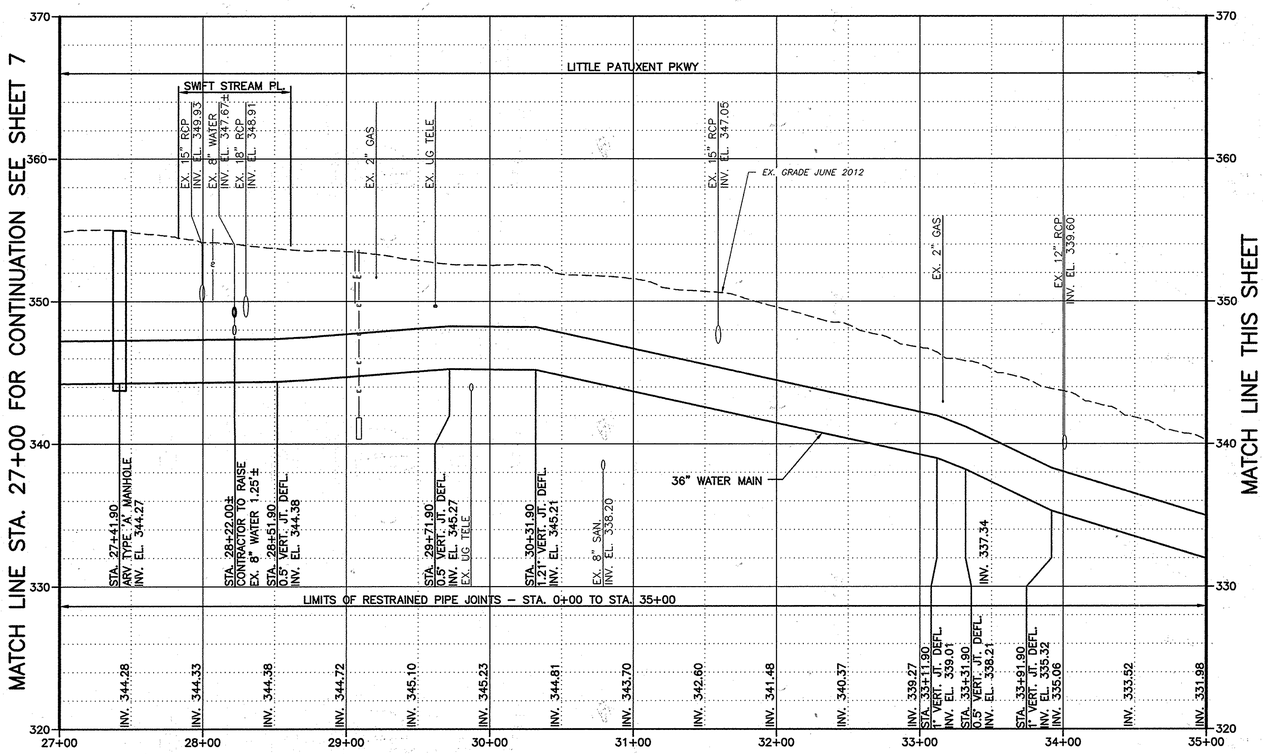
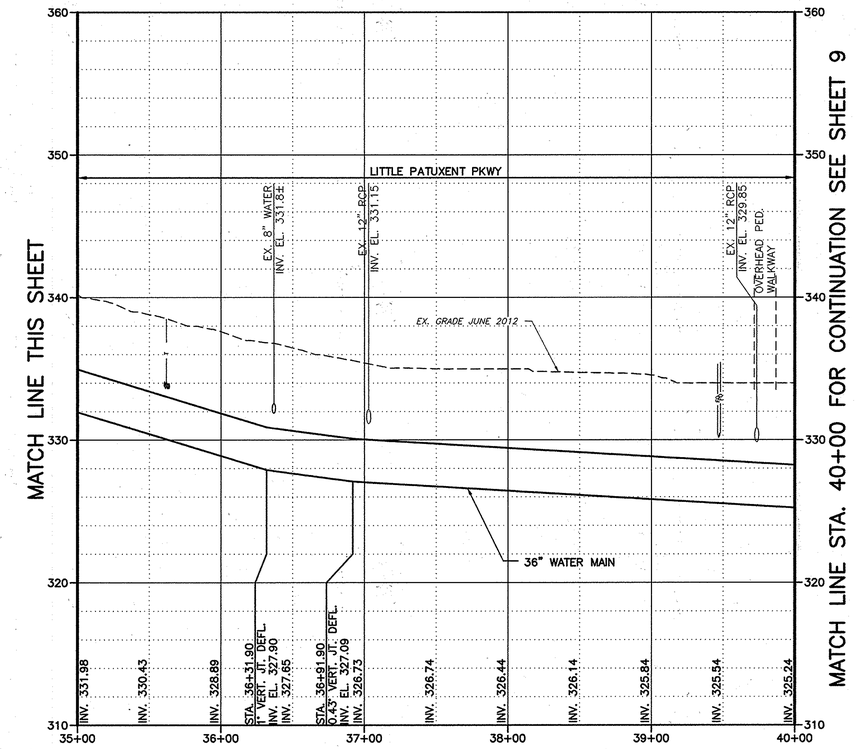




TRAVERSE 914
IRON ROD AND CAP







GRAPHIC SCALES

VERTICAL 1"=5' (5 0 5 10)

HORIZONTAL 1"=50' (50 0 50 100)

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 10/1/15
CHIEF, BUREAU OF ENGINEERING — DATE 9/30/15
CHIEF, BUREAU OF UTILITIES — DATE 10/1/15
CHIEF, UTILITY DESIGN DIVISION PSD — DATE 9/30/15

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STATE OF MARYLAND — ROBERT JOHN DUDA — PROFESSIONAL ENGINEER

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

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

PLAN AND PROFILE
STA. 27+00 TO STA. 40+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 8 OF 48

FILE NO. 33498-XXXF

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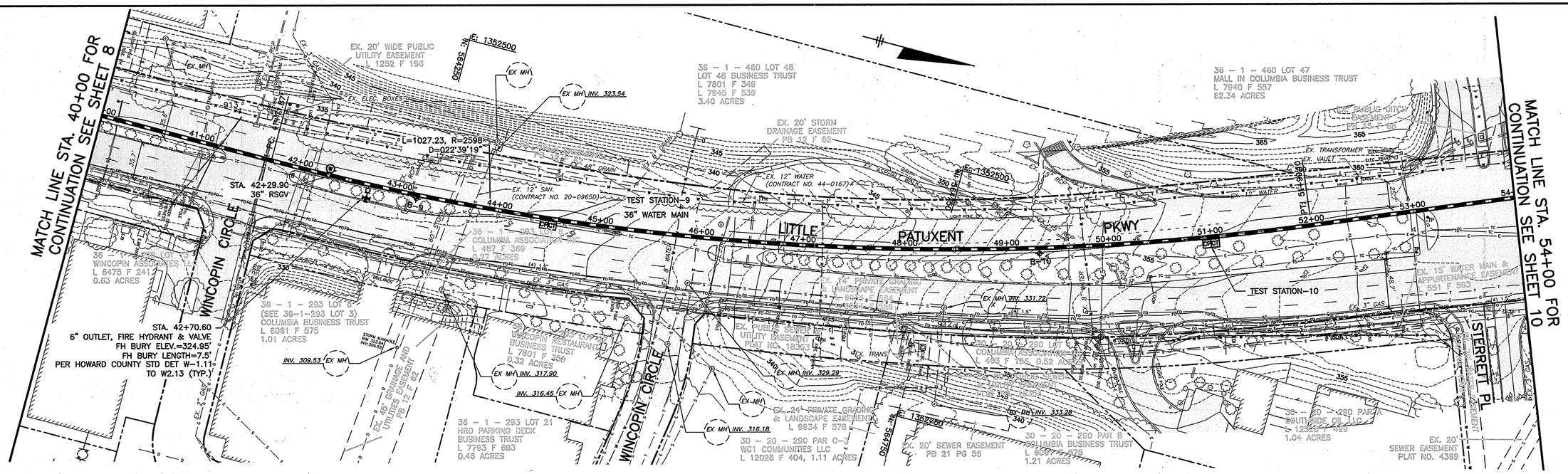
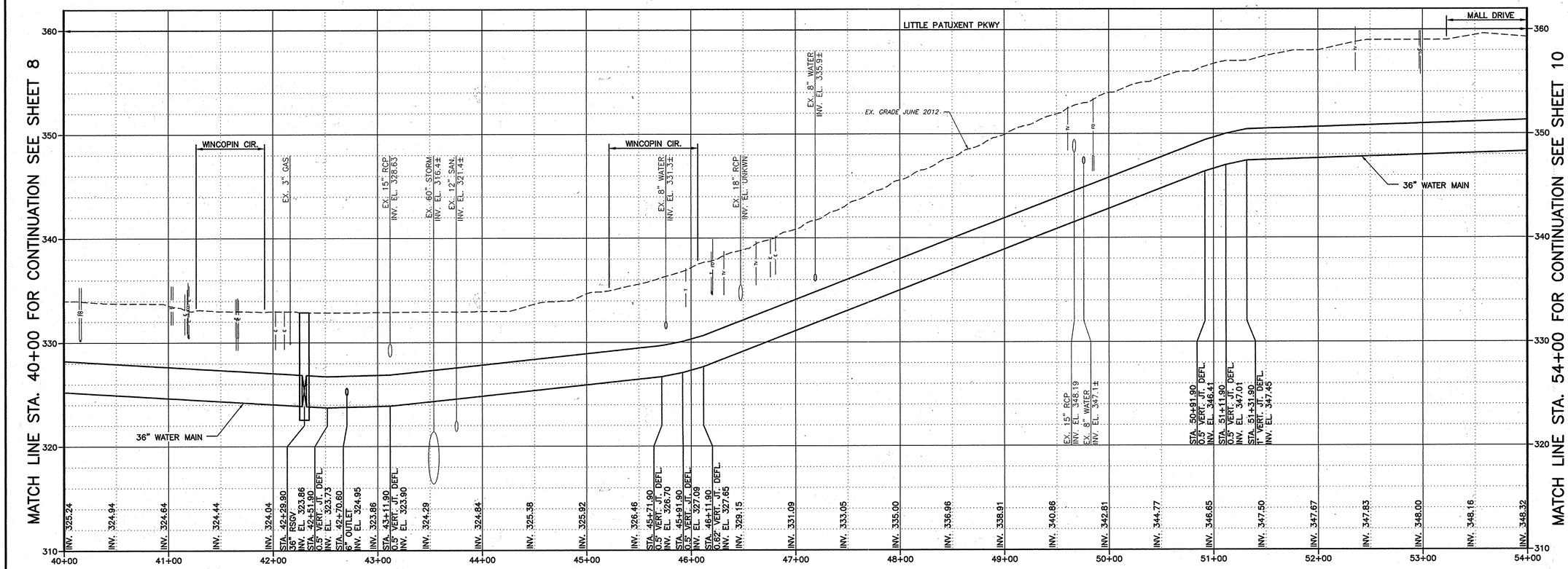
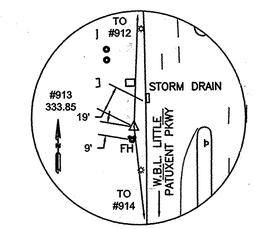
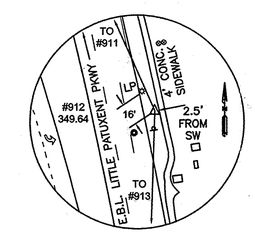






TRAVERSE 913
IRON ROD AND CAP



TRAVERSE 912
IRON ROD AND CAP

GRAPHIC SCALES

VERTICAL 1"=5' (5 0 5 10)

HORIZONTAL 1"=50' (50 0 50 100)

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 10/1/15
CHIEF – BUREAU OF ENGINEERING — DATE 9/30/15
CHIEF, BUREAU OF UTILITIES — DATE 10/1/15
CHIEF, UTILITY DESIGN DIVISION PSD — DATE 9/30/15

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STATE OF MARYLAND — ROBERT JOHN DUDA — PROFESSIONAL ENGINEER

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

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

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

FILE NO. 33498-XXXF

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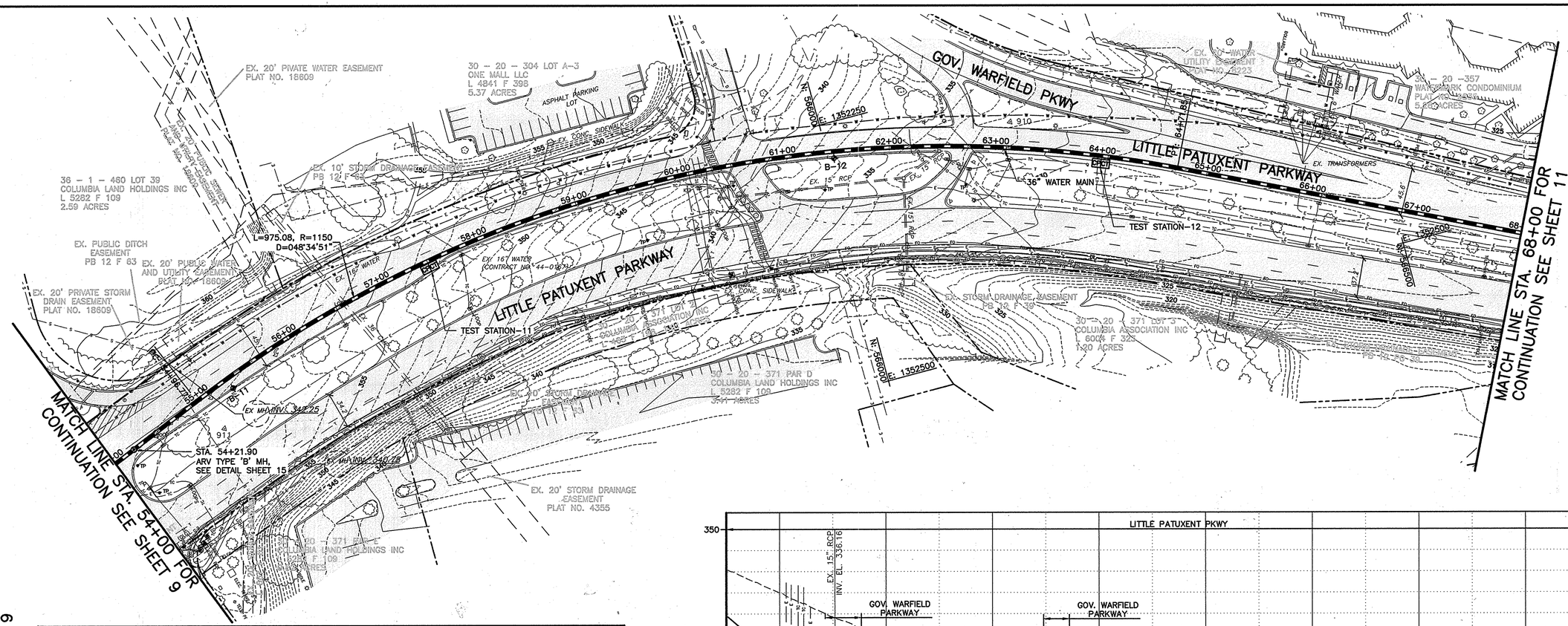

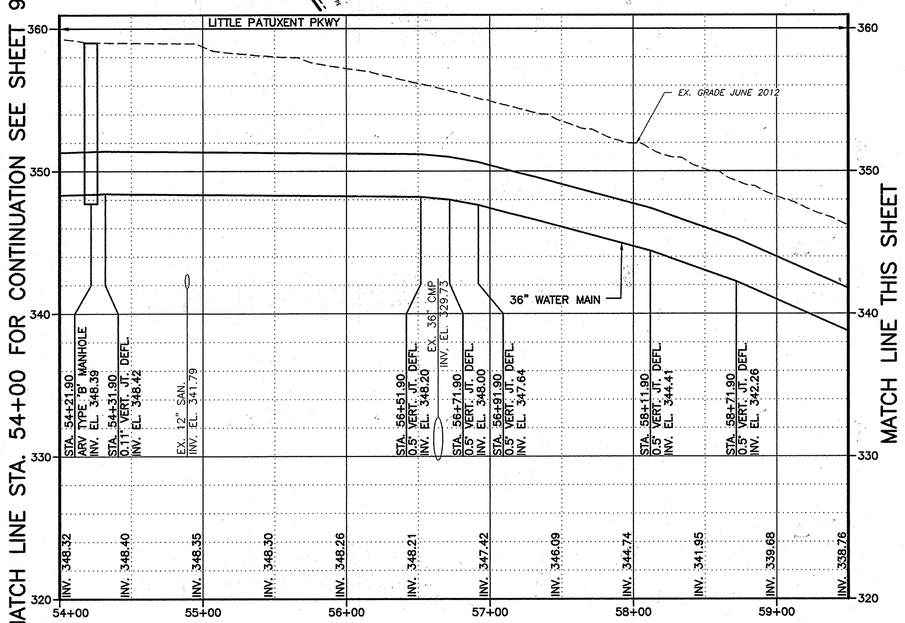

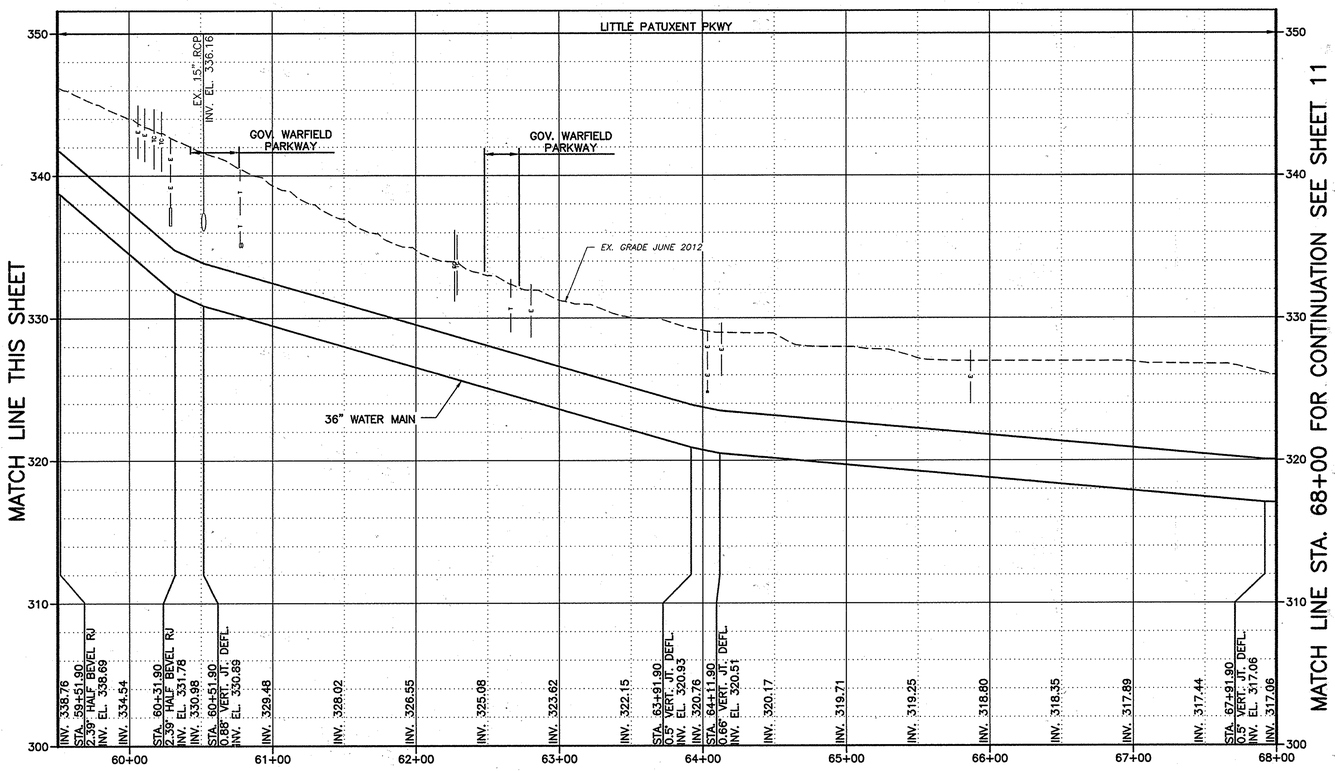

GRAPHIC SCALES

VERTICAL 1"=5' 5 0 5 10

HORIZONTAL 1"=50' 50 0 50 100

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 10/1/15
CHIEF - BUREAU OF ENGINEERING — DATE 9/30/15
CHIEF, BUREAU OF UTILITIES — DATE 10/1/15
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STATE OF MARYLAND — ROBERT JOHN DUDA — PROFESSIONAL ENGINEER

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

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

PLAN AND PROFILE
STA. 54+00 TO STA. 68+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 10 OF 48

FILE NO. 33498- XXXF

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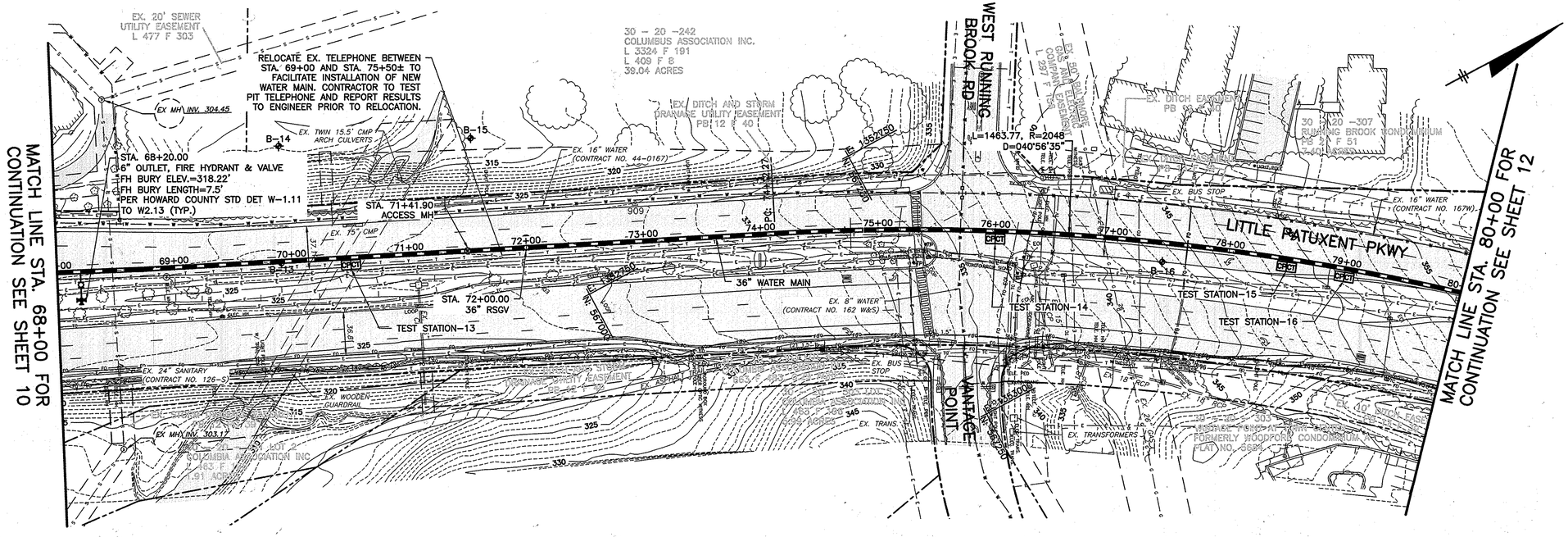

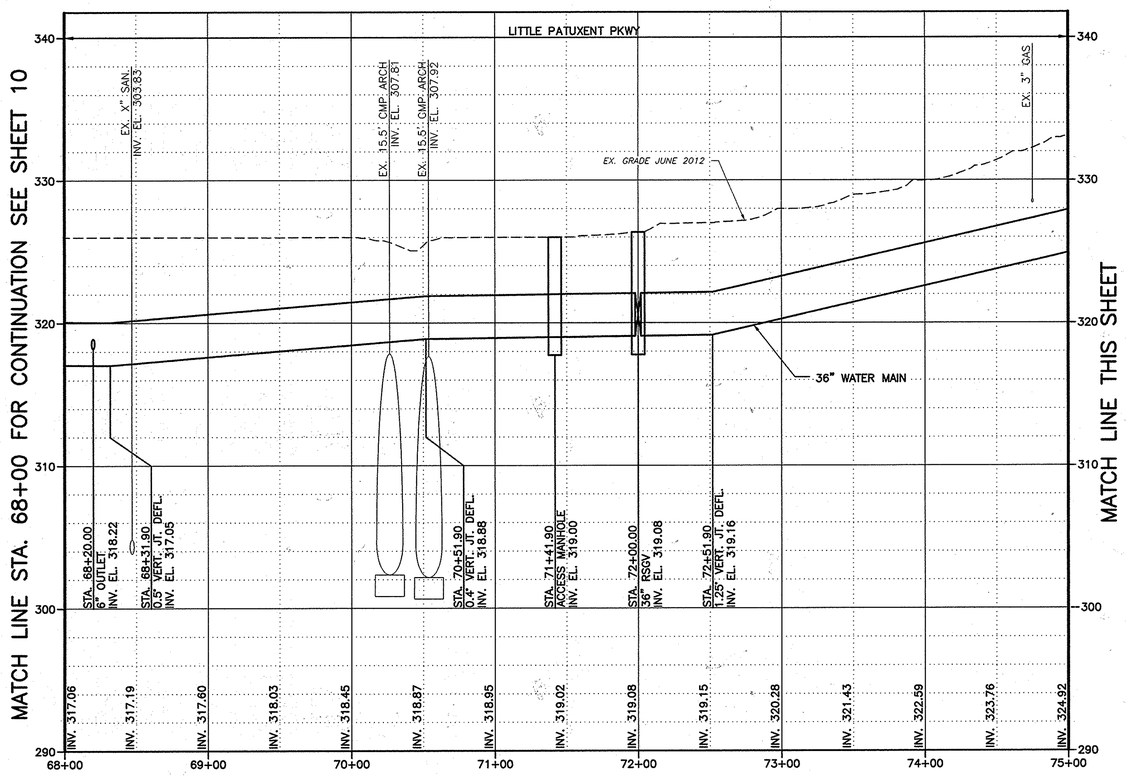

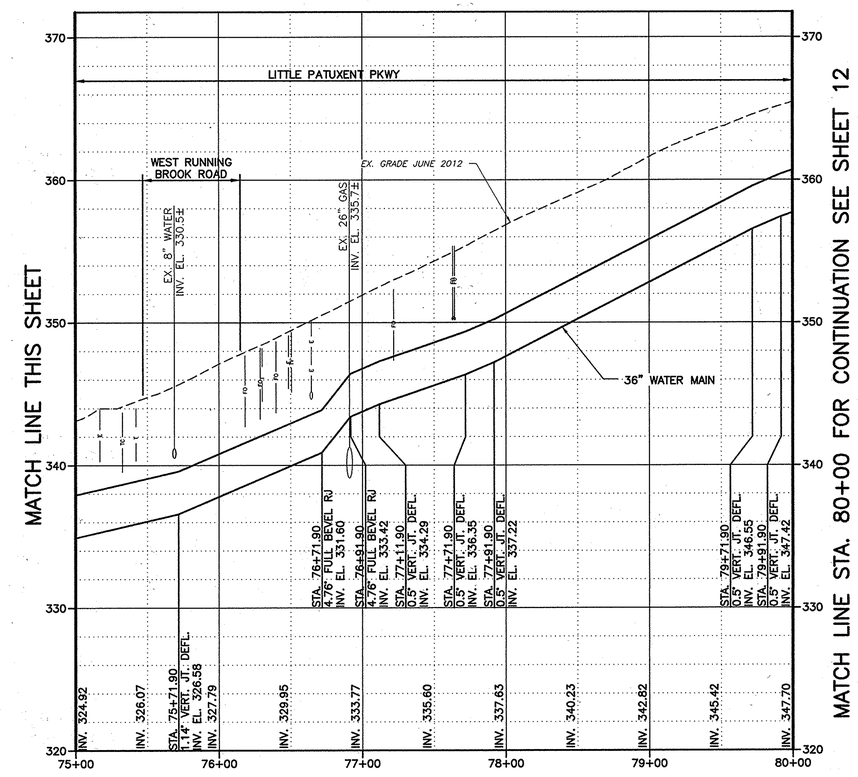

GRAPHIC SCALES

VERTICAL 1"=5' (5 0 5 10)

HORIZONTAL 1"=50' (50 0 50 100)

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 10/1/15
CHIEF – BUREAU OF ENGINEERING — DATE 9/30/15
CHIEF, BUREAU OF UTILITIES — DATE 10/1/15
CHIEF, UTILITY DESIGN DIVISION PSD — DATE 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 — ROBERT JOHN DUCKETT — REGISTERED PROFESSIONAL ENGINEER

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

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

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

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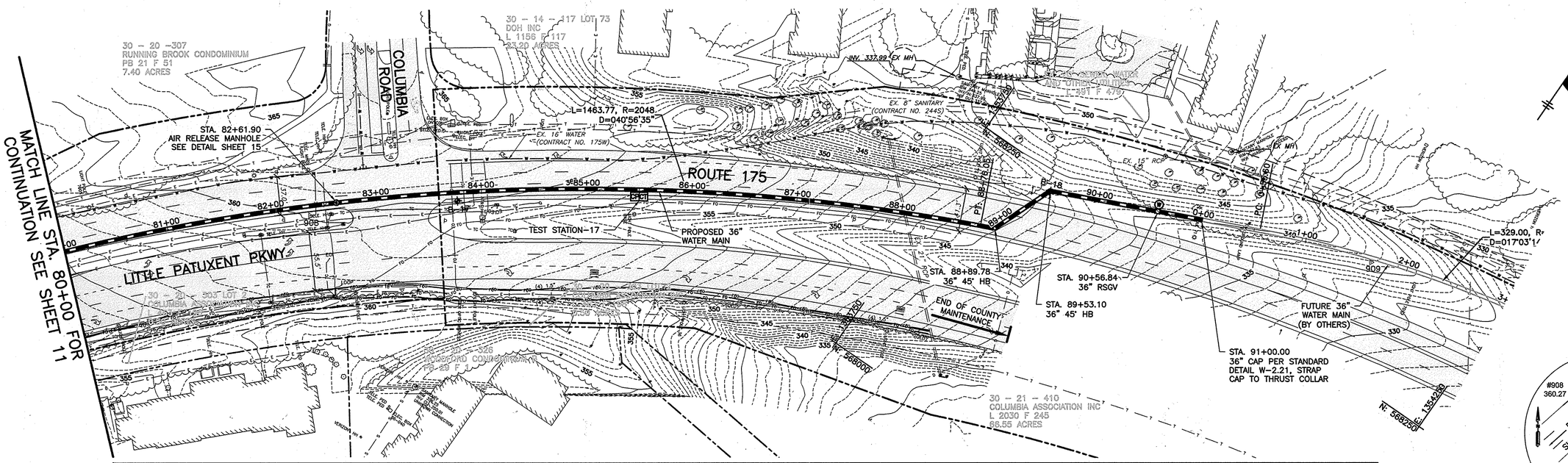
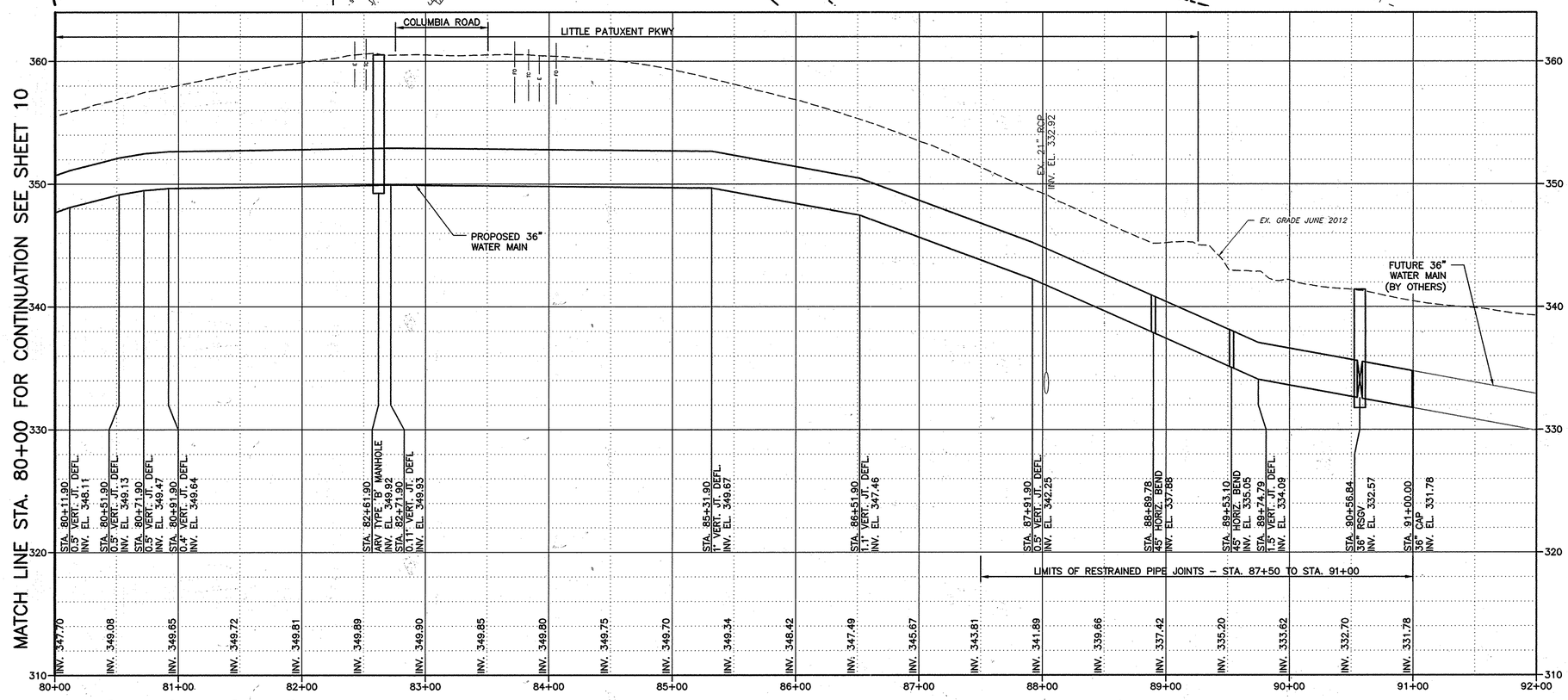
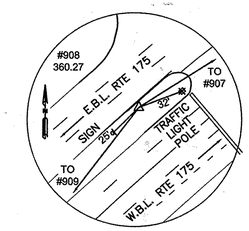
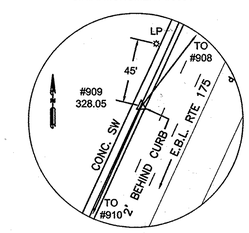






TRAVERSE 908
S.H.A. MONUMENT #3064



TRAVERSE 909
IRON ROD AND CAP

GRAPHIC SCALES

VERTICAL 1"=5' 5 0 5 10

HORIZONTAL 1"=50' 50 0 50 100

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 10/1/15
CHIEF - BUREAU OF ENGINEERING — DATE 9/30/15
CHIEF, BUREAU OF UTILITIES — DATE 10/1/15
CHIEF, UTILITY DESIGN DIVISION — DATE 9/30/15

O'BRIEN & GERE
4201 MITCHELLVILLE ROAD
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STATE OF MARYLAND — ROBERT JOHN DIVITO — PROFESSIONAL ENGINEER

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

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

PLAN AND PROFILE
STA. 80+00 TO STA. 91+00

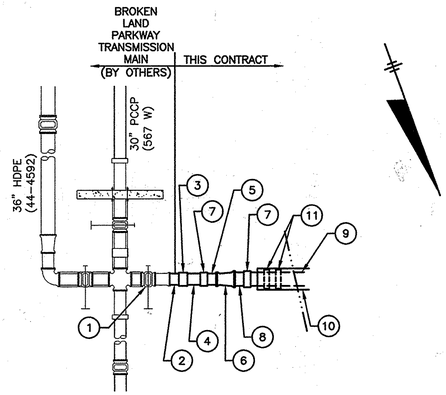
600' SCALE MAP NO. 30 BLOCK NO. 36

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-XXXF



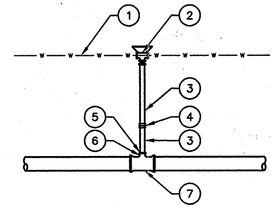
CONNECTION DETAIL STA. 0+00

EXISTING:

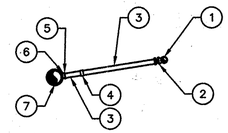
1. 30" VALVE

PROPOSED:

2. 30" DI PExPE SPOOL PIECE 3.0' LONG CLASS 54
3. 30" DI MJ SOLID SLEEVE, RESTRAINED
4. 30" DI PExFL SPOOL PIECE 3.0' LONG CLASS 54
5. 30" PCCP FLxSR SPOOL PIECE
6. 36"x30" PCCP SR ECCENTRIC REDUCER
7. 36" SRxWELDED 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 SPxSR 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:

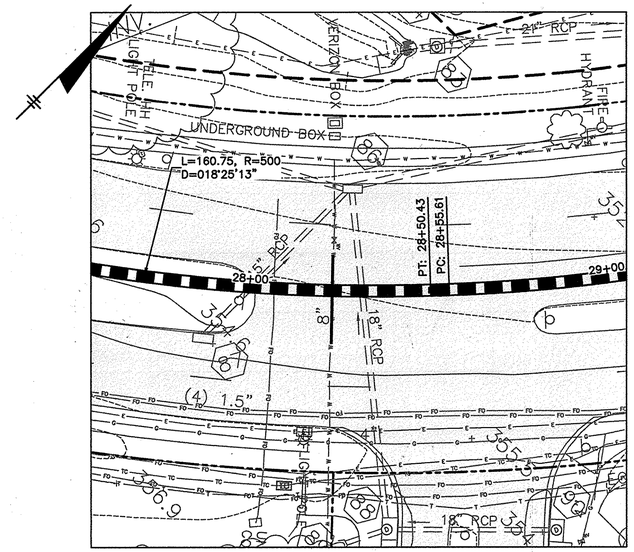
1. 12" CI WM PIPE

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 SRxFL ADAPTER
6. 36"x12" DI MJ RJ TEE
7. 36" PCCP WM PIPE

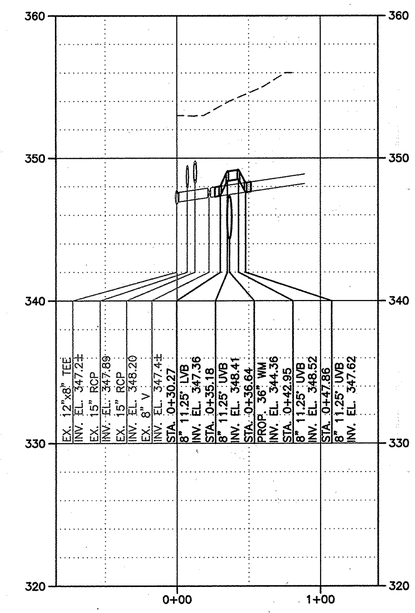
NOTE:

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' 50' 0 50'
VERT. 1"=5' 5' 0 5'

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND			
DIRECTOR OF PUBLIC WORKS	DATE 10/1/15	CHIEF – BUREAU OF ENGINEERING	DATE 9/30/15
CHIEF, BUREAU OF UTILITIES	DATE 10/1/15	CHIEF, UTILITY DESIGN DIVISION	DATE 9/30/15

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STATE OF MARYLAND ROBERT JOHN FIELD PROFESSIONAL ENGINEER

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

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

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

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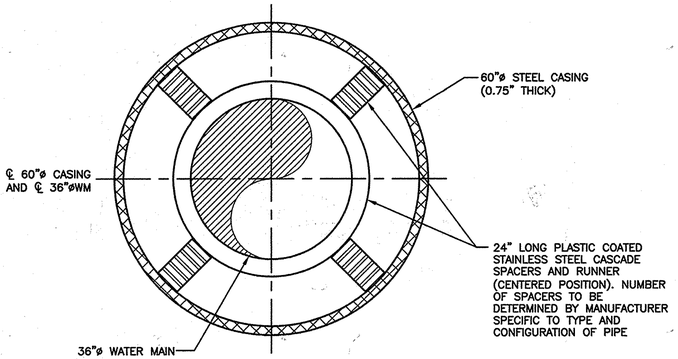
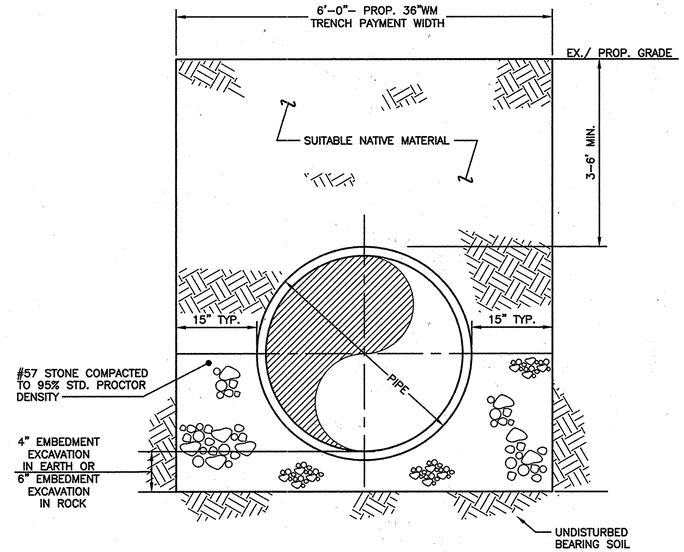


60" CASING UNDER ROADWAY

N.T.S.

DETAIL NOTES:

1. CASING TO BE SEALED ON BOTH ENDS WITH DUAL BRICK AND MORTAR COURSE.
2. PROVIDE FLEXIBLE RESTRAINED PIPE JOINT 3-FEET BEYOND EACH END OF CASING PIPE.
3. 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.
4. CASING SPACERS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

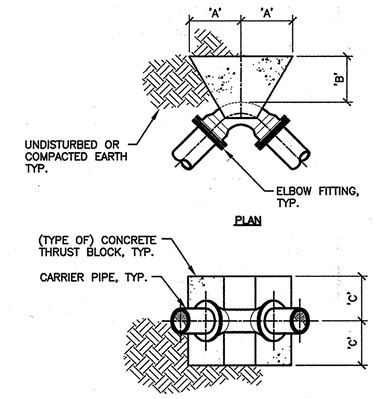


TYPICAL PIPE TRENCH DETAIL (UNPAVED AREA)

N.T.S.

DETAIL NOTES:

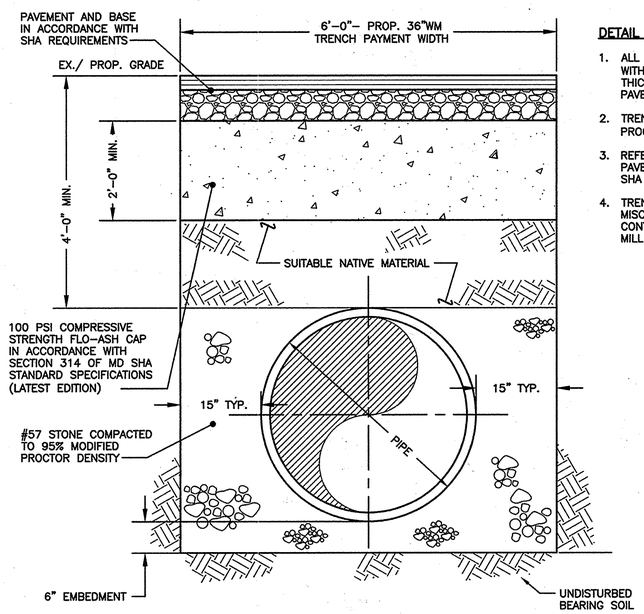
1. WITHIN ROAD RIGHT-OF-WAY, TRENCH SHALL BE COMPACTED TO 95% STD. PROCTOR DENSITY, 8" LAYERS MAXIMUM.
2. OUTSIDE OF ROAD RIGHT-OF-WAY, MATERIAL ABOVE TOP OF PIPE SHALL BE COMPACTED TO 90% IN 12" LAYERS.



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

THRUST BLOCK FOR BENDS

NOT TO SCALE



TYPICAL PIPE TRENCH DETAIL (PAVED AREA)

N.T.S.

DETAIL NOTES:

1. ALL TRENCHING PERFORMED UNDER PAVEMENT WITHIN THE SHA ROW SHALL INCLUDE A 2'-0" THICK FLOWABLE FILL CAP BELOW SUBGRADE FOR PAVEMENT REPLACEMENT.
2. TRENCH SHALL BE COMPACTED TO 95% MODIFIED PROCTOR DENSITY, 8" LAYERS MAXIMUM.
3. REFER TO RESTORATION SCHEDULE FOR BASE AND PAVEMENT REQUIREMENTS FOR WORK WITHIN THE SHA ROW.
4. TRENCH LIMIT DEPICTED HEREIN SHALL NOT BE MISCONSTRUED AS LIMITS FOR FINAL PAVING. CONTRACTOR SHALL NOTE THE REQUIRED AREA FOR MILL & OVERLAY DEPICTED IN THE PLANS.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 10/1/15
CHIEF – BUREAU OF ENGINEERING — DATE 9/30/15
CHIEF, BUREAU OF UTILITIES — DATE 10/1/15
CHIEF, UTILITY DESIGN DIVISION — DATE 9/30/15

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

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STATE OF MARYLAND — ROBERT JOHN DAVIS — No. 18523 — PROFESSIONAL ENGINEER

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

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

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

SCALE AS SHOWN

SHEET 14 OF 48

FILE NO. 33498-XXXF

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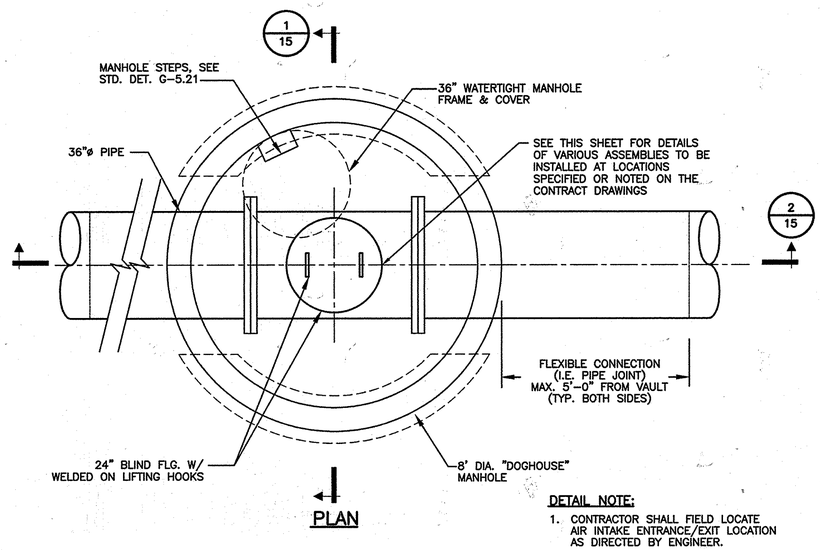
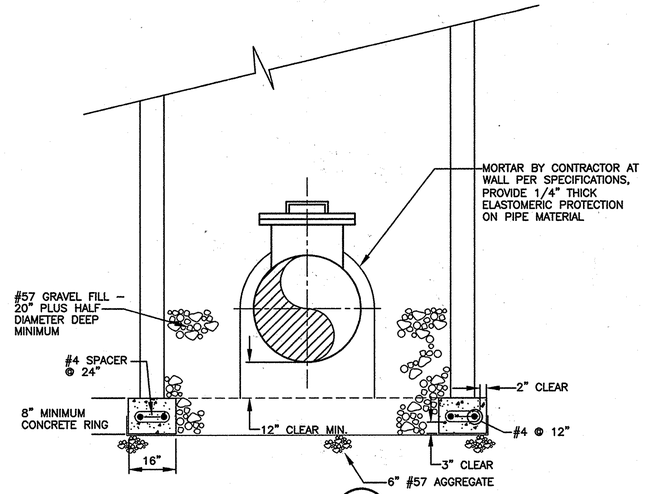


DETAIL NOTE:

1. CONTRACTOR SHALL FIELD LOCATE AIR INTAKE ENTRANCE/EXIT LOCATION AS DIRECTED BY ENGINEER.

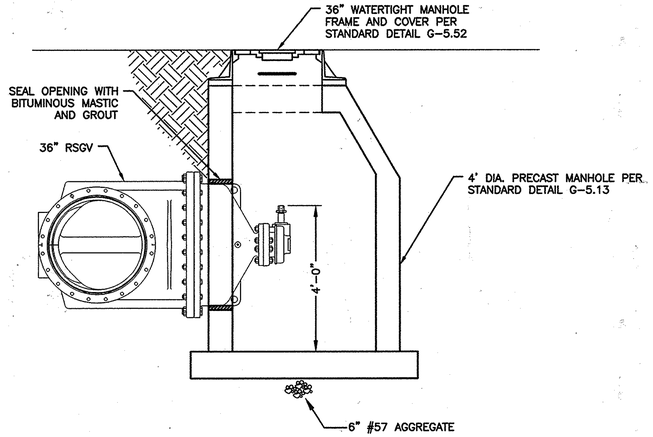
TYPICAL ACCESS MANHOLE – DETAIL

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



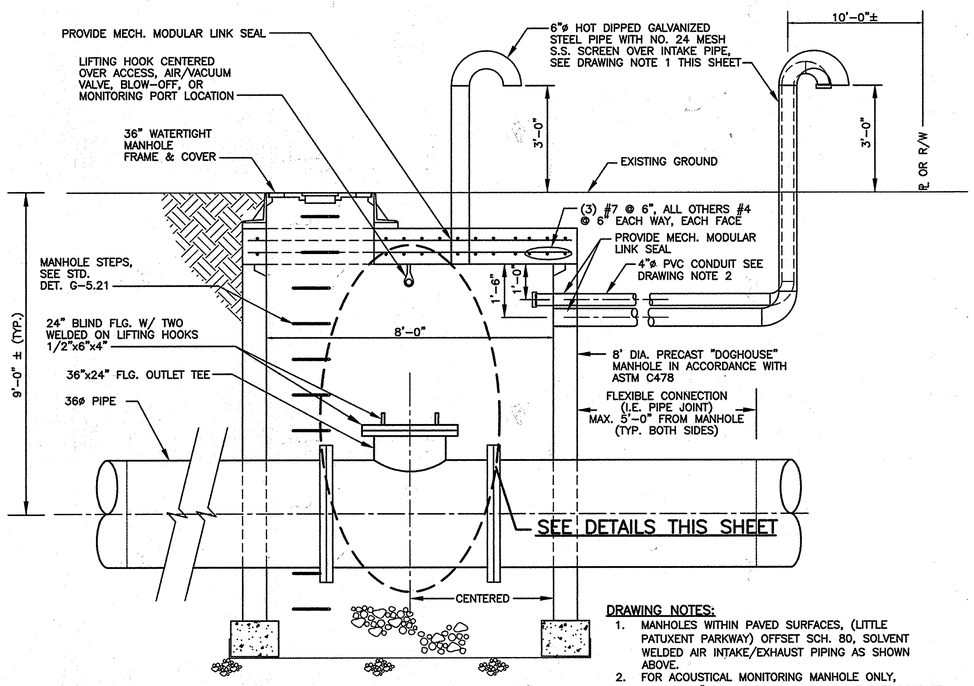
SECTION 1/15

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



36" RSGV WITH ACTUATOR ACCESS MANHOLE

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

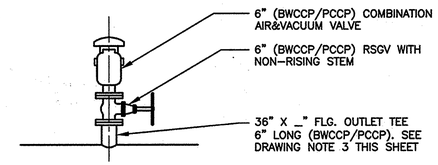


DRAWING NOTES:

1. MANHOLES WITHIN PAVED SURFACES, (LITTLE PATUXENT PARKWAY) OFFSET SCH. 80, SOLVENT WELDED AIR INTAKE/EXHAUST PIPING AS SHOWN ABOVE.
2. 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.
3. COAT EXPOSED STEEL FITTINGS WITH 2 COATS OF ROYSTON R-28 MASTIC, PER MANUFACTURERS RECOMMENDATIONS.

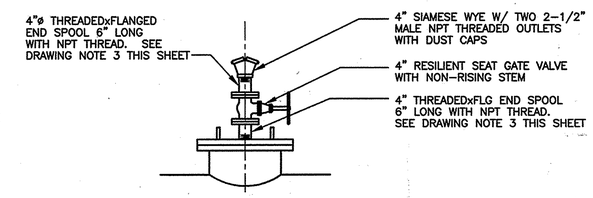
SECTION 2/15

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



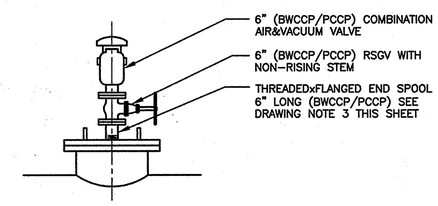
TYPICAL AIR&VACUUM VALVE MANHOLE ASSEMBLY – DETAIL A

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



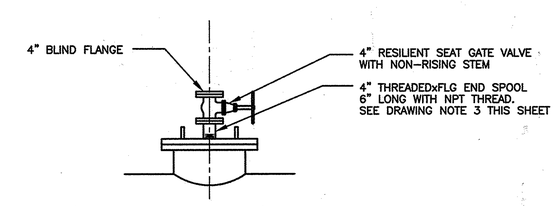
TYPICAL BLOW-OFF/ACCESS MANHOLE ASSEMBLY – DETAIL C

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



TYPICAL AIR&VACUUM VALVE/ACCESS MANHOLE ASSEMBLY – DETAIL B

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



TYPICAL ACOUSTICAL MONITORING MANHOLE ASSEMBLY – DETAIL D

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

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

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 10/1/15
CHIEF – BUREAU OF ENGINEERING — DATE 9/30/15
CHIEF, BUREAU OF UTILITIES — DATE 10/1/15
CHIEF, UTILITY DESIGN DIVISION — DATE 9/30/15

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

PROFESSIONAL CERTIFICATION:
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STATE OF MARYLAND — ROBERT JOHN RUDY — PROFESSIONAL ENGINEER

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

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

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

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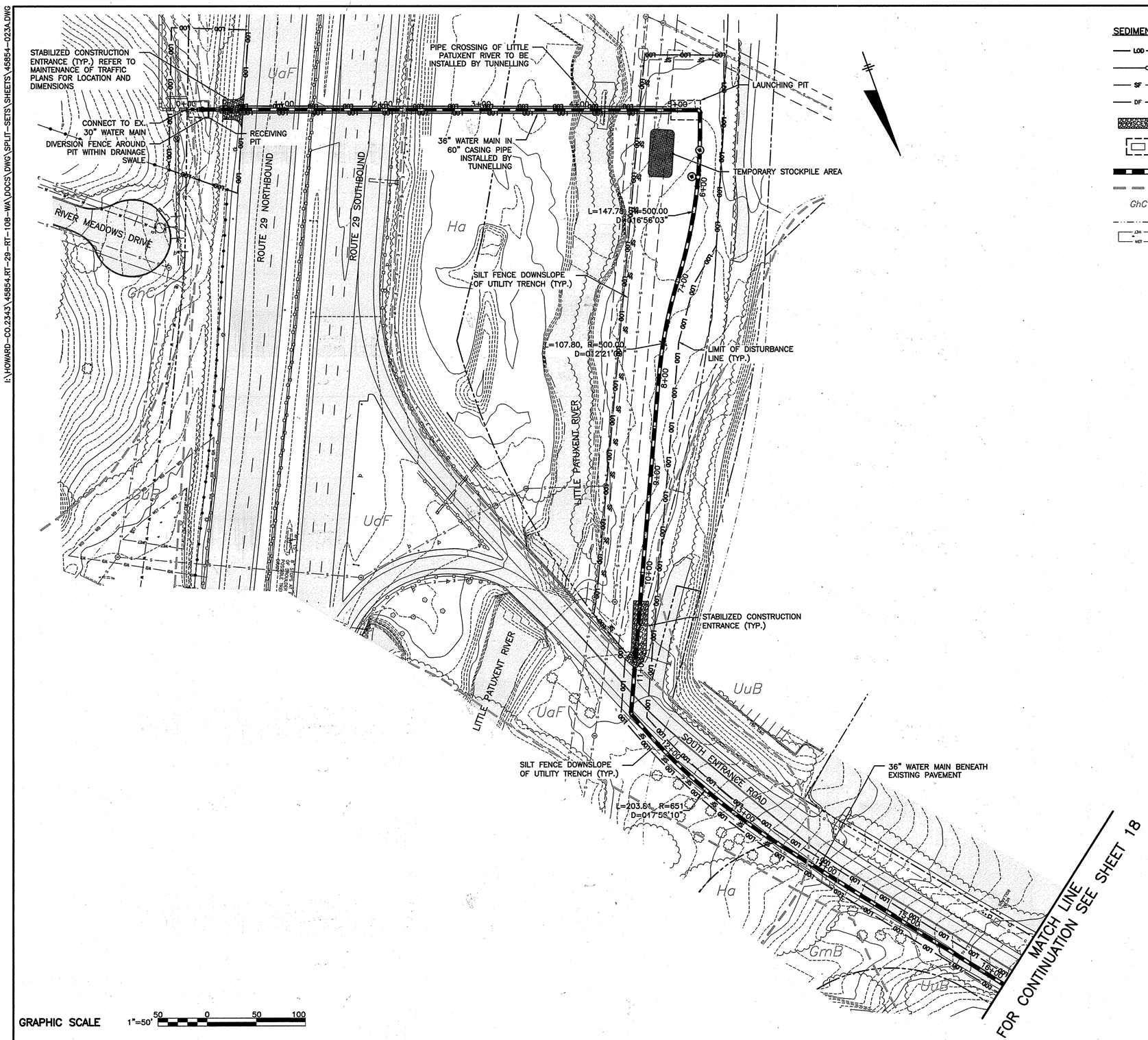
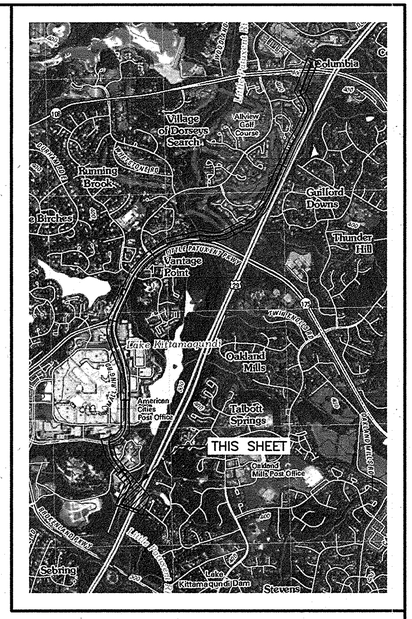


SEDIMENT CONTROL PLAN LEGEND

- 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
- GhC — SOIL LABEL
- 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 22.
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.

GRAPHIC SCALE 1"=50' 50 0 50 100

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 — Signature of Engineer – Registration Number

9/22/15 — Date

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 10/1/15
CHIEF – BUREAU OF ENGINEERING — DATE 9/30/15
CHIEF, BUREAU OF UTILITIES — DATE 10/1/15
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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 DAY — REGISTERED PROFESSIONAL ENGINEER

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

BY	NO.	REVISION	DATE
RJD	0	PERMIT SUBMITTAL	08/15

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-XXXF

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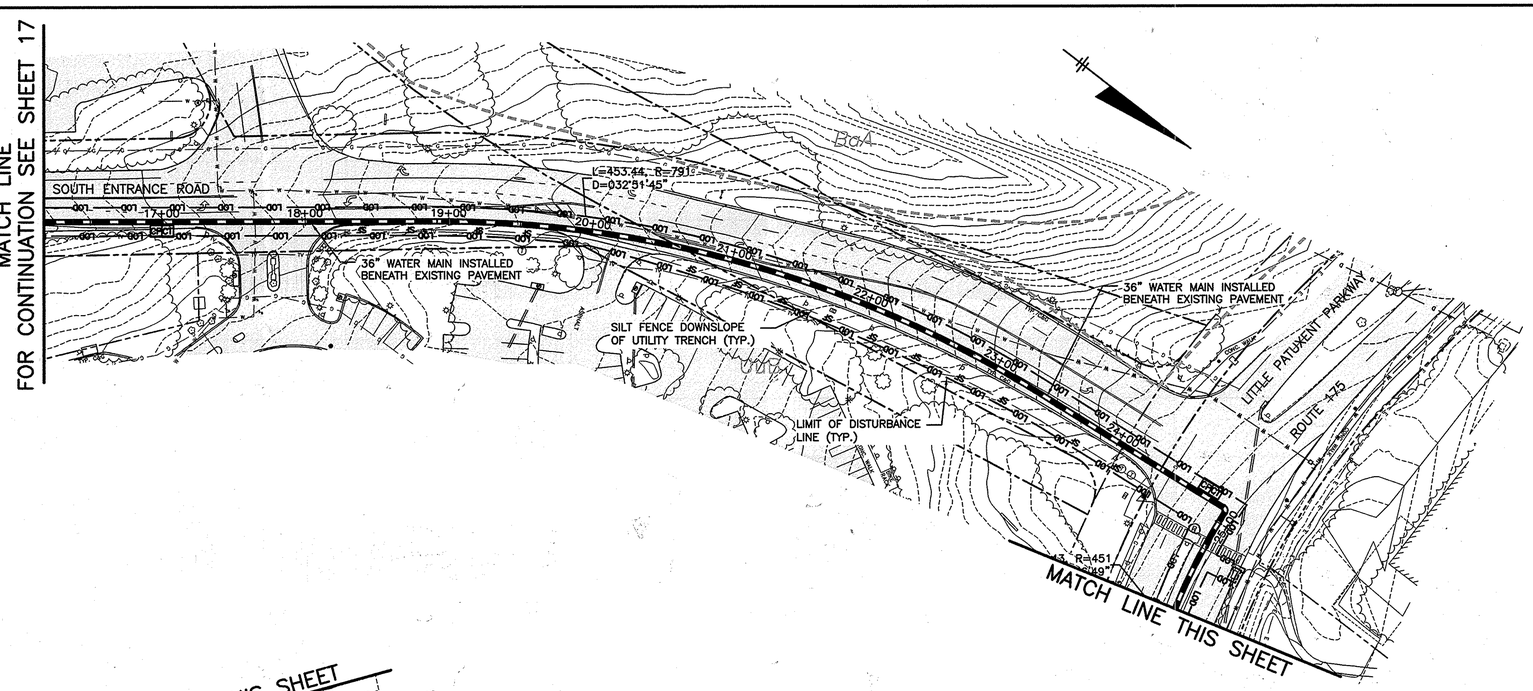
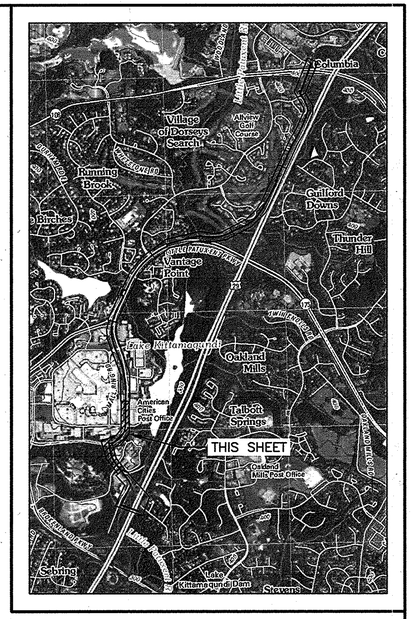


SEDIMENT CONTROL PLAN LEGEND

- 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
- GhC — SOIL LABEL
- FLOODPLAIN BOUNDARY
- WETLANDS AREA



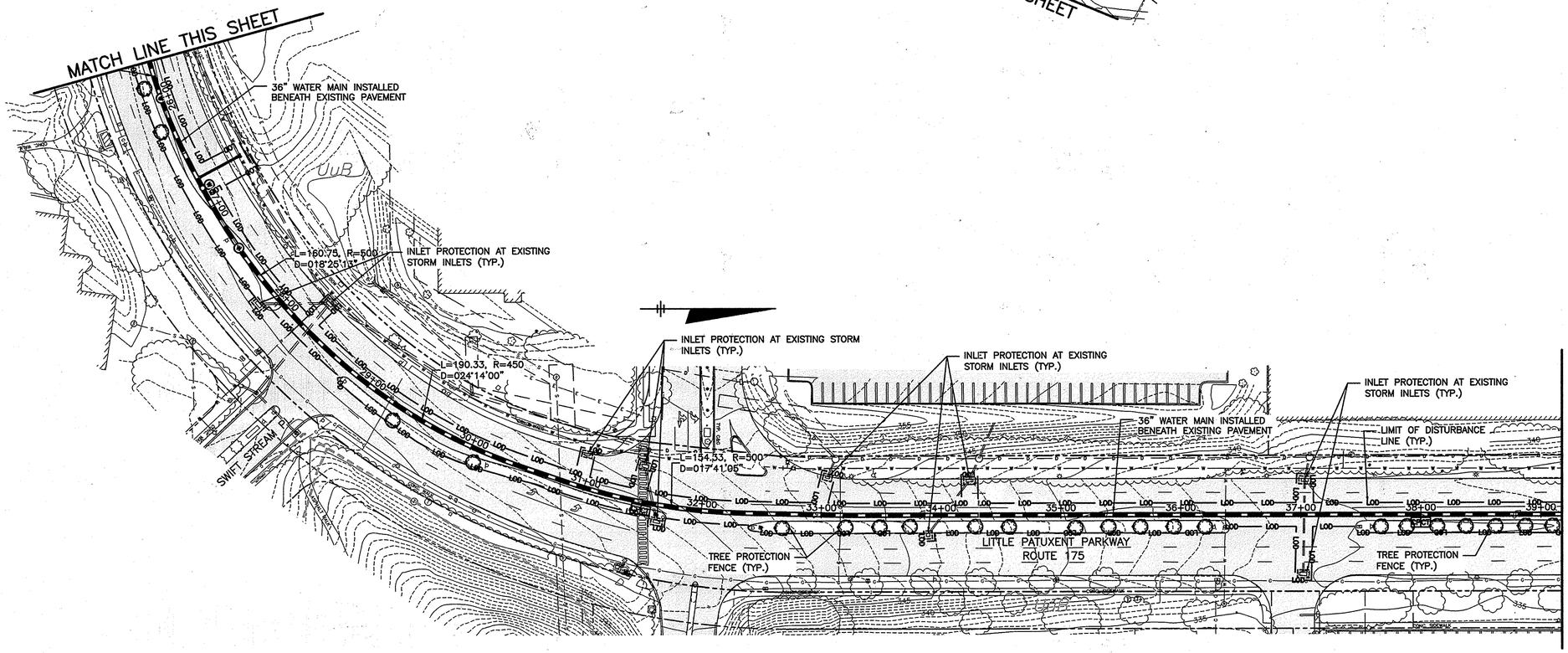
LOCATION AND INDEX MAP

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 22.
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.



GRAPHIC SCALE 1"=50' 50 0 50 100

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 — DATE 10/1/15
CHIEF - BUREAU OF ENGINEERING — DATE 9/30/15
CHIEF, BUREAU OF UTILITIES — DATE 10/1/15
CHIEF, UTILITY DESIGN DIVISION — DATE 9/30/15

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

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STATE OF MARYLAND — ROBERT JOHN DIZ — No. 18523 — PROFESSIONAL ENGINEER

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

BY	NO.	REVISION	DATE
RJD	0	PERMIT SUBMITTAL	08/15

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

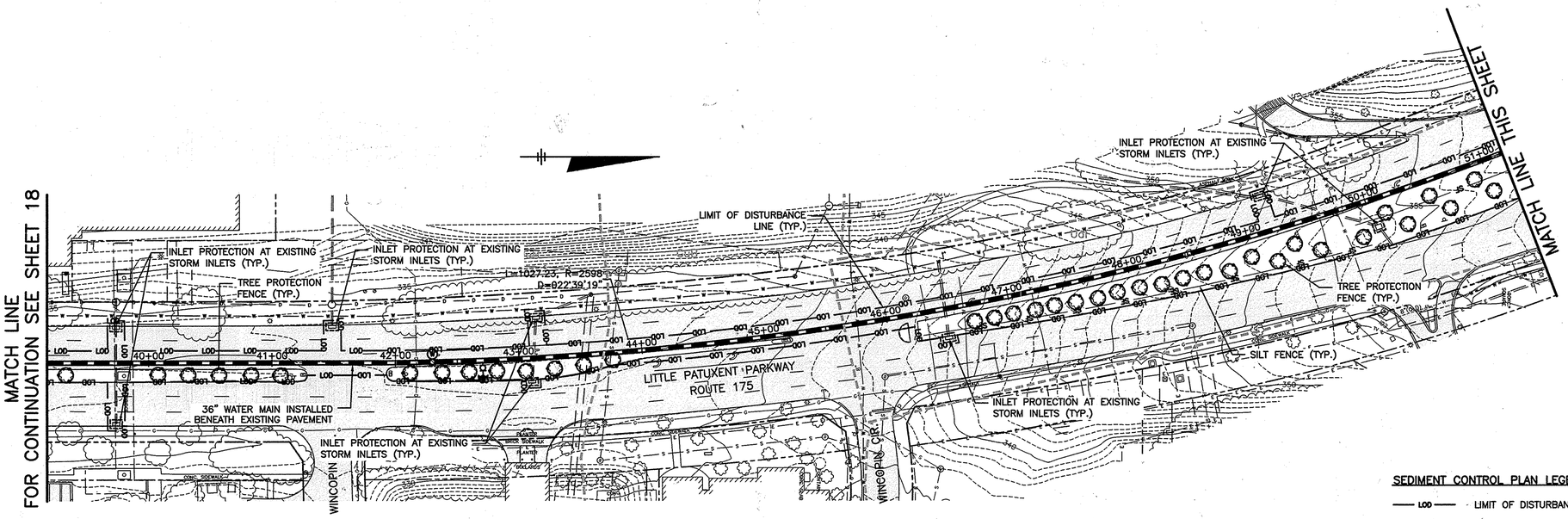
600' SCALE MAP NO. 30 BLOCK NO. 36

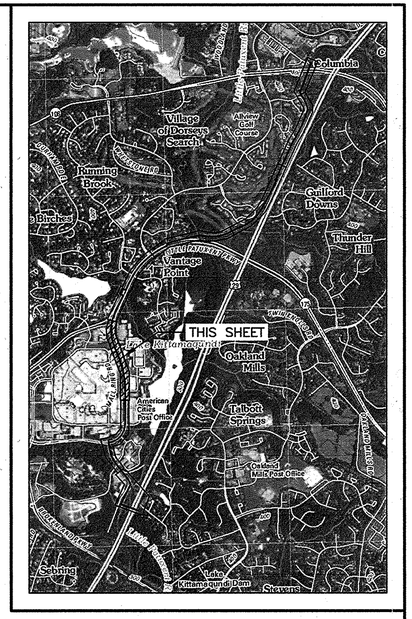
U.S. ROUTE 29 WATER TRANSMISSION MAIN
SOUTH ENTRANCE ROAD TO LITTLE PATUXENT PARKWAY
CAPITAL PROJECT: W-8296
CONTRACT NO.: 44-4776
ELECTION DISTRICT: 5
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

SHEET 17 OF 48

FILE NO. 33498-XXXF





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
- SCE — STABILIZED CONSTRUCTION ENTRANCE
- TEMPORARY INLET PROTECTION
- PROPOSED WATER MAIN
- SOIL BOUNDARY LINE
- GhC — SOIL LABEL
- FLOODPLAIN BOUNDARY
- WETLANDS AREA

NOTES

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GRAPHIC SCALE 1"=50' 50 0 50 100

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Signature of Engineer — Registration Number 18523 — Date 9/22/15

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 10/1/15
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CHIEF, BUREAU OF UTILITIES — DATE 10/1/15
CHIEF, UTILITY DESIGN DIVISION — DATE 9/30/15

O'BRIEN & GERE
4201 MITCHELLVILLE ROAD
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STATE OF MARYLAND — ROBERT JOHN DUNN — REGISTERED PROFESSIONAL ENGINEER

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

BY	NO.	REVISION	DATE
RJD	0	PERMIT SUBMITTAL	08/15

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

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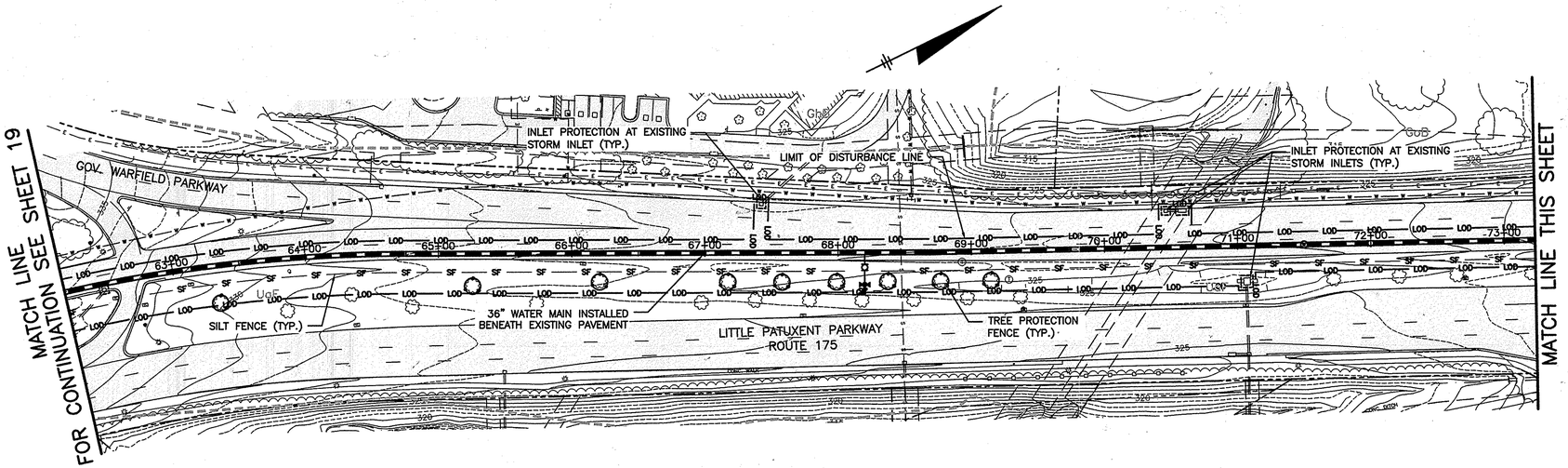

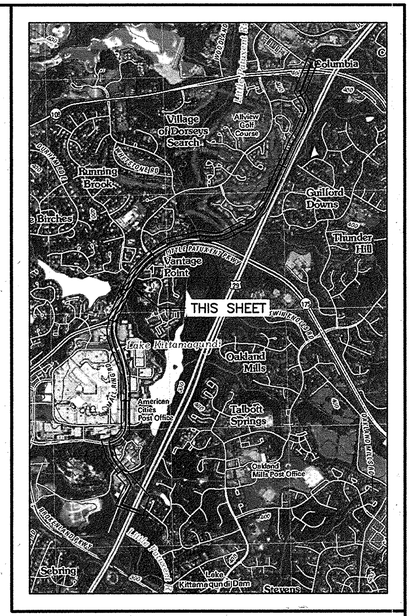

LOCATION AND INDEX MAP

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
- GhC — SOIL LABEL
- FLOODPLAIN BOUNDARY
- FLOW / WET — WETLANDS AREA

NOTES

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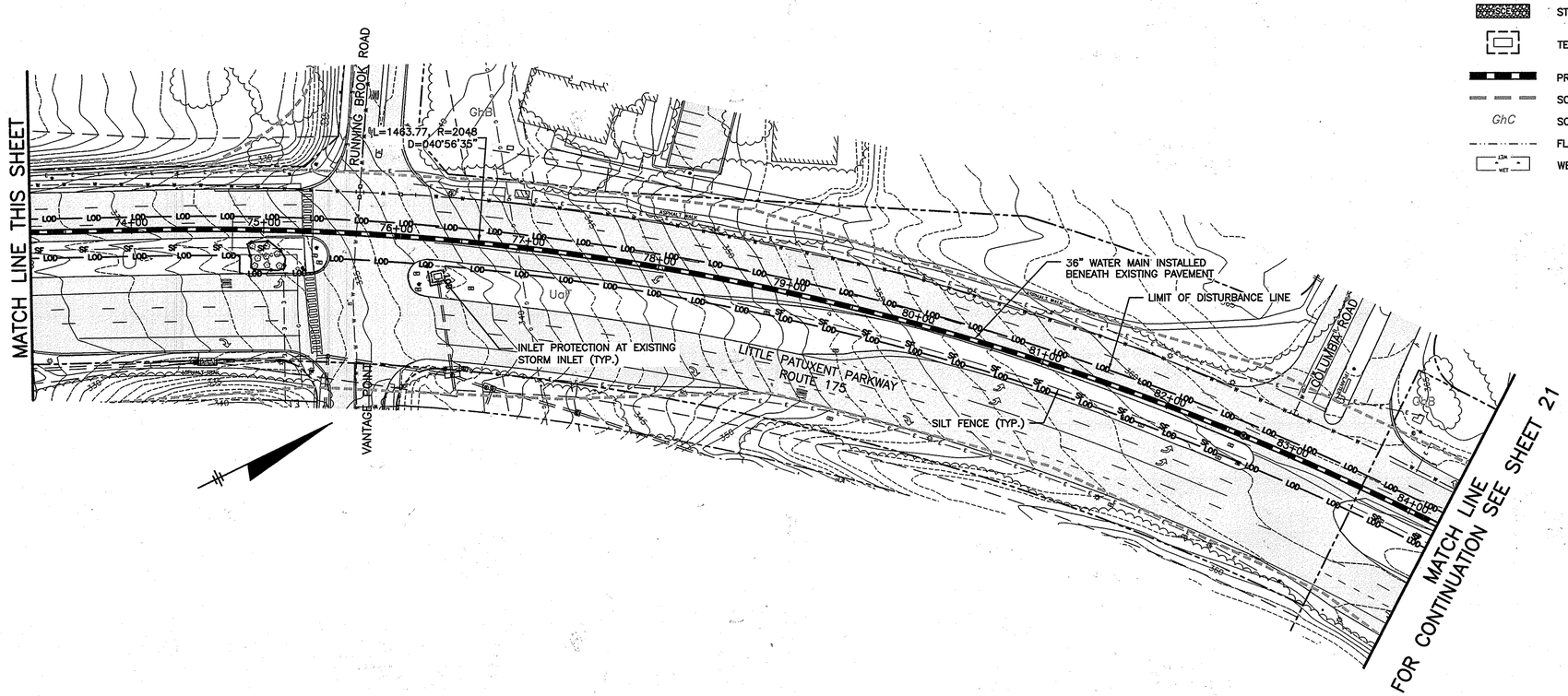

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Signature of Engineer — Registration Number 18523 Date 9/22/15

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 10/1/15
CHIEF – BUREAU OF ENGINEERING — DATE 9/30/15
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STATE OF MARYLAND — ROBERT JOHN DOLL — REGISTERED PROFESSIONAL ENGINEER

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

BY	NO.	REVISION	DATE
RJD	0	PERMIT SUBMITTAL	08/15

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

SCALE AS SHOWN

SHEET 19 OF 48

FILE NO. 33498-XXXF

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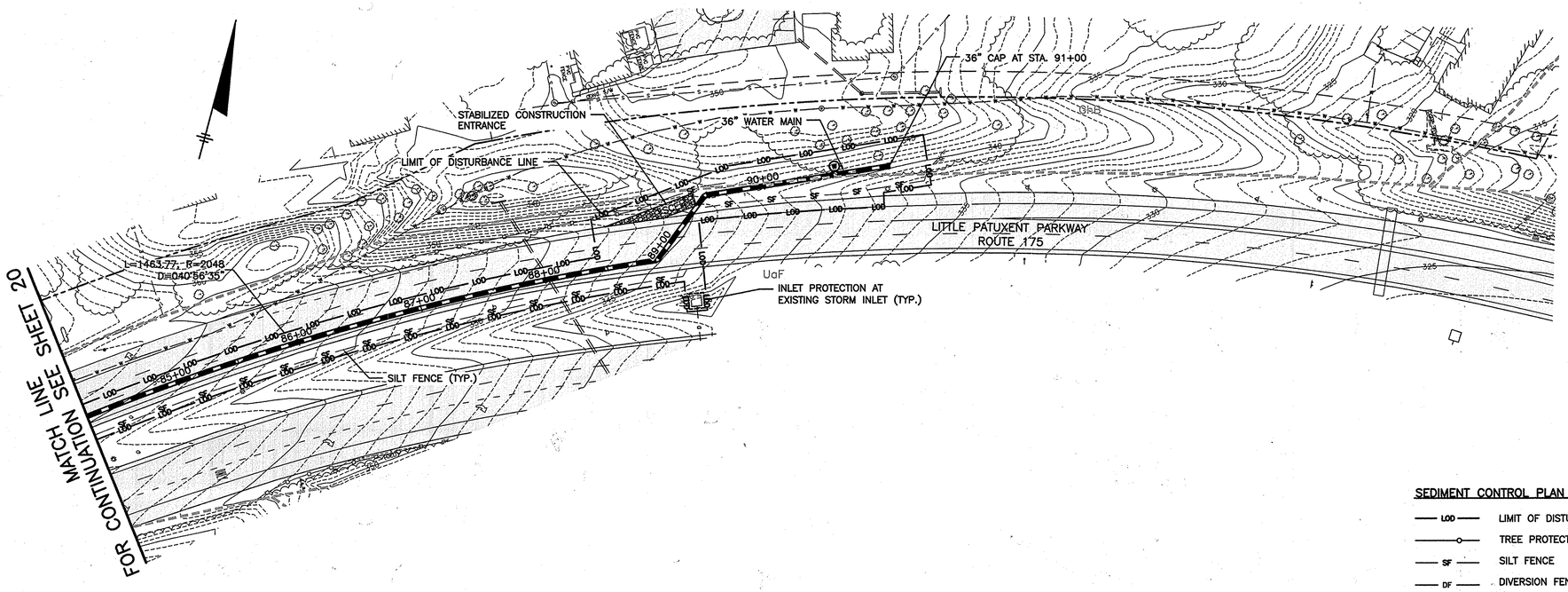

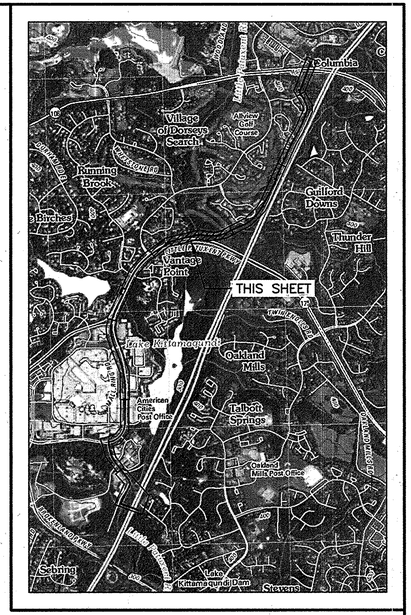

LOCATION AND INDEX MAP

SCALE: 1" = 2000'

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SEDIMENT CONTROL PLAN LEGEND

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- GhC — SOIL LABEL
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- FZW / WET — WETLANDS AREA

NOTES

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18523 — Signature of Engineer – Registration Number

9/22/15 — Date

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

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STATE OF MARYLAND — ROBERT JOHN DAY — PROFESSIONAL ENGINEER

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

BY	NO.	REVISION	DATE
RJD	0	PERMIT SUBMITTAL	08/15

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

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HOWARD SOIL CONSERVATION DISTRICT STANDARD SEDIMENT CONTROL NOTES

1. A MINIMUM OF 48 HOURS NOTICE MUST BE GIVEN TO THE HOWARD COUNTY DEPARTMENT OF INSPECTIONS, LICENSES AND PERMITS, SEDIMENT CONTROL DIVISION PRIOR TO THE START OF ANY CONSTRUCTION (313-1855).
2. ALL VEGETATIVE AND STRUCTURAL PRACTICES ARE TO BE INSTALLED ACCORDING TO THE PROVISIONS OF THIS PLAN AND ARE TO BE IN CONFORMANCE WITH THE MOST CURRENT MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL AND REVISIONS THERETO.
3. FOLLOWING INITIAL SOIL DISTURBANCE OR RE-DISTURBANCE, PERMANENT OR TEMPORARY STABILIZATIONS SHALL BE COMPLETED WITHIN: a) 7 CALENDAR DAYS FOR ALL PERIMETER SEDIMENT CONTROL STRUCTURES, DIKES, PERIMETER SLOPES AND ALL SLOPES GREATER THAN 3:1; b) 14 DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE.
4. ALL SEDIMENT TRAPS/BASINS SHOWN MUST BE FENCED AND WARNING SIGNS POSTED AROUND THEIR PERIMETER IN ACCORDANCE WITH VOL. 1, CHAPTER 12 OF THE HOWARD COUNTY DESIGN MANUAL, STORM DRAINAGE.
5. ALL DISTURBED AREAS MUST BE STABILIZED WITHIN THE TIME PERIOD SPECIFIED ABOVE IN ACCORDANCE WITH THE 1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL FOR PERMANENT SEEDING (SEC. 51), SOD (SEC 54), TEMPORARY SEEDING (SEC. 50) AND MULCHING (SEC. 52). TEMPORARY STABILIZATION WITH MULCH ALONE CAN ONLY BE DONE WHEN RECOMMENDED SEEDING DATES DO NOT ALLOW FOR PROPER GERMINATION AND ESTABLISHMENT OF GRASSES.
6. ALL SEDIMENT CONTROL STRUCTURES ARE TO REMAIN IN PLACE AND ARE TO BE MAINTAINED IN OPERATIVE CONDITION UNTIL PERMISSION FOR THEIR REMOVAL HAS BEEN OBTAINED FROM THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.
7. SITE ANALYSIS:

TOTAL AREA OF SITE:	7.29 ACRES
AREA DISTURBED:	7.29 ACRES
AREA TO BE ROOFED OR PAVED:	3.20 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

8. ANY SEDIMENT CONTROL PRACTICE WHICH IS DISTURBED BY GRADING ACTIVITY FOR PLACEMENT OF UTILITIES MUST BE REPAIRED ON THE SAME DAY OF DISTURBANCE.
9. ADDITIONAL SEDIMENT CONTROL MUST BE PROVIDED, IF DEEMED NECESSARY BY THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.
10. ON ALL SITES WITH DISTURBED AREAS IN EXCESS OF 2 ACRES, APPROVAL OF THE INSPECTION AGENCY SHALL BE REQUESTED UPON COMPLETION OF INSTALLATION OF PERIMETER EROSION AND SEDIMENT CONTROLS, BUT BEFORE PROCEEDING WITH ANY OTHER EARTH DISTURBANCE OR GRADING. OTHER BUILDING OR GRADING INSPECTION APPROVALS MAY NOT BE AUTHORIZED UNTIL THIS INITIAL APPROVAL BY THE INSPECTION AGENCY IS MADE.
11. TRENCHES FOR THE CONSTRUCTION OF UTILITIES IS LIMITED TO THREE PIPE LENGTHS OR THAT WHICH SHALL BE BACK-FILLED AND STABILIZED BY THE END OF EACH WORK DAY, WHICHEVER IS SHORTER.

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.

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 TUNNELLING. 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.
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.

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 600 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.

SEEDING:

1. MARCH 1 – APRIL 30 AND AUGUST 1 – OCTOBER 15: SEED WITH 60 LBS /ACRE (1.4 LBS/1000 S.F.) OF TALL FESCUE (NO K-31 FESCUE ALLOWED).
2. MAY 1 – JULY 31: SEED WITH 60 LBS/ACRE (1.4 LBS/1000 S.F.) TALL FESCUE (NO K-31 FESCUE ALLOWED) AND 2 LBS/ACRE (0.05 LBS/1000 S.F.) OF WEEPING LOVEGRASS.
3. OCTOBER 16 – FEBRUARY 28: PROTECT SITE BY:
   OPTION 1: 2 TONS/ACRE OF WELL ANCHORED STRAW MULCH AND SEED AS SOON AS POSSIBLE IN THE SPRING.
   OPTION 2: USE SOD.
   OPTION 3: SEED WITH 60 LBS/ACRE TALL FESCUE (NO K-31 FESCUE ALLOWED) AND MULCH WITH 2 TONS/ACRE WELL ANCHORED STRAW MULCH.

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 (5 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.

SOILS TABLE

SYMBOL	DESCRIPTION	SLOPES	HYDRIC COMPONENTS?	HYDROLOGIC SOIL GROUP	LIMITATIONS
BaA	BAILE SILT LOAM	0-3%	YES	D	CUTBANKS CAVE; SEASONAL HIGH WATER TABLE; SLOW PERCOLATION; PONDING
Co	CODORUS AND HATBORO SILT LOAMS	0-3%	YES	C	CUTBANKS CAVE; SEASONAL HIGH WATER TABLE; SLOW PERCOLATION; FLOODING
GbB	GLADSTONE LOAM	3-8%	NO	B	CUTBANKS CAVE
GbC	GLADSTONE LOAM	8-15%	NO	B	CUTBANKS CAVE
GgB	GLENELG LOAM	3-8%	NO	B	CUTBANKS CAVE
GhB	GLENELG-URBAN LAND COMPLEX	0-8%	NO	B	CUTBANKS CAVE
GhC	GLENELG-URBAN LAND COMPLEX	8-15%	NO	B	CUTBANKS CAVE
GmB	GLENVILLE SILT LOAM	3-8%	NO	C	CUTBANKS CAVE; SEASONAL HIGH WATER TABLE; SLOW PERCOLATION
GnB	GLENVILLE-BAILE SILT LOAMS	0-8%	YES	C	CUTBANKS CAVE; SEASONAL HIGH WATER TABLE; SLOW PERCOLATION
GoB	GLENVILLE-CODORUS SILT LOAMS	0-8%	NO	C	CUTBANKS CAVE; SEASONAL HIGH WATER TABLE; SLOW PERCOLATION
GuB	GLENVILLE-URBAN LAND-UDORTHENTS COMPLEX	0-8%	NO	C	CUTBANKS CAVE; SEASONAL HIGH WATER TABLE; SLOW PERCOLATION
Ha	HATBORO-CODORUS SILT LOAMS	0-3%	YES	D	CUTBANKS CAVE; SEASONAL HIGH WATER TABLE; SLOW PERCOLATION; PONDING; FLOODING
MaC	MANOR LOAM	8-15%	NO	B	CUTBANKS CAVE
MaD	MANOR LOAM	15-25%	NO	B	CUTBANKS CAVE
McD	MANOR LOAM, VERY ROCKY	15-25%	NO	B	CUTBANKS CAVE
UaF	UDORTHENTS, HIGHWAY	0-65%	NO	–	CUTBANKS CAVE; SLOW PERCOLATION
UuB	URBAN LAND-UDORTHENTS COMPLEX	0-8%	NO	D	CUTBANKS CAVE; SLOW PERCOLATION

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 LOST 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 SEEDED 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.

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 — Signature of Engineer – Registration Number; 9/22/15 — 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] 10/1/15 — CHIEF, BUREAU OF UTILITIES, 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

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 DUFF — 18523 — REGISTERED PROFESSIONAL ENGINEER

DSN. BY: SMS					
DRN. BY: SMS					
CHK. BY: RJD					
DATE: 08/15	RJD	0	PERMIT SUBMITTAL	08/15	
	BY	NO.	REVISION	DATE	

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

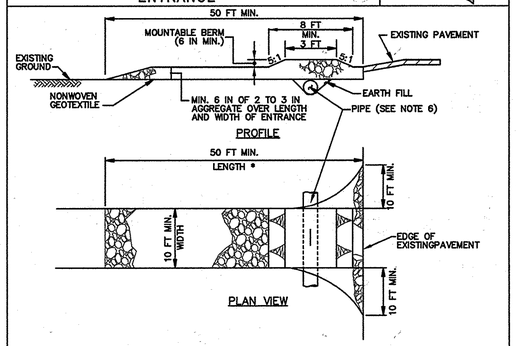
SCALE AS SHOWN

FILE NO. 33498-XXXF

I:\HOWARD-CO.2343\45854.RT-29-RT-108-WA\DOCS\DWG\SPLIT-SETS\SHEETS\45854-033.DWG

DETAIL B-1 STABILIZED CONSTRUCTION ENTRANCE

STANDARD SYMBOL: SCE



CONSTRUCTION SPECIFICATIONS

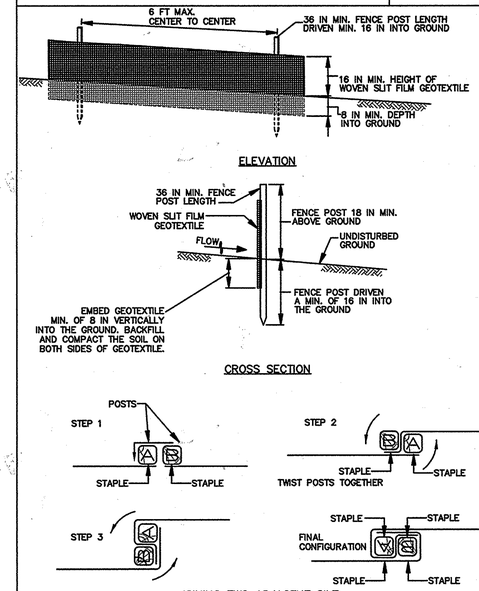
1. PLACE STABILIZED CONSTRUCTION ENTRANCE IN ACCORDANCE WITH THE APPROVED PLAN. VEHICLES MUST TRAVEL OVER THE ENTIRE LENGTH OF THE SCE. USE MINIMUM LENGTH OF 50 FEET (*30 FEET FOR SINGLE RESIDENCE LOT). USE MINIMUM WIDTH OF 10 FEET. FLARE SCE 10 FEET MINIMUM AT THE EXISTING ROAD TO PROVIDE A TURNING RADIUS.
2. 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.
3. PREPARE SUBGRADE AND PLACE NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS.
4. 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.
5. 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—



1 OF 2

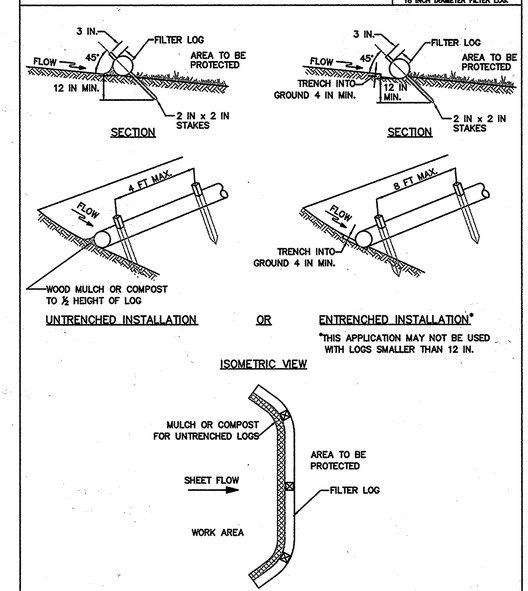
MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

DETAIL E-6 FILTER LOG

STANDARD SYMBOL: —FL-18—

DESIGNATION FL-18 REFERS TO 18 INCH DIAMETER FILTER LOG.



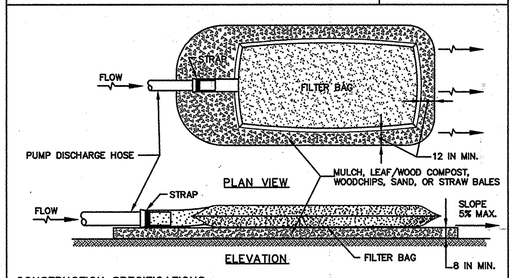
1 OF 2

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 F-4 FILTER BAG

STANDARD SYMBOL: FB



CONSTRUCTION SPECIFICATIONS

1. TIGHTLY SEAL SLEEVE AROUND THE PUMP DISCHARGE HOSE WITH A STRAP OR SIMILAR DEVICE.
2. 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.
3. 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.
4. 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.
5. 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
PERMITTIVITY (SEC^{-1})	1.2 SEC^{-1}	ASTM D-4491
UV RESISTANCE	70% STRENGTH @ 500 HOURS	ASTM D-4355
APPARENT OPENING SIZE (AOS)	0.15-0.18 MM	ASTM D-4751
SEAM STRENGTH	90%	ASTM D-4632

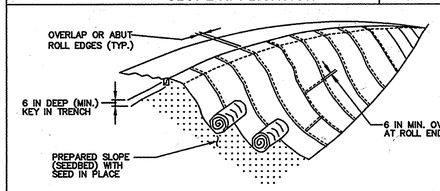
6. REPLACE FILTER BAG IF BAG CLOGS OR HAS RIPS, TEARS, OR PUNCTURES. DURING OPERATION KEEP CONNECTION BETWEEN PUMP HOSE AND FILTER BAG WATER TIGHT. REPLACE BEDDING IF IT BECOMES DISPLACED.

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/ft^2 (* INCLUDE SHEAR STRESS)



ISOMETRIC VIEW

CONSTRUCTION SPECIFICATIONS

1. USE MATTING THAT HAS A DESIGN VALUE FOR SHEAR STRESS EQUAL TO OR HIGHER THAN THE SHEAR STRESS DESIGNATED ON APPROVED PLANS.
2. 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 SMOLDER 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.
3. 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 1½ 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.
4. 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.
5. UNROLL MATTING DOWNSLOPE. LAY MAT SMOOTHLY AND FIRMLY UPON THE SEEDED SURFACE. AVOID STRETCHING THE MATTING.
6. 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.
7. 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.
8. STAPLE/STAKE MAT IN A STAGGERED PATTERN ON 4 FOOT (MAXIMUM) CENTERS THROUGHOUT AND 2 FOOT (MAXIMUM) CENTERS ALONG SEAMS, JOINTS, AND ROLL ENDS.
9. 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

1. USE WOOD POSTS 1¾ X 1¾ ± ⅛ 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.
2. USE 36 INCH MINIMUM POSTS DRIVEN 16 INCH MINIMUM INTO GROUND NO MORE THAN 6 FEET APART.
3. 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.
4. 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.
5. EMBED GEOTEXTILE A MINIMUM OF 8 INCHES VERTICALLY INTO THE GROUND. BACKFILL AND COMPACT THE SOIL ON BOTH SIDES OF FABRIC.
6. WHERE TWO SECTIONS OF GEOTEXTILE ADJOIN: OVERLAP, TWIST, AND STAPLE TO POST IN ACCORDANCE WITH THIS DETAIL.
7. 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.
8. 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.

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-6 FILTER LOG

STANDARD SYMBOL: —FL-18—

DESIGNATION FL-18 REFERS TO 18 INCH DIAMETER FILTER LOG.

CONSTRUCTION SPECIFICATIONS

1. PRIOR TO INSTALLATION, CLEAR ALL OBSTRUCTIONS INCLUDING ROCKS, CLODS, AND DEBRIS GREATER THAN ONE INCH THAT MAY INTERFERE WITH PROPER FUNCTION OF FILTER LOG.
2. 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.
3. 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.
4. FOR UNTRENCHED INSTALLATION BLOW OR HAND PLACE MULCH OR COMPOST ON UPHILL SIDE OF THE SLOPE ALONG LOG.
5. 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.
6. 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.
7. WHEN MORE THAN ONE LOG IS NEEDED, OVERLAP ENDS 12 INCHES MINIMUM AND STAKE.
8. REMOVE SEDIMENT WHEN IT HAS ACCUMULATED TO A DEPTH OF ½ THE EXPOSED HEIGHT OF LOG AND REPLACE MULCH. REPLACE FILTER LOG IF TORN. REINSTALL FILTER LOG IF UNDERMINING OR DISLODGING 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.

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

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 — DATE 10/1/15
CHIEF – BUREAU OF ENGINEERING — DATE 9/30/15
CHIEF, BUREAU OF UTILITIES — DATE 10/1/15
CHIEF, UTILITY DESIGN DIVISION — DATE 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 — ROBERT JOHN DAY — REGISTERED PROFESSIONAL ENGINEER

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

BY	NO.	REVISION	DATE
RJD	0	PERMIT SUBMITTAL	08/15

SOIL EROSION AND SEDIMENT CONTROL PLAN NOTES AND DETAILS – 2

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 22 OF 48

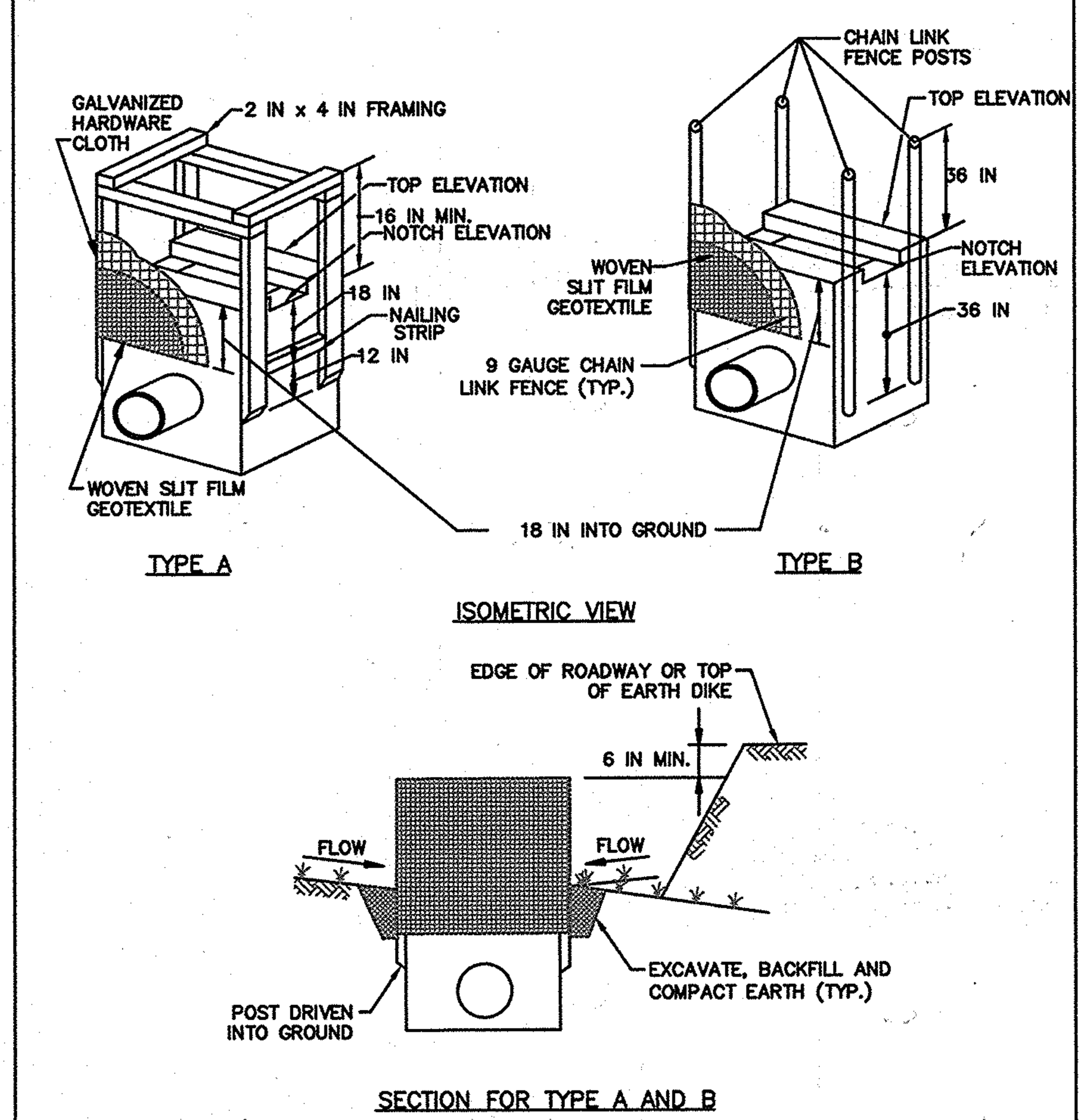
FILE NO. 33498-XXXF

DETAIL E-9-1 STANDARD INLET PROTECTION

STANDARD SYMBOL

SIP

TYPE A MAXIMUM DRAINAGE AREA = ¼ ACRE
TYPE B MAXIMUM DRAINAGE AREA = 1 ACRE



1 OF 2

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

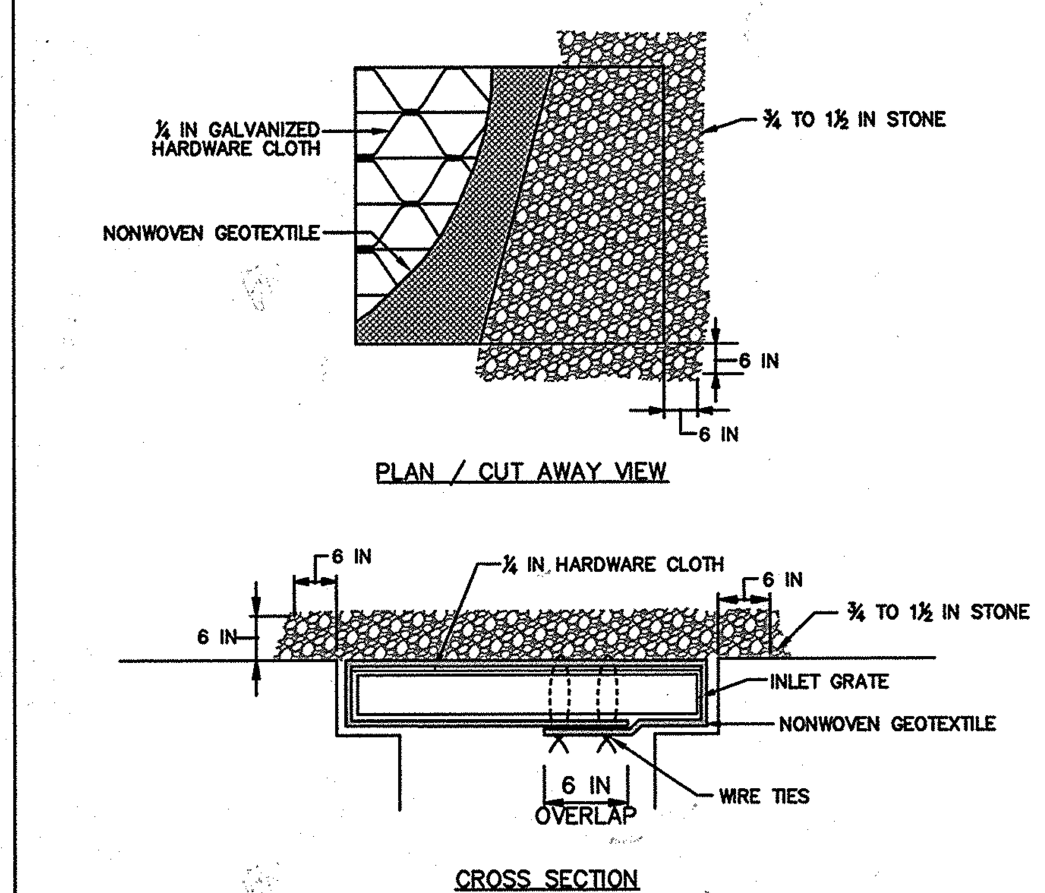
U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL E-9-2 AT-GRADE INLET PROTECTION

STANDARD SYMBOL

AGIP

MAXIMUM DRAINAGE AREA = 1 ACRE



CONSTRUCTION SPECIFICATIONS

1. USE NONWOVEN GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS.
2. LIFT GRATE AND WRAP WITH NONWOVEN GEOTEXTILE TO COMPLETELY COVER ALL OPENINGS. SECURE WITH WIRE TIES AND SET GRATE BACK IN PLACE.
3. PLACE CLEAN ¾ TO 1½ INCH STONE OR EQUIVALENT RECYCLED CONCRETE 6 INCHES THICK ON THE GRATE.
4. 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.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

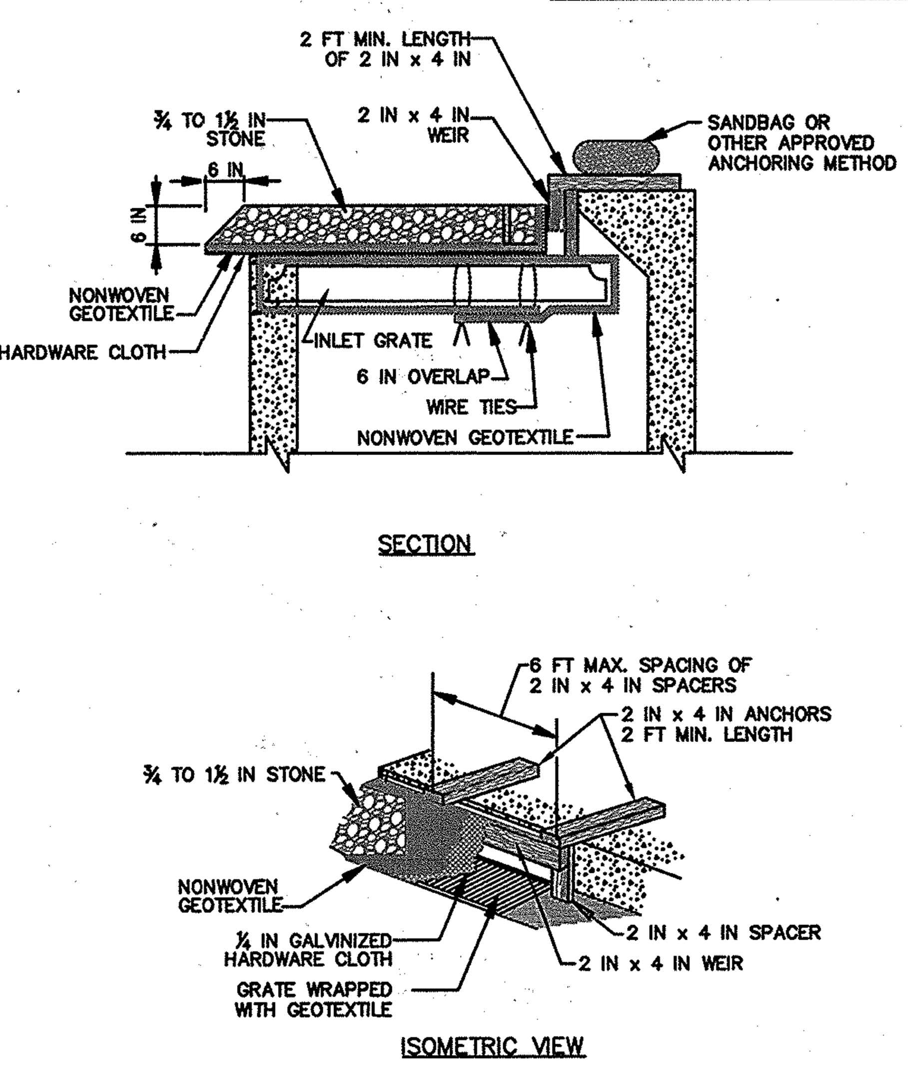
U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL E-9-6 COMBINATION INLET PROTECTION

STANDARD SYMBOL

COIP

MAXIMUM DRAINAGE AREA = ¼ ACRE



1 OF 2

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

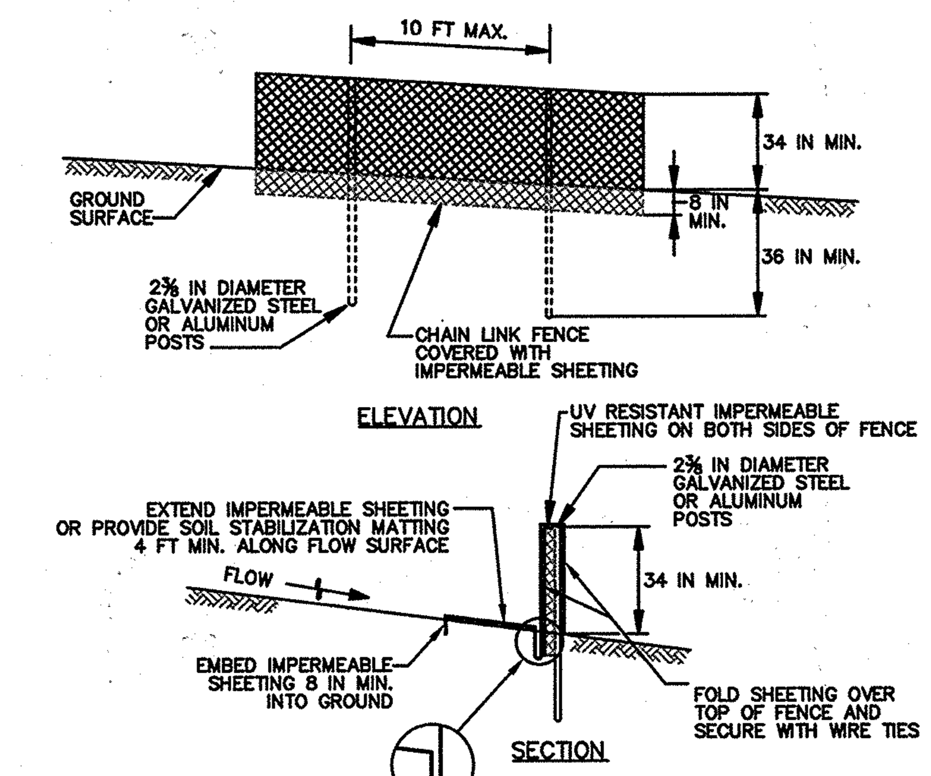
U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL C-9 DIVERSION FENCE

STANDARD SYMBOL

DF

MAXIMUM DRAINAGE AREA = 2 ACRES



CONSTRUCTION SPECIFICATIONS

1. USE 42 INCH HIGH, 9 GAUGE OR THICKER CHAIN LINK FENCING (2⅜ INCH MAXIMUM OPENING).
2. USE 2⅜ 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.
3. FASTEN CHAIN LINK FENCE SECURELY TO THE FENCE POSTS WITH WIRE TIES.
4. 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.
5. 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.
6. WHEN TWO SECTIONS OF SHEETING ADJOIN EACH OTHER, OVERLAP BY 6 INCHES AND FOLD WITH SEAM FACING DOWNGRADE.
7. 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.

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

1. USE WOVEN SLIT FILM GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS.
2. EXCAVATE COMPLETELY AROUND THE INLET TO A DEPTH OF 18 INCHES BELOW THE NOTCH ELEVATION.
3. 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 ½ 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 2⅜ 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.
4. 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.
5. 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

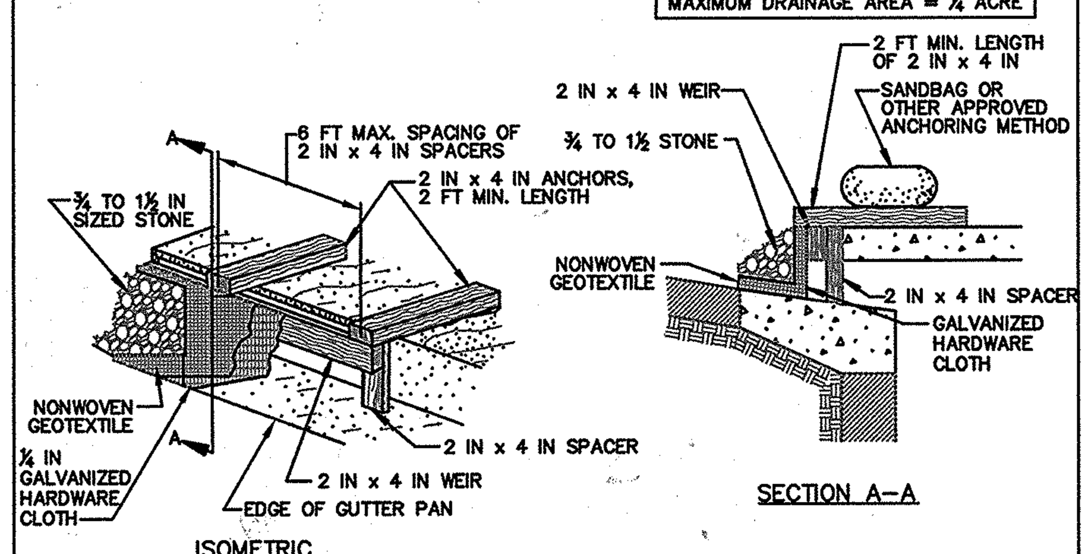
U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL E-9-3 CURB INLET PROTECTION

STANDARD SYMBOL

CIP

MAXIMUM DRAINAGE AREA = ¼ ACRE



CONSTRUCTION SPECIFICATIONS

1. USE NOMINAL 2 INCH x 4 INCH LUMBER
2. USE NONWOVEN GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS.
3. NAIL THE 2x4 WEIR TO 9 INCH LONG VERTICAL SPACERS (MAXIMUM 6 FEET APART).
4. ATTACH A CONTINUOUS PIECE OF ¼ 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.
5. PLACE A CONTINUOUS PIECE OF NONWOVEN GEOTEXTILE OF THE SAME DIMENSIONS AS THE HARDWARE CLOTH OVER THE HARDWARE CLOTH AND SECURELY ATTACH TO THE 2x4 WEIR.
6. PLACE THE ASSEMBLY AGAINST THE INLET THROAT AND NAIL TO 2x4 ANCHORS (MINIMUM 2 FEET LENGTH). EXTEND THE ANCHORS ACROSS THE INLET TOP AND HOLD IN PLACE BY SANDBAGS OR OTHER APPROVED ANCHORING METHOD.
7. INSTALL END SPACERS A MINIMUM OF 1 FOOT BEYOND THE ENDS OF THE THROAT OPENING.
8. 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 ¾ TO 1½ INCH STONE OR EQUIVALENT RECYCLED CONCRETE.
9. AT NON-SUMP LOCATIONS, INSTALL A TEMPORARY SANDBAG OR ASPHALT BERM TO PREVENT INLET BYPASS.
10. 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.

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

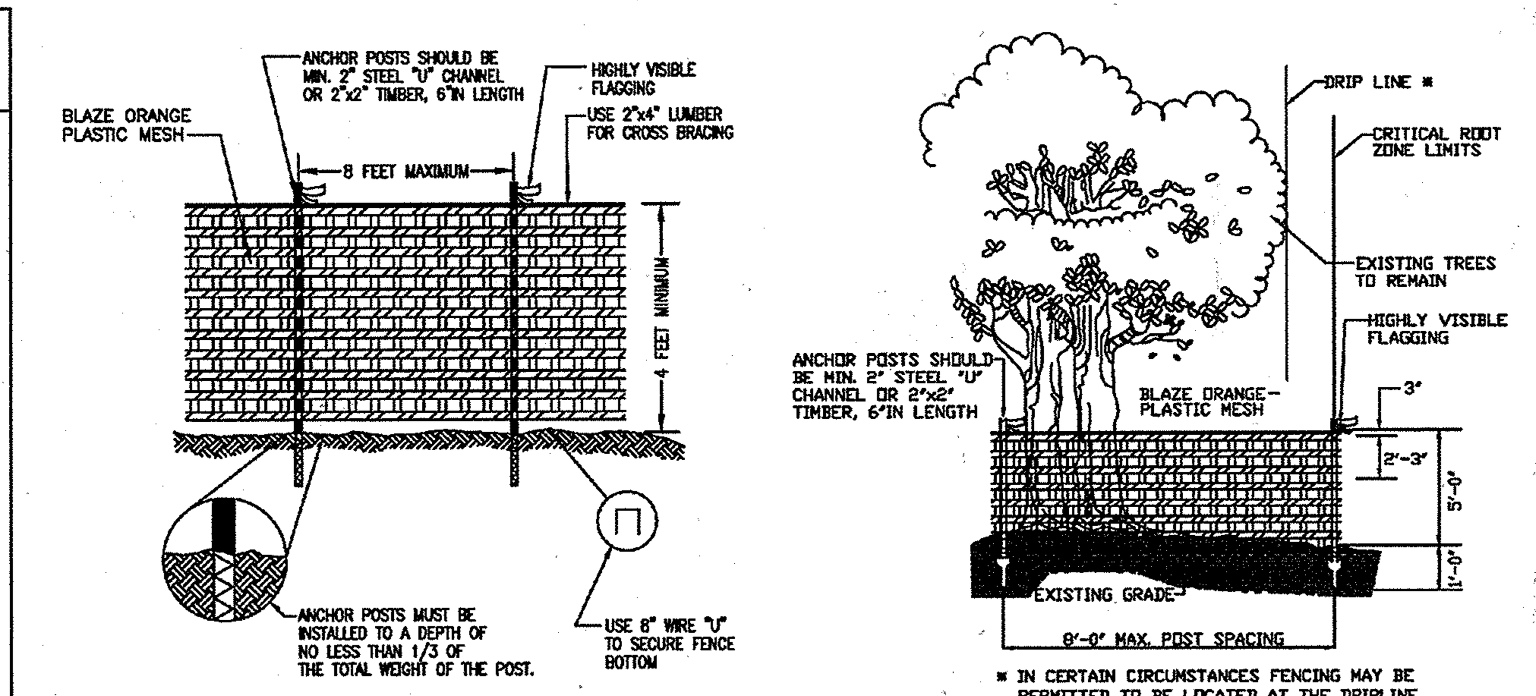
CONSTRUCTION SPECIFICATIONS

1. USE NOMINAL 2 INCH x 4 INCH LUMBER.
2. USE NONWOVEN GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS.
3. LIFT GRATE, AND WRAP WITH NONWOVEN GEOTEXTILE TO COMPLETELY COVER ALL OPENINGS, THEN SET GRATE BACK IN PLACE.
4. ATTACH A CONTINUOUS PIECE OF ½ 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.
5. 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.
6. 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).
7. 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.
8. INSTALL END SPACERS A MINIMUM OF 1 FOOT BEYOND BOTH ENDS OF THE THROAT OPENING.
9. FORM THE ¼ 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 ¾ TO 1½ 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.
10. AT NON-SUMP LOCATIONS, INSTALL A TEMPORARY SANDBAG OR ASPHALT BERM TO PREVENT INLET BYPASS.
11. 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



NOTES:

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

TREE PROTECTION FENCE

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.

18523 — 9/22/15

Signature of Engineer – Registration Number — Date

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

10/1/15	9/30/15
DIRECTOR OF PUBLIC WORKS — DATE	CHIEF – BUREAU OF ENGINEERING — DATE
10/1/15	9/30/15
CHIEF, BUREAU OF UTILITIES — DATE	CHIEF, UTILITY DESIGN DIVISION 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 — REGISTERED PROFESSIONAL ENGINEER

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

BY	NO.	REVISION	DATE
RJD	0	PERMIT SUBMITTAL	08/15

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

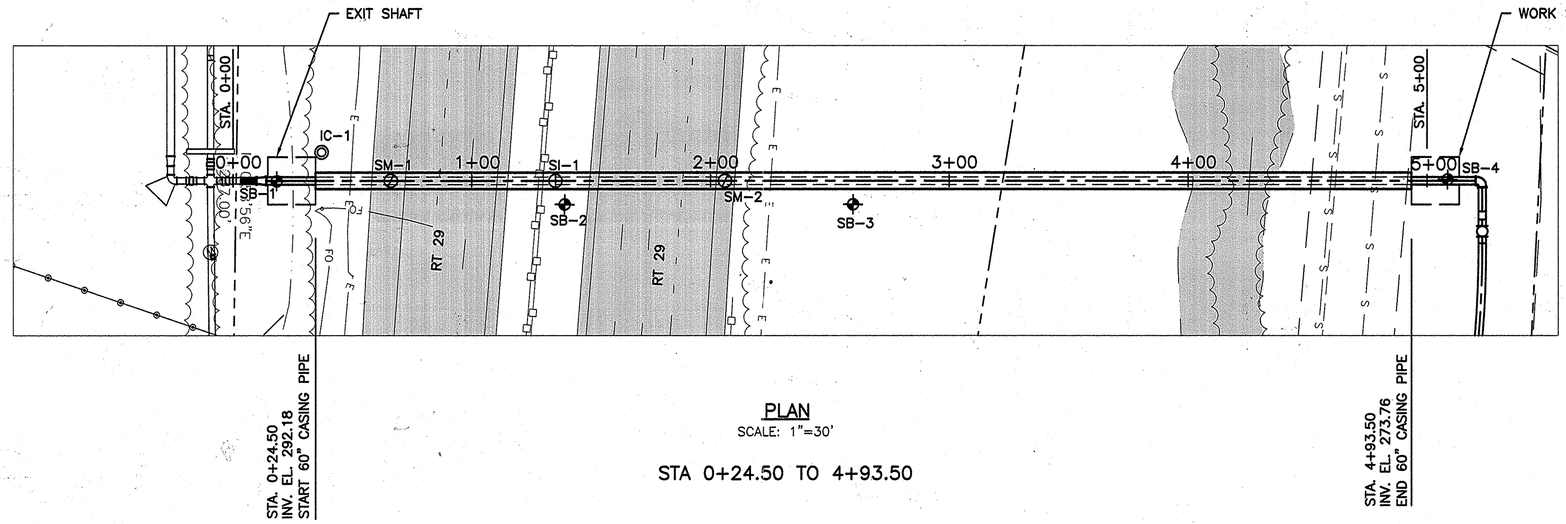
SCALE AS SHOWN

SHEET 23 OF 48

FILE NO. 33498-XXXF

I:\HOWARD-CO.2343\45854.RT-29-RT-108-WA\DOCS\DWG\SPLIT-SETS\SHEETS\45854-034.DWG

S:\JENNY ENGINEERING\PROJ\CAD\DWG\ACTIVE PROJECTS\2012016-HOWARD COUNTY - RT 29 CROSSSING\02 CROSSING-1\9.DWG



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

1"=30' 30' 15' 0 30'
HORIZONTAL SCALE IN FEET

JENNY ENGINEERING CORPORATION
CONSULTING ENGINEERS
2 Edison Place Springfield, New Jersey 07081
Phone: (973) 379-8899 Fax: (973) 379-8774
Website: www.jencorp.com

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 10/1/15	CHIEF – BUREAU OF ENGINEERING — DATE 9/30/15
CHIEF, BUREAU OF UTILITIES — DATE 10/1/15	CHIEF, UTILITY DESIGN DIVISION PSD — DATE 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. 21100, EXPIRATION DATE 01/19/2016

STATE OF MARYLAND — LUIS JIMENEZ ARAUJO — 21100 — REGISTERED PROFESSIONAL ENGINEER

DSN. BY:	LJG
DRN. BY:	JSA/RS
CHK. BY:	LG
DATE:	JULY 2015

BY	NO.	REVISION	DATE

GEOTECHNICAL INSTRUMENTATIONAL PLAN

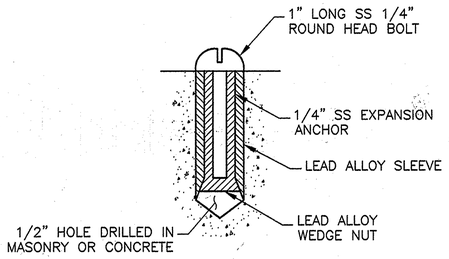
600' SCALE MAP NO. _____ BLOCK NO. ___#___

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

SCALE AS SHOWN

SHEET 24 OF 48

FILE NO. 33498-XXXF

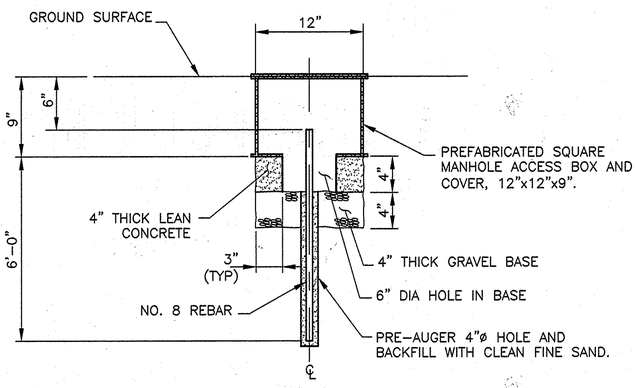


SURFACE SETTLEMENT MARKER HORIZONTAL MASONRY, CONCRETE SURFACE OR PAVEMENT

(SM)

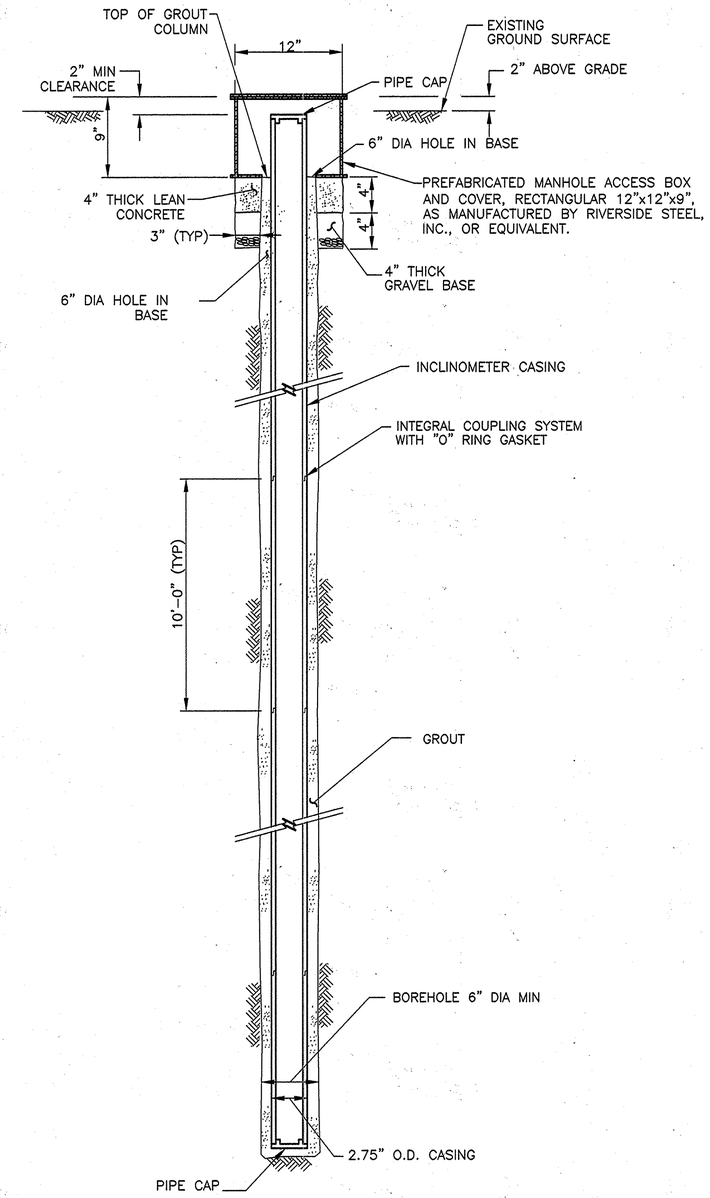
NOTE:

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



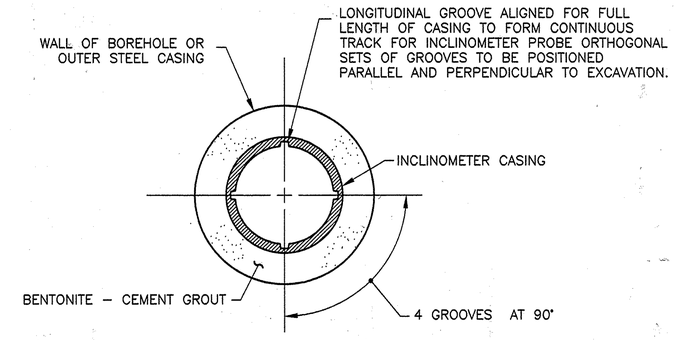
SUBSURFACE SHALLOW SETTLEMENT INDICATOR

(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

JENNY ENGINEERING CORPORATION
CONSULTING ENGINEERS
2 Edison Place Springfield, New Jersey 07081
Phone: (973) 379-8080 Fax: (973) 379-5774
Website: www.jencorp.com

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 10/1/15
CHIEF – BUREAU OF ENGINEERING — DATE 9/30/15
CHIEF, BUREAU OF UTILITIES — DATE 10/1/15
CHIEF, UTILITY DESIGN DIVISION — DATE 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. 21100, EXPIRATION DATE 01/19/2016

STATE OF MARYLAND — LAURA JEAN GRIFFITH — 21100 — REGISTERED PROFESSIONAL ENGINEER

DSN. BY: LJG
DRN. BY: JSA/RS
CHK. BY: LG
DATE: JULY 2015

BY	NO.	REVISION	DATE

GEOTECHNICAL INSTRUMENTATION MONTORING 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

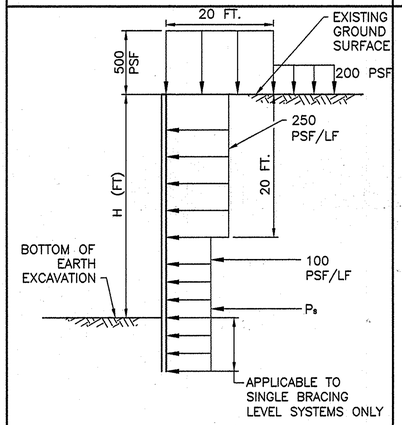
SHEET 25 OF 48

FILE NO. 33498–XXXF

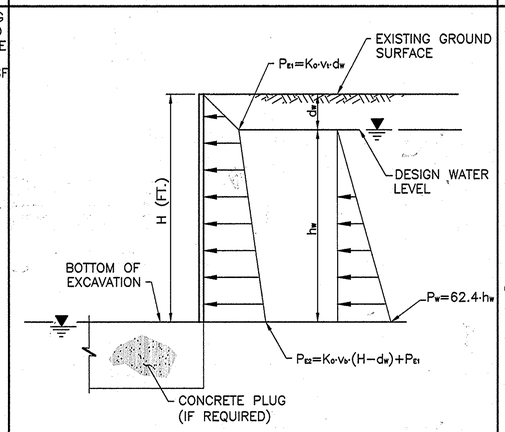
S:\JENNY ENGINEERING\PROJ\CAD\DWG\ACTIVE PROJECTS\2012016–HOWARD COUNTY – RT 29 CROSSSING\02 CROSSING–1\10.DWG

MINIMUM DESIGN CRITERIA FOR TEMPORARY EXCAVATION SUPPORT SYSTEM

TRAFFIC AND CONSTRUCTION EQUIPMENT LOAD

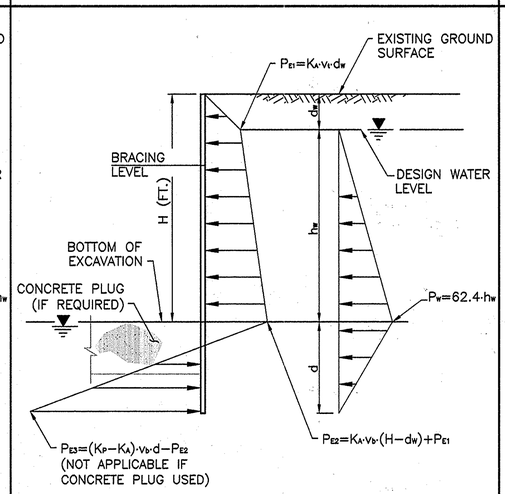


CIRCULAR SHAFT

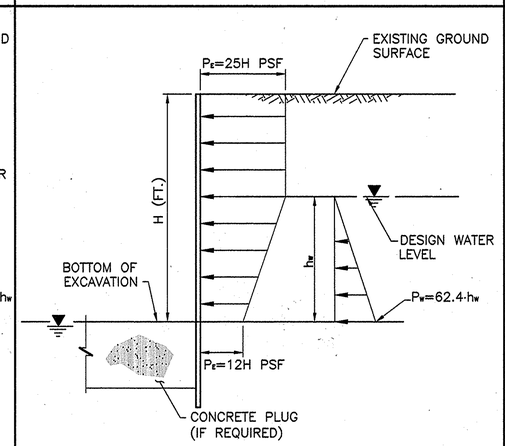


BRACED PORTALS OR RECTANGULAR SHAFTS

SINGLE BRACING LEVEL SYSTEMS



MULTIPLE BRACING SYSTEMS



LIST OF SYMBOLS

C_u	–	UNDRAINED SHEAR STRENGTH OF COHESIVE SOIL (PSF).
H	–	HEIGHT OF CUT FROM GROUND SURFACE TO THE BOTTOM OF THE EXCAVATION (FT.)
K_A	–	LATERAL EARTH PRESSURE COEFFICIENT FOR RANKINE ACTIVE CONDITION
K_o	–	LATERAL EARTH PRESSURE COEFFICIENT FOR RANKINE AT REST CONDITION
K_P	–	LATERAL EARTH PRESSURE COEFFICIENT FOR RANKINE PASSIVE CONDITION
P_E	–	LATERAL EARTH PRESSURE
P_s	–	LATERAL SURCHARGE PRESSURE
P_w	–	LATERAL HYDROSTATIC PRESSURE
d	–	EMBEDMENT DEPTH BELOW BOTTOM OF EXCAVATION
d_w	–	DEPTH FROM GROUND SURFACE TO DESIGN WATER LEVEL
h	–	DEPTH BELOW GROUND SUFRACE (FT)
h_w	–	DEPTH FROM DESIGN GROUNDWATER LEVEL TO BOTTOM OF EXCAVATION (FT)
v_b	–	BUOYANT UNIT WEIGHT OF SOIL (PSF)
v_t	–	TOTAL UNIT WEIGHT OF SOIL (PCF)

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

JENNY ENGINEERING CORPORATION
CONSULTING ENGINEERS
2 Edison Place Springfield, New Jersey 07081
Phone: (973) 379-6666 Fax: (973) 379-5774
Website: www.jennyeng.com

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 10/1/15
CHIEF – BUREAU OF ENGINEERING — DATE 9/30/15
CHIEF, BUREAU OF UTILITIES — DATE 10/1/15
CHIEF, UTILITY DESIGN DIVISION — PSD — DATE 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. 21100, EXPIRATION DATE 01/19/2016

STATE OF MARYLAND — LUCIAN JOSEPH GIRARD — 21100 — REGISTERED PROFESSIONAL ENGINEER

DSN. BY:	LJG
DRN. BY:	JSA/RS
CHK. BY:	LG
DATE:	JULY 2015

BY	NO.	REVISION	DATE

CONSTRUCTION SHAFTS DESIGN CRITERIA

600' SCALE MAP NO. _____ BLOCK NO. _____

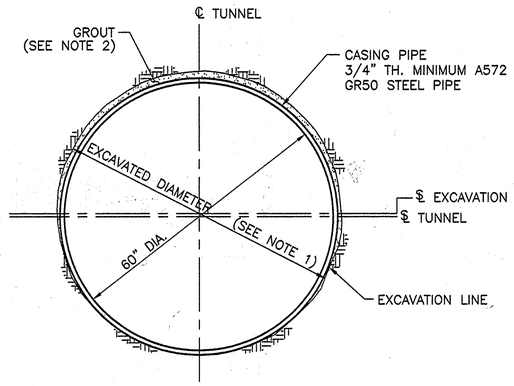
US ROUTE 29 WATER TRANSMISSION MAIN
SOUTH ENTRANCE ROAD TO LITTLE PATUXENT PARKWAY
CAPITAL PROJECT: W–8296
CONTRACT NO.: 44–4776
ELECTION DISTRICT: X
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

SHEET 26 OF 48

FILE NO. 33498–XXXF

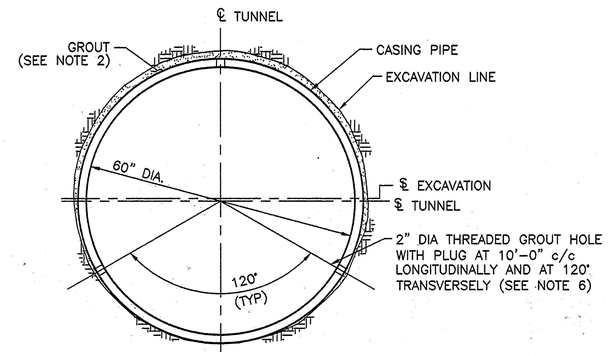
S:\JENNY ENGINEERING\PROJ\CAD\DWG\ACTIVE PROJECTS\2012016–HOWARD COUNTY – RT 29 CROSSSING\02 CROSSING–1\11.DWG



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" 0 1 2 3 SCALE IN FEET

JENNY ENGINEERING CORPORATION
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Website: www.jennyeng.com

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS	DATE 10/1/15	CHIEF – BUREAU OF ENGINEERING	DATE 9/30/15
CHIEF, BUREAU OF UTILITIES	DATE 10/6/15	CHIEF, UTILITY DESIGN DIVISION PSD	DATE 9/30/15

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

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STATE OF MARYLAND
LAURA JEANNE GRIFFITH
21100
REGISTERED PROFESSIONAL ENGINEER

DSN. BY:	LJG
DRN. BY:	JSA/RS
CHK. BY:	LG
DATE:	JULY 2015

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

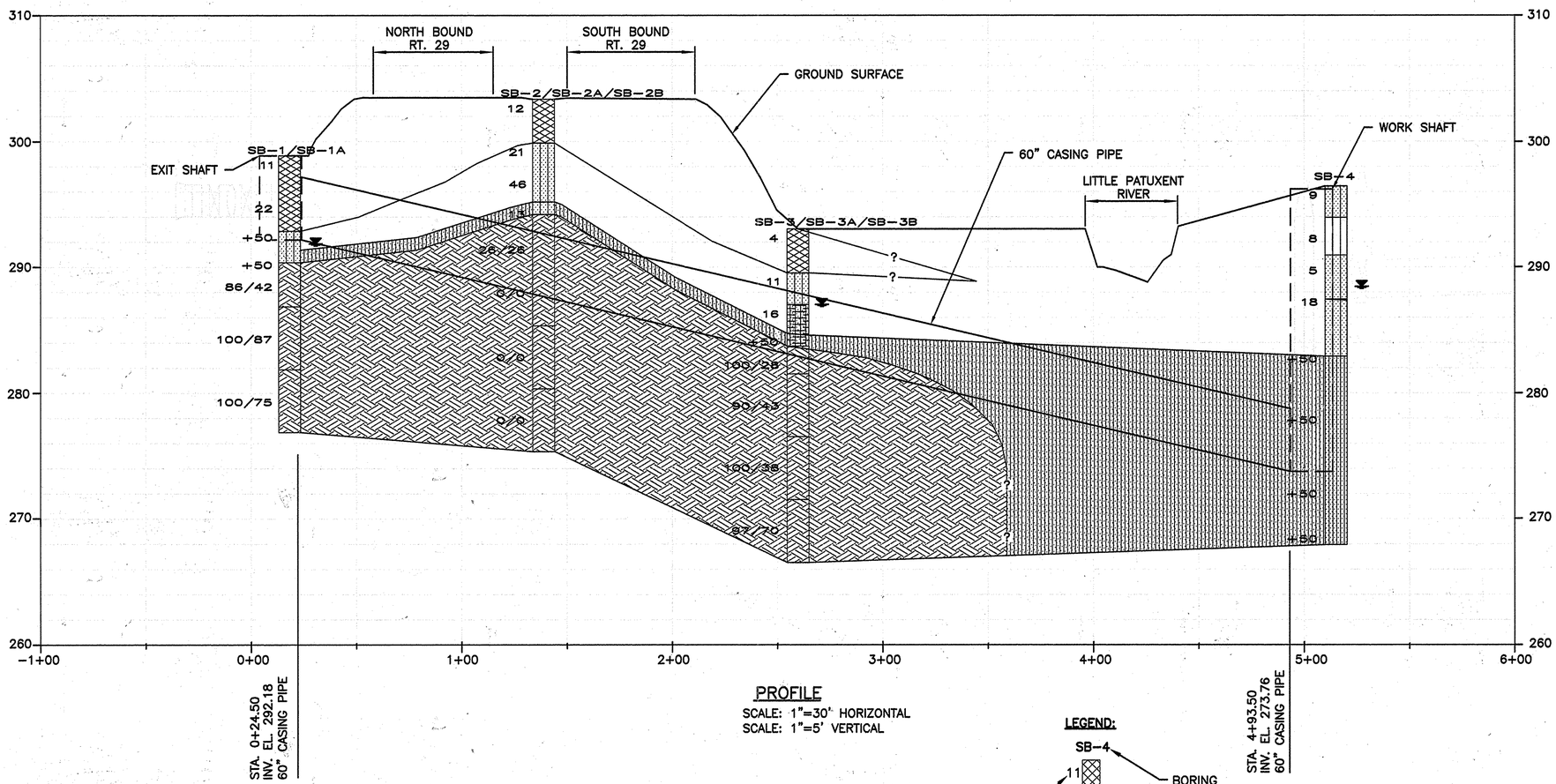
SCALE AS SHOWN

SHEET 27 OF 48

FILE NO. 33498-XXXF

S:\JENNY ENGINEERING\PROJ\CAD\DWG\ACTIVE PROJECTS\2012016-HOWARD COUNTY - RT 29 CROSSSING\02 CROSSING-1\12.DWG

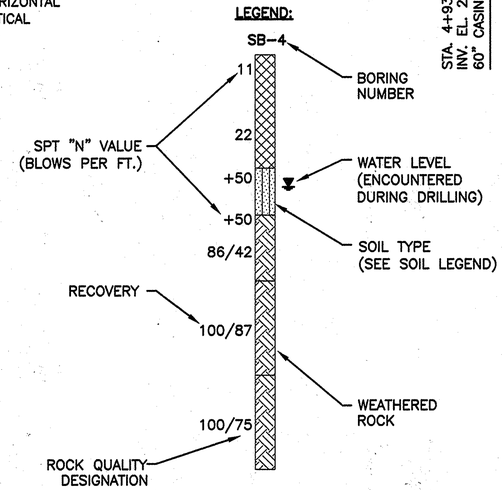
S:\JENNY ENGINEERING\PROJ\CAD\DWG\ACTIVE PROJECTS\2012016-HOWARD COUNTY - RT 29 CROSSSING\02 CROSSING-1\GP1.DWG



PROFILE

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

LEGEND:



SOILS

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

1"=5' 5' 0 5' VERTICAL SCALE IN FEET

1"=30' 30' 15' 0 30' HORIZONTAL SCALE IN FEET

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.

JENNY ENGINEERING CORPORATION
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Phone: (973) 379-9889 Fax: (973) 379-5774
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DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 10/1/15	CHIEF - BUREAU OF ENGINEERING — DATE 9/30/15
CHIEF, BUREAU OF UTILITIES — DATE 10/1/15	CHIEF, UTILITY DESIGN DIVISION PSD — DATE 9/30/15

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

PROFESSIONAL CERTIFICATION:
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STATE OF MARYLAND — LICENSED PROFESSIONAL ENGINEER — 21100 — REGISTERED PROFESSIONAL ENGINEER

DSN. BY:	LJG
DRN. BY:	JSA/RS
CHK. BY:	LG
DATE:	JULY 2015

BY	NO.	REVISION	DATE

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

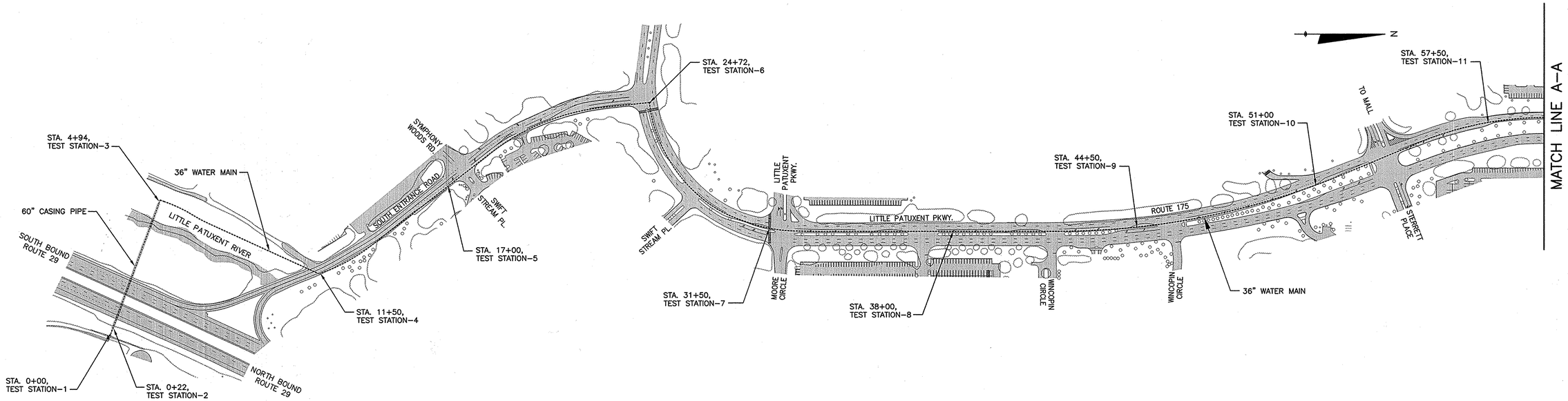
600' SCALE MAP NO. _____ BLOCK NO. _____

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 28 OF 48

FILE NO. 33498-XXXF



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

RUSSELL CORROSION CONSULTANTS, INC.
Columbia, Maryland

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS	10/1/15 DATE	CHIEF - BUREAU OF ENGINEERING	9/30/15 DATE
CHIEF, BUREAU OF UTILITIES	10/1/15 DATE	CHIEF, UTILITY DESIGN DIVISION PSD	9/30/15 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. 44991, EXPIRATION DATE 01/09/2016.

STATE OF MARYLAND — YAOFU ZHANG — No. 44991 — PROFESSIONAL ENGINEER — 09/15/2015

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

BY	NO.	REVISION	DATE

CATHODIC PROTECTION LAYOUT 1

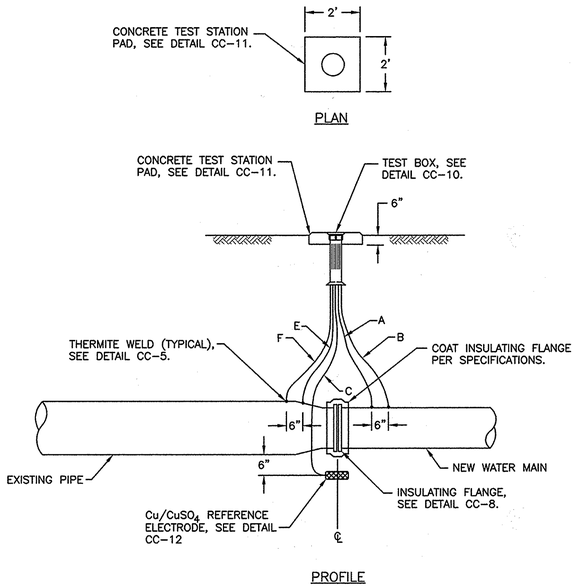
600' SCALE MAP NO. _____ BLOCK NO. _____

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

SCALE AS SHOWN

SHEET 29 OF 48

FILE NO. 33498-



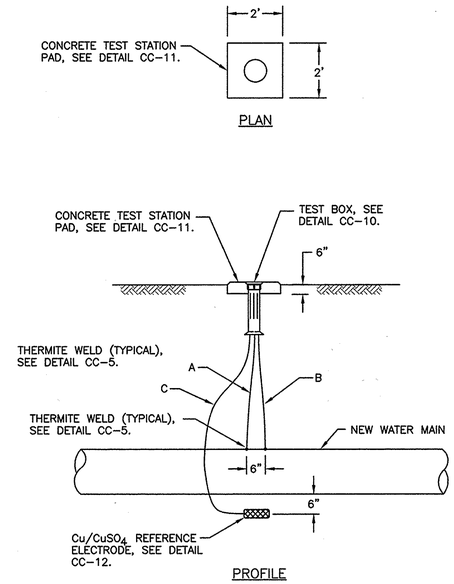
WIRING SCHEDULE					
DESCRIPTION	WIRE	TEST STATION TERMINAL	AWG WIRE SIZE	TYPE OF INSULATION	COLOR OF INSULATION
NEW WATER MAIN	A B	1 3	#8 #10	THWN THWN	BLUE BLUE
PERMANENT REFERENCE ELECTRODE	C	6	#14	HMWPE	BLACK
EXISTING PIPE	E F	2 5	#8 #10	THWN THWN	WHITE WHITE

NOTES:

1. 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.
2. ALL THERMITE WELDS TO PCCP OR BAR WRAPPED CONCRETE CYLINDER PIPE TO BE PERFORMED AT STEEL BONDING PLATES, SEE DETAIL CC-7.

CC-1: INSULATING FLANGE TEST STATION

Scale: None



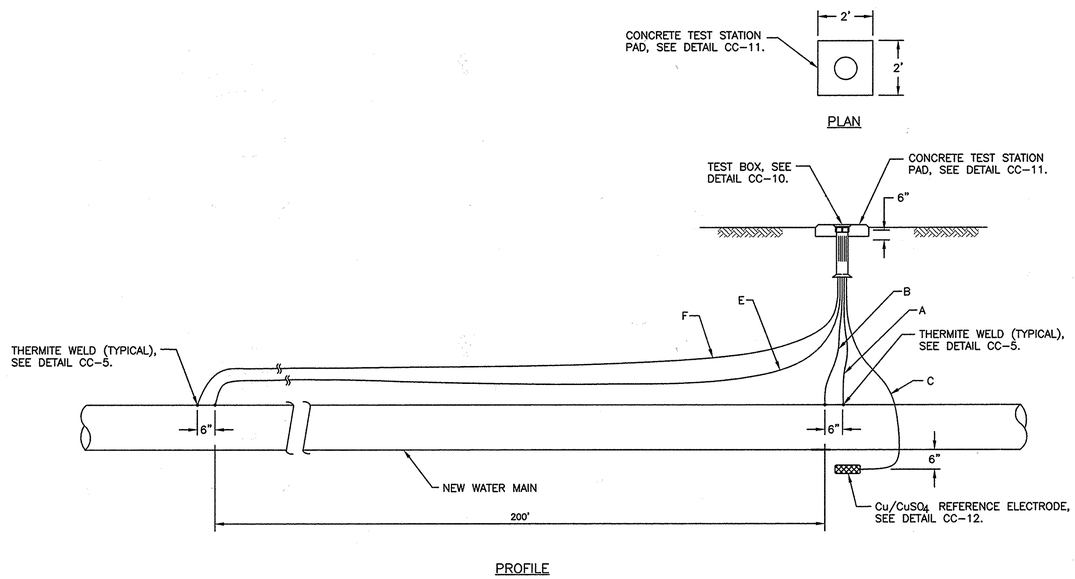
WIRING SCHEDULE					
DESCRIPTION	WIRE	TEST STATION TERMINAL	AWG WIRE SIZE	TYPE OF INSULATION	COLOR OF INSULATION
NEW WATER MAIN	A B	1 3	#8 #10	THWN THWN	BLUE BLUE
PERMANENT REFERENCE ELECTRODE	C	6	#14	HMWPE	BLACK

NOTES:

1. 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.
2. ALL THERMITE WELDS TO PCCP OR BAR WRAPPED CONCRETE CYLINDER PIPE TO BE PERFORMED AT STEEL BONDING PLATES, SEE DETAIL CC-7.

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
NEW WATER MAIN 200 FT. AWAY FROM TEST STATION	E F	2 5	#8 #10	THWN THWN	WHITE WHITE

NOTES:

1. 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.
2. ALL THERMITE WELDS TO PCCP OR BAR WRAPPED CONCRETE CYLINDER PIPE TO BE PERFORMED AT STEEL BONDING PLATES, SEE DETAIL CC-7.

CC-3: IR DROP TEST STATION

Scale: None

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RUSSELL CORROSION CONSULTANTS, INC.
Columbia, Maryland

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS	DATE 10/1/15	CHIEF - BUREAU OF ENGINEERING	DATE 9/30/15
CHIEF, BUREAU OF UTILITIES	DATE 10/1/15	CHIEF, UTILITY DESIGN DIVISION PSD	DATE 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. 44991, EXPIRATION DATE 01/09/2016.

STATE OF MARYLAND — JAMES WILLIAM WELLS — No. 44991 — PROFESSIONAL ENGINEER
9/15/2015

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

BY	NO.	REVISION	DATE

CATHODIC PROTECTION DETAILS 1

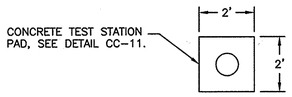
600' SCALE MAP NO. _____ BLOCK NO. _____

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

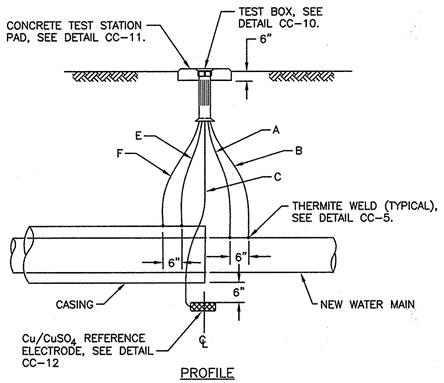
SCALE AS SHOWN

SHEET 30 OF 48

FILE NO. 33498-



PLAN



PROFILE

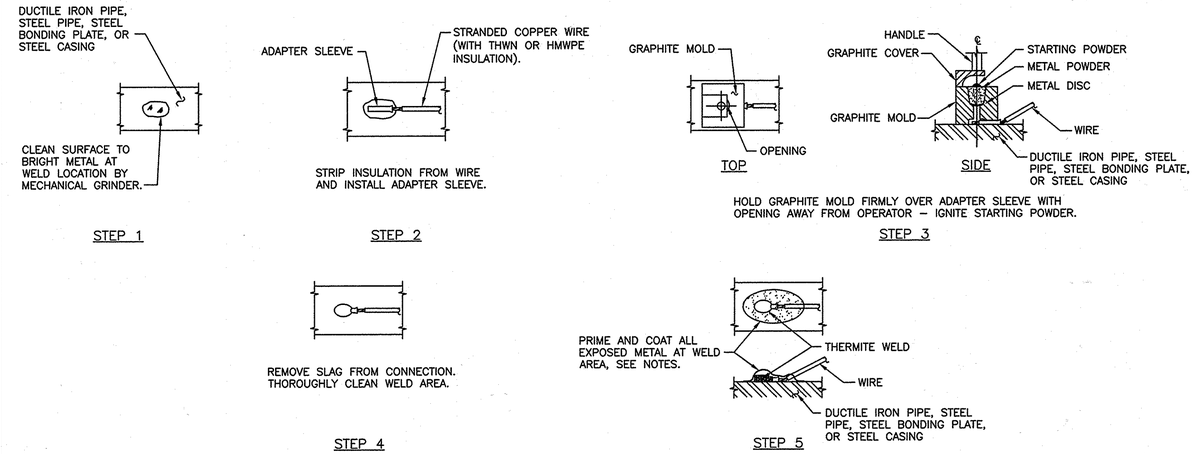
WIRING SCHEDULE					
DESCRIPTION	WIRE	TEST STATION TERMINAL	AWG WIRE SIZE	TYPE OF INSULATION	COLOR OF INSULATION
NEW WATER MAIN	A B	1 3	#8 #10	THWN THWN	BLUE BLUE
PERMANENT REFERENCE ELECTRODE	C	6	#14	HMWPE	BLACK
CASING PIPE	E F	2 5	#8 #10	THWN THWN	WHITE WHITE

NOTES:

1. 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.
2. ALL THERMITE WELDS TO PCCP OR BAR WRAPPED CONCRETE CYLINDER PIPE TO BE PERFORMED AT STEEL BONDING PLATES, SEE DETAIL CC-7.

CC-4: CASING TEST STATION

Scale: None

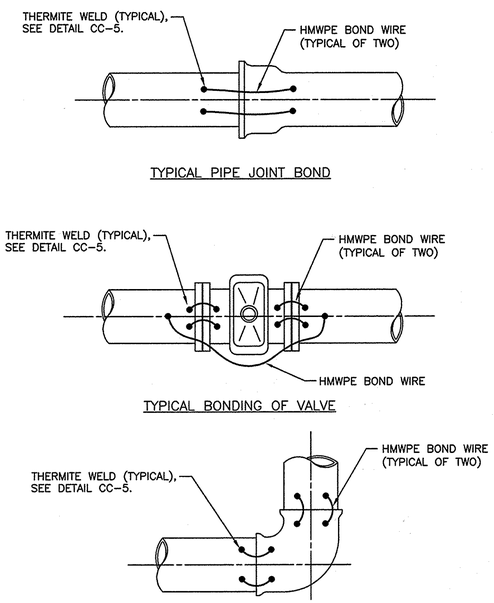


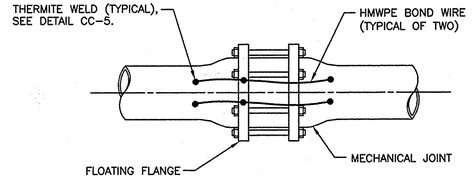
NOTES:

1. 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.
2. 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.

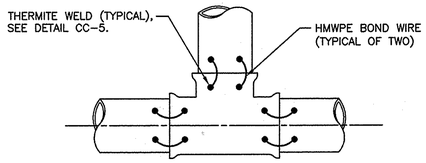
CC-5: THERMITE WELD

Scale: None





TYPICAL MECHANICAL COUPLING BOND



TYPICAL BONDING OF TEE

NOTES:

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

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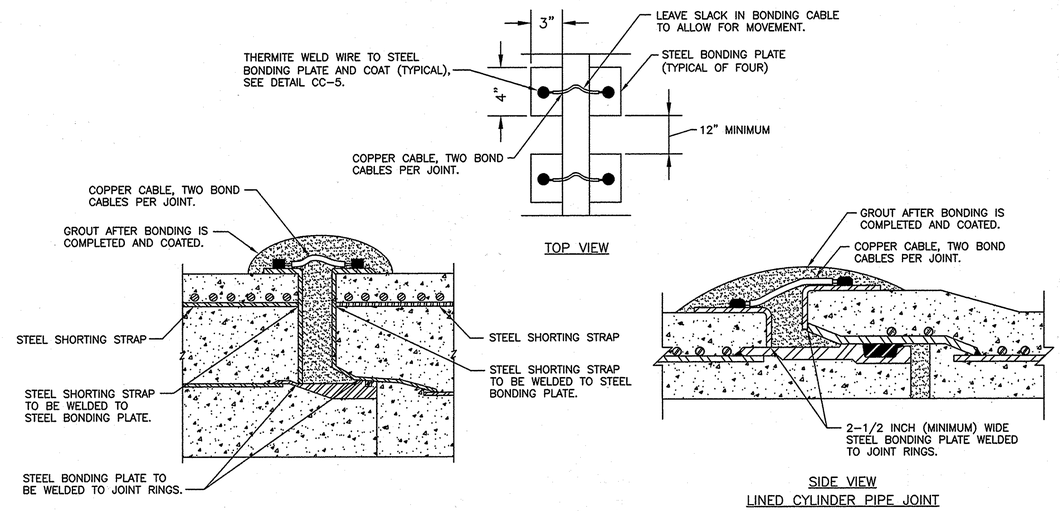
CC-6: JOINT BONDING

Scale: None



NOTES:

1. TWO STEEL SHORTING STRAPS REQUIRED PER PIPE SECTION FOR EMBEDDED CYLINDER PIPE. NO SHORTING STRAPS REQUIRED FOR LINED CYLINDER PIPE.
2. STEEL BONDING PLATES AND STEEL SHORTING STRAPS (IF REQUIRED) TO BE INSTALLED BY PIPE MANUFACTURER DURING PIPE FABRICATION.
3. BOND ALL PIPE JOINTS, INCLUDING THOSE ON PIPE, FITTINGS, VALVES, ETC., EXCEPT THOSE SPECIFIED TO BE INSULATED.
4. 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

RUSSELL CORROSION CONSULTANTS, INC.
Columbia, Maryland

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS	DATE 10/1/15	CHIEF – BUREAU OF ENGINEERING	DATE 9/30/15
CHIEF, BUREAU OF UTILITIES	DATE 10/1/15	CHIEF, UTILITY DESIGN DIVISION PSD	DATE 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. 44991, EXPIRATION DATE 01/09/2016.

STATE OF MARYLAND YAOYU ZHANG No. 44991 PROFESSIONAL ENGINEER

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

BY	NO.	REVISION	DATE

CATHODIC PROTECTION DETAILS 2

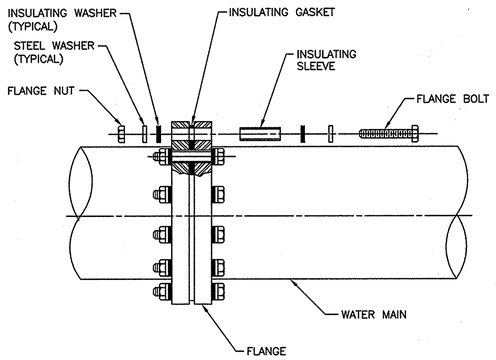
600' SCALE MAP NO. _____ BLOCK NO. _____

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

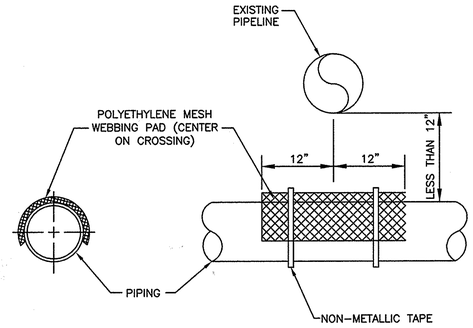
SHEET 31 OF 48

FILE NO. 33498-



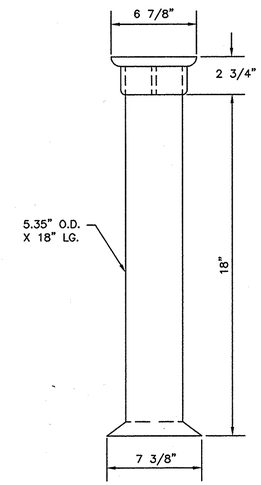
NOTE:
SEE SPECIFICATIONS FOR EXTERNAL COATING OF INSULATING FLANGE.

CC-8: INSULATING FLANGE
Scale: None

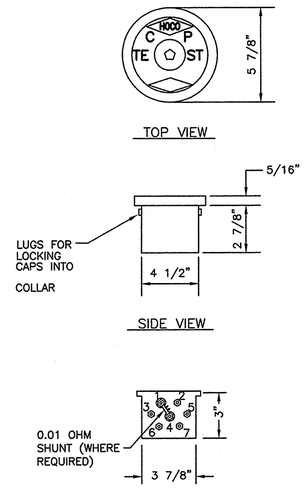


NOTE:
USE ONLY WHEN PIPES ARE LESS THAN 12" APART.

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

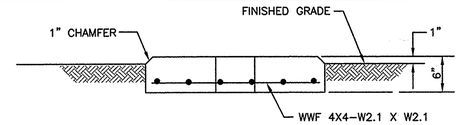


SIDE VIEW
TEST BOX BODY

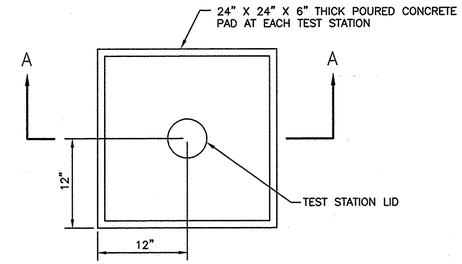


TEST BOX LID
AND TERMINAL BOARD

CC-10: TEST BOX
Scale: None

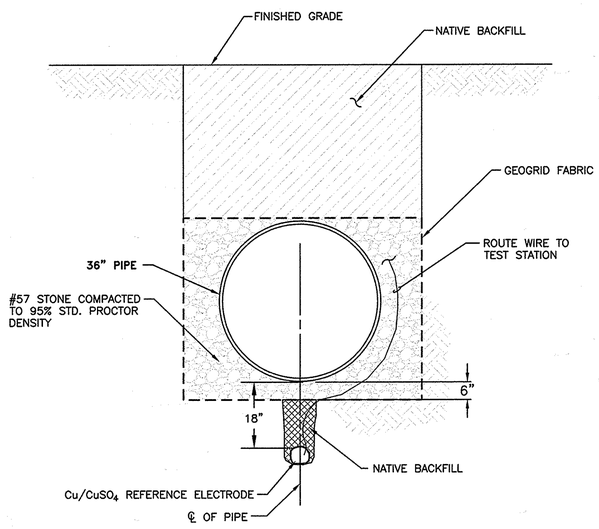


SECTION "A-A"



PLAN

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

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. 0+00	INSULATING FLANGE	0	CC-1	YES
TEST STATION-2	STA. 0+22	CASING	0	CC-5	YES
TEST STATION-3	STA. 4+94	CASING	0	CC-5	YES
TEST STATION-4	STA. 11+50	STANDARD	0	CC-2	YES
TEST STATION-5	STA. 17+00	STANDARD	0	CC-2	YES
TEST STATION-6	STA. 24+72	INSULATING FLANGE	0	CC-1	YES
TEST STATION-7	STA. 31+50	INSULATING FLANGE	0	CC-1	YES
TEST STATION-8	STA. 38+00	STANDARD	0	CC-2	YES
TEST STATION-9	STA. 44+50	STANDARD	0	CC-2	YES
TEST STATION-10	STA. 51+00	STANDARD	0	CC-2	YES
TEST STATION-11	STA. 57+50	STANDARD	0	CC-2	YES
TEST STATION-12	STA. 64+00	STANDARD	0	CC-2	YES
TEST STATION-13	STA. 70+50	STANDARD	0	CC-2	YES
TEST STATION-14	STA. 76+00	IR DROP	0	CC-3	YES
TEST STATION-15	STA. 78+50	STANDARD	0	CC-2	YES
TEST STATION-16	STA. 79+00	IR DROP	0	CC-3	YES
TEST STATION-17	STA. 85+50	STANDARD	0	CC-2	YES

CC-13: TEST STATION SCHEDULE
Scale: None

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RUSSELL CORROSION CONSULTANTS, INC.
Columbia, Maryland

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 10/1/15
CHIEF - BUREAU OF ENGINEERING — DATE 9/30/15
CHIEF, BUREAU OF UTILITIES — DATE 10/1/15
CHIEF, UTILITY DESIGN DIVISION PSD — DATE 9/30/15

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

PROFESSIONAL CERTIFICATION:
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STATE OF MARYLAND — YAOFU ZHANG — No. 44991 — PROFESSIONAL ENGINEER
09/15/2015

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

BY	NO.	REVISION	DATE

CATHODIC PROTECTION DETAILS 3

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 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

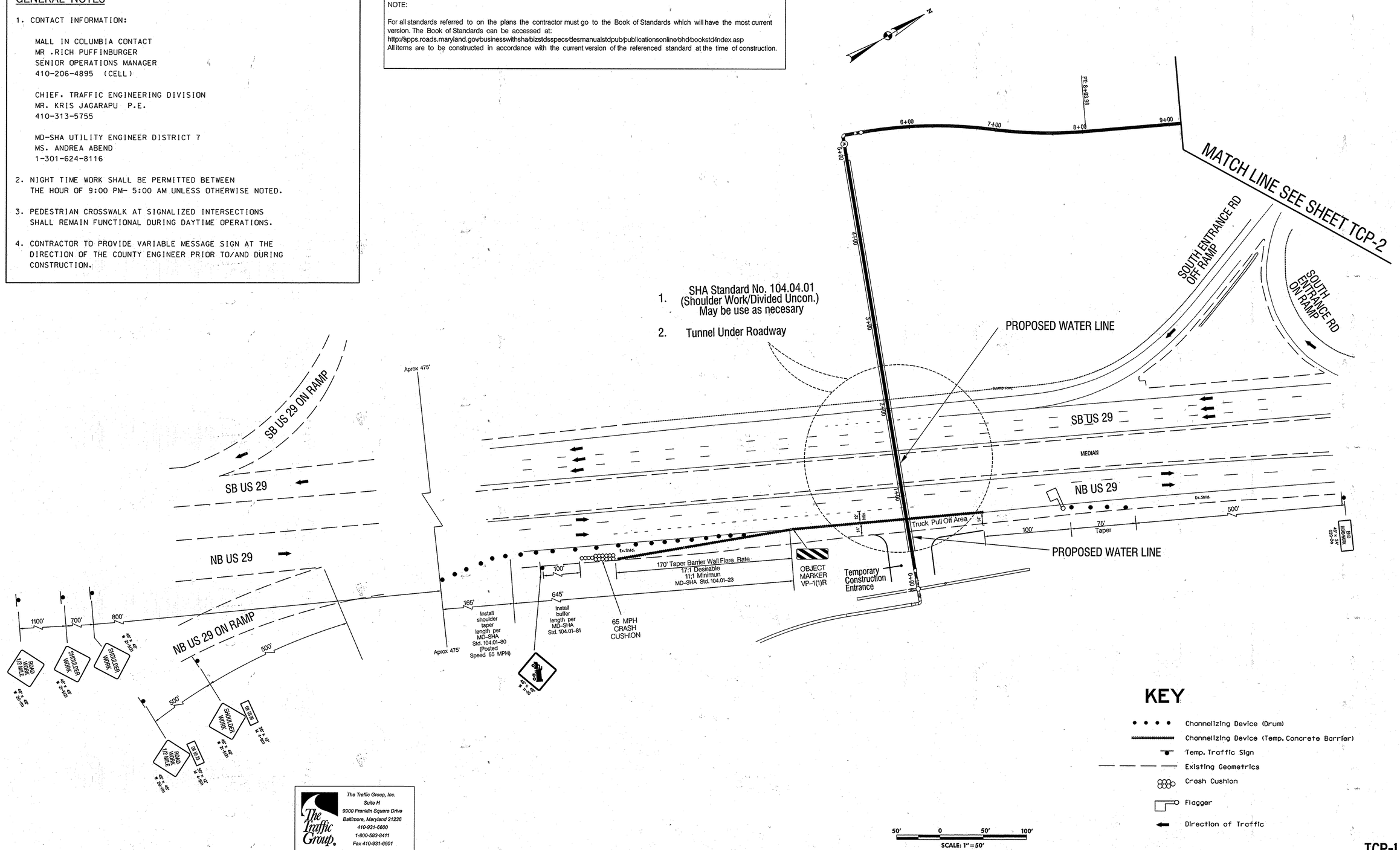
2. NIGHT TIME WORK SHALL BE PERMITTED BETWEEN THE HOUR OF 9:00 PM- 5:00 AM UNLESS OTHERWISE NOTED.

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/bizstdsspecs/desmanualstdpub/publicationsonline/ohd/bookstd/index.asp
All items are to be constructed in accordance with the current version of the referenced standard at the time of construction.



KEY

- Channelizing 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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TCP-1

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

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 7/13/16

STATE OF MARYLAND MING-YU CHEN No. 33316 PROFESSIONAL ENGINEER

DSN. BY:	F. HOECKEL
DRN. BY:	F. HOECKEL
CHK. BY:	J. DIRNDORFER
DATE:	SEPT 15, 2015

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 33 OF 48

PLOTTED: Thursday, September 17, 2015 AT 03:01 PM
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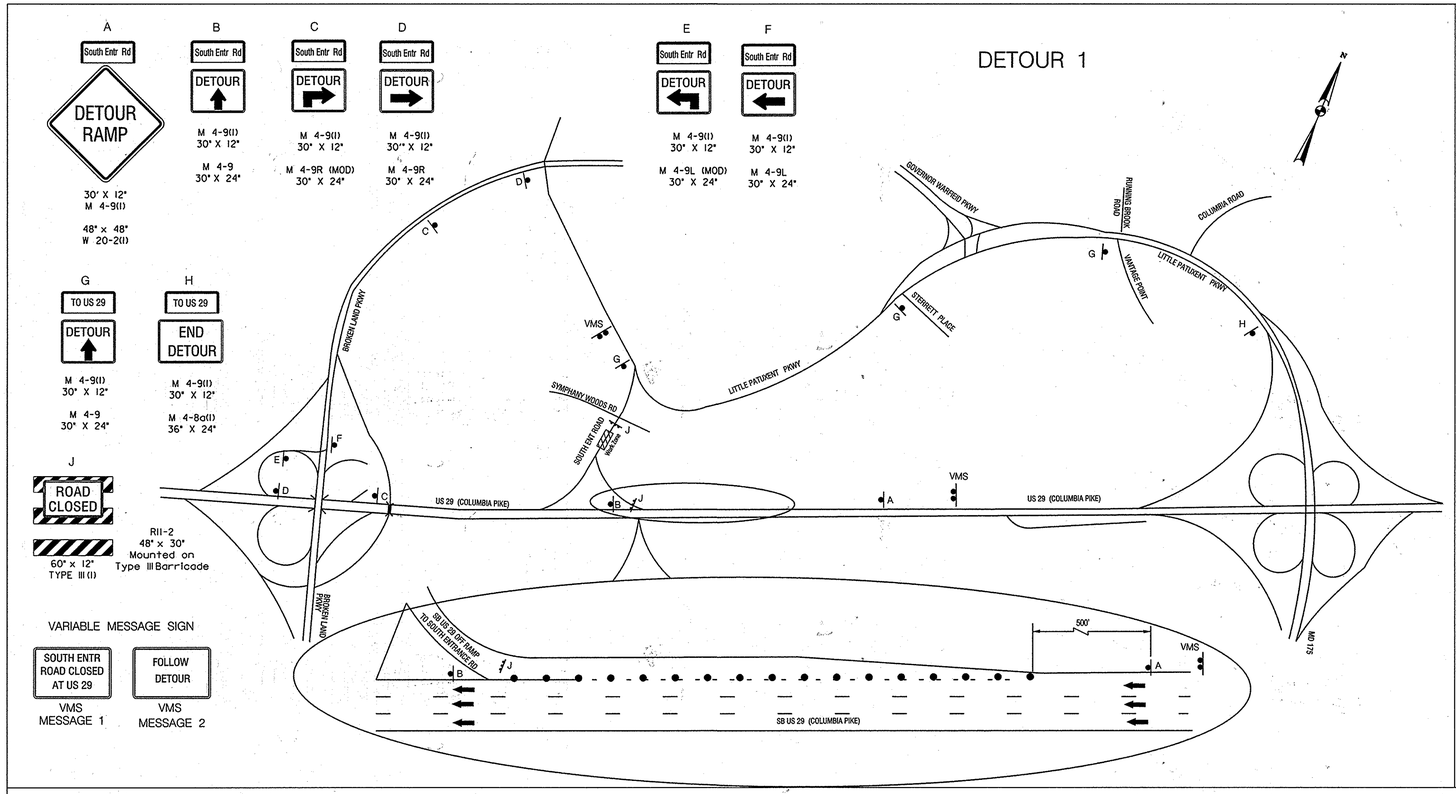

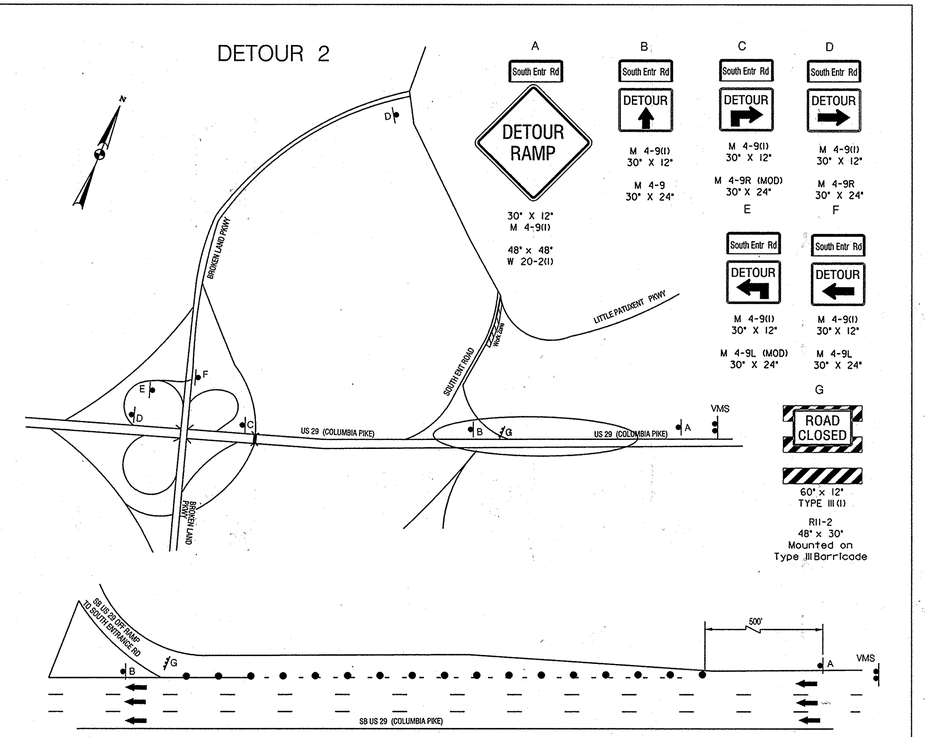

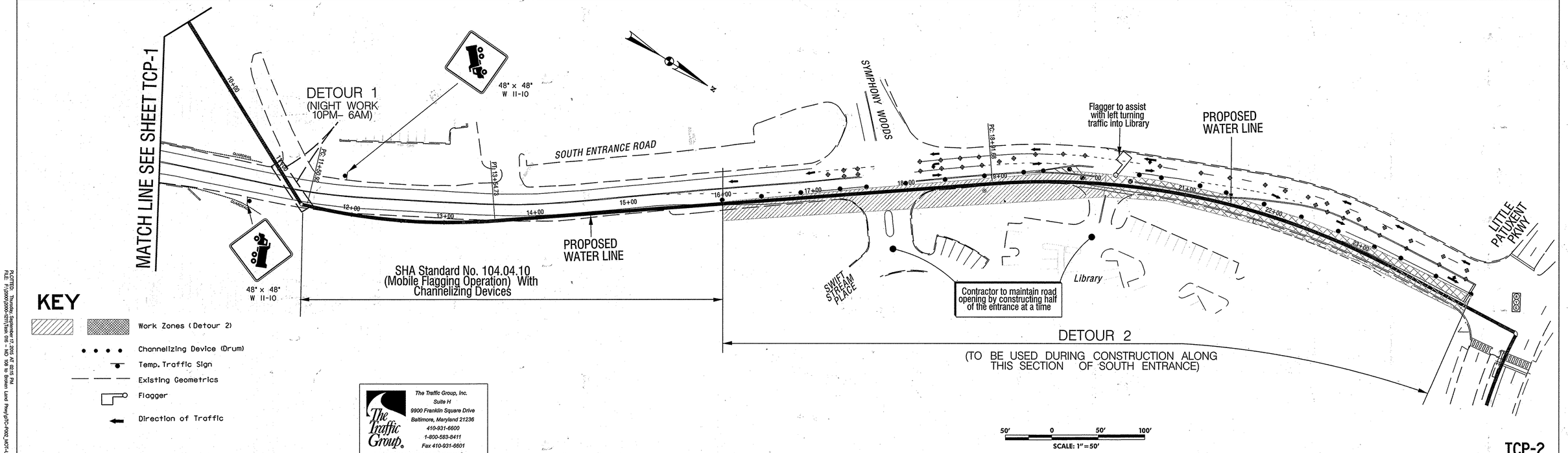

KEY

- Work Zones (Detour 2)
- Channelizing Device (Drum)
- Temp. Traffic Sign
- Existing Geometrics
- Flagger
- Direction of Traffic

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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

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STATE OF MARYLAND — BING-YU CHIEN — No. 33316 — PROFESSIONAL ENGINEER

DSN. BY:	F. HOECKEL
DRN. BY:	F. HOECKEL
CHK. BY:	J. DIRNDORFER
DATE:	SEPT 15, 2015

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

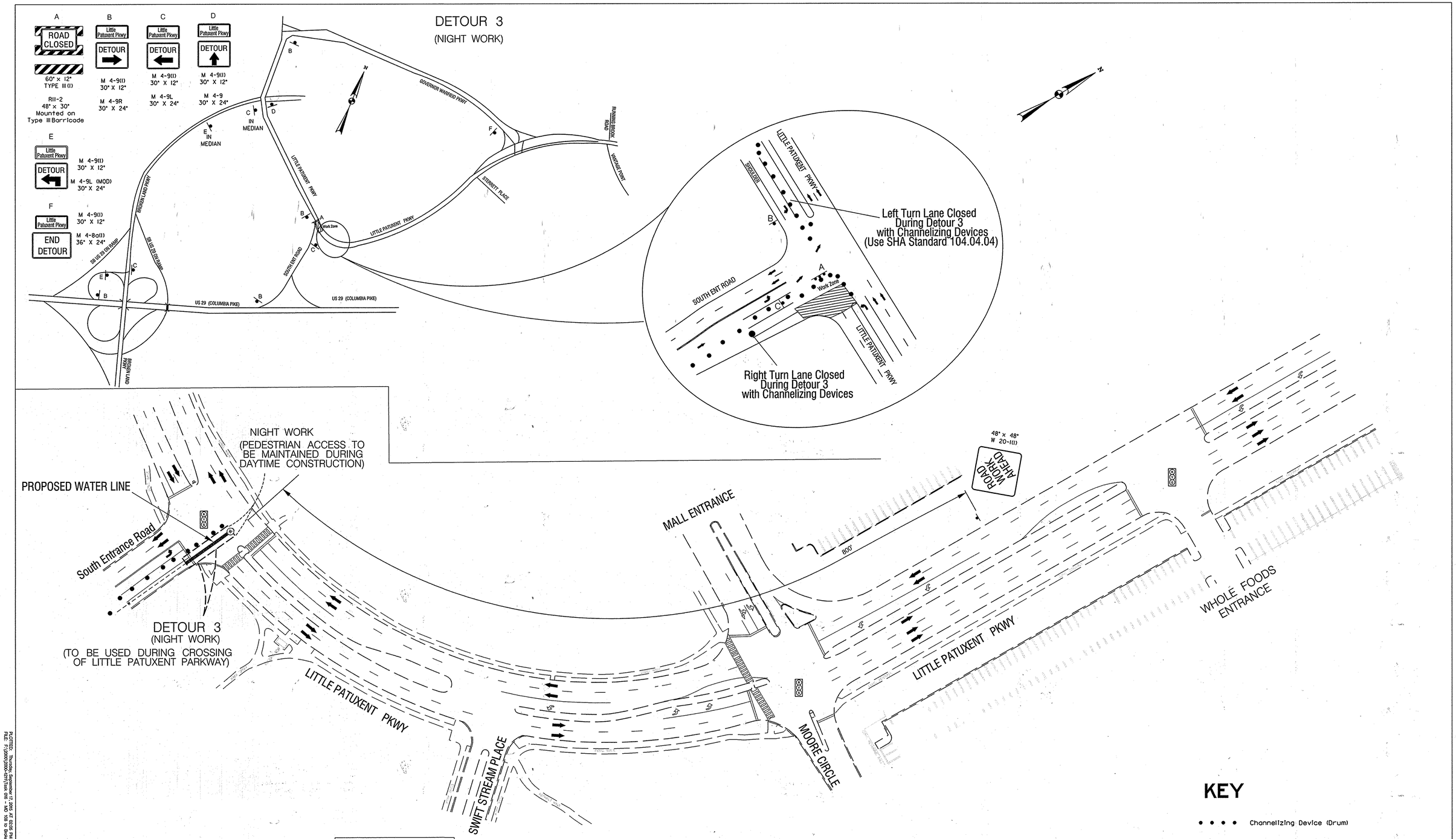
CAPITAL PROJECT: W-8296
CONTRACT NO.:44-4776
ELECTION DISTRICT: 5
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

SHEET 34 OF 48

TCP-2

PLOTTED: Thursday, September 17, 2015 AT 02:16 PM
FILE: F:\2015\2015-0511\tcp\15 - MOT\15 Brown Lane Pkwy\ST-PROP MOT-US29.dgn



TCP-3

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HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 10/1/15
CHIEF - BUREAU OF ENGINEERING — DATE 9/30/15
CHIEF, BUREAU OF UTILITIES — DATE 10/6/15
CHIEF, UTILITY DESIGN DIVISION — DATE 9/30/15

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EXPIRATION DATE 7/13/16

STATE OF MARYLAND
FANG YU CHEN
No. 33316
PROFESSIONAL ENGINEER

DSN. BY:	F. HOECKEL
DRN. BY:	F. HOECKEL
CHK. BY:	J. DIRNDORFER
DATE:	SEPT 15, 2015

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 35 OF 48

PLOTTED: Thursday, September 17, 2015 AT 02:06 PM
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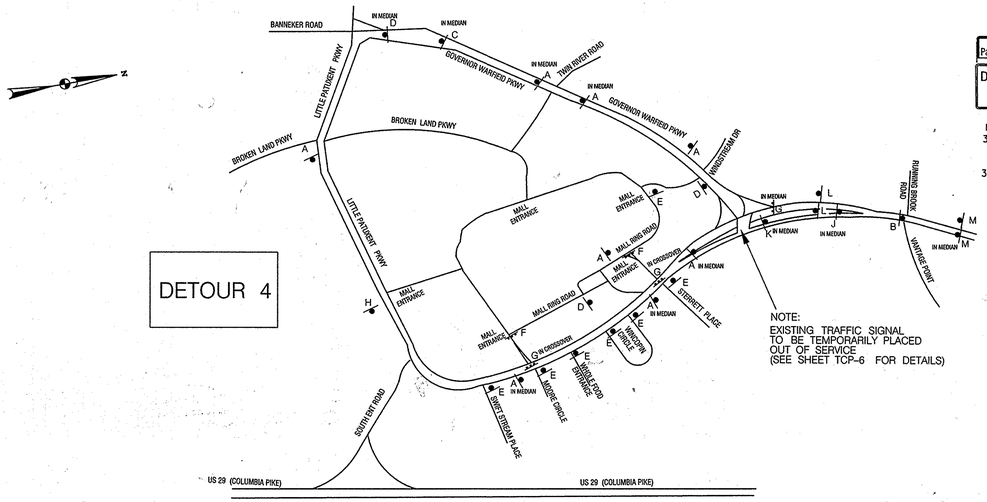
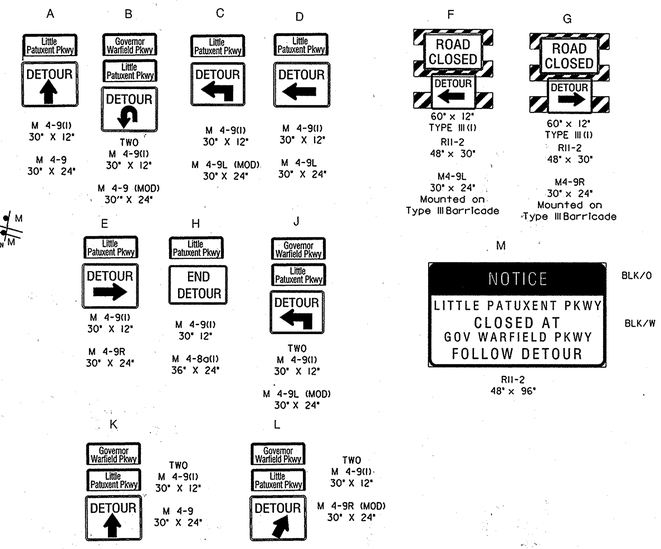
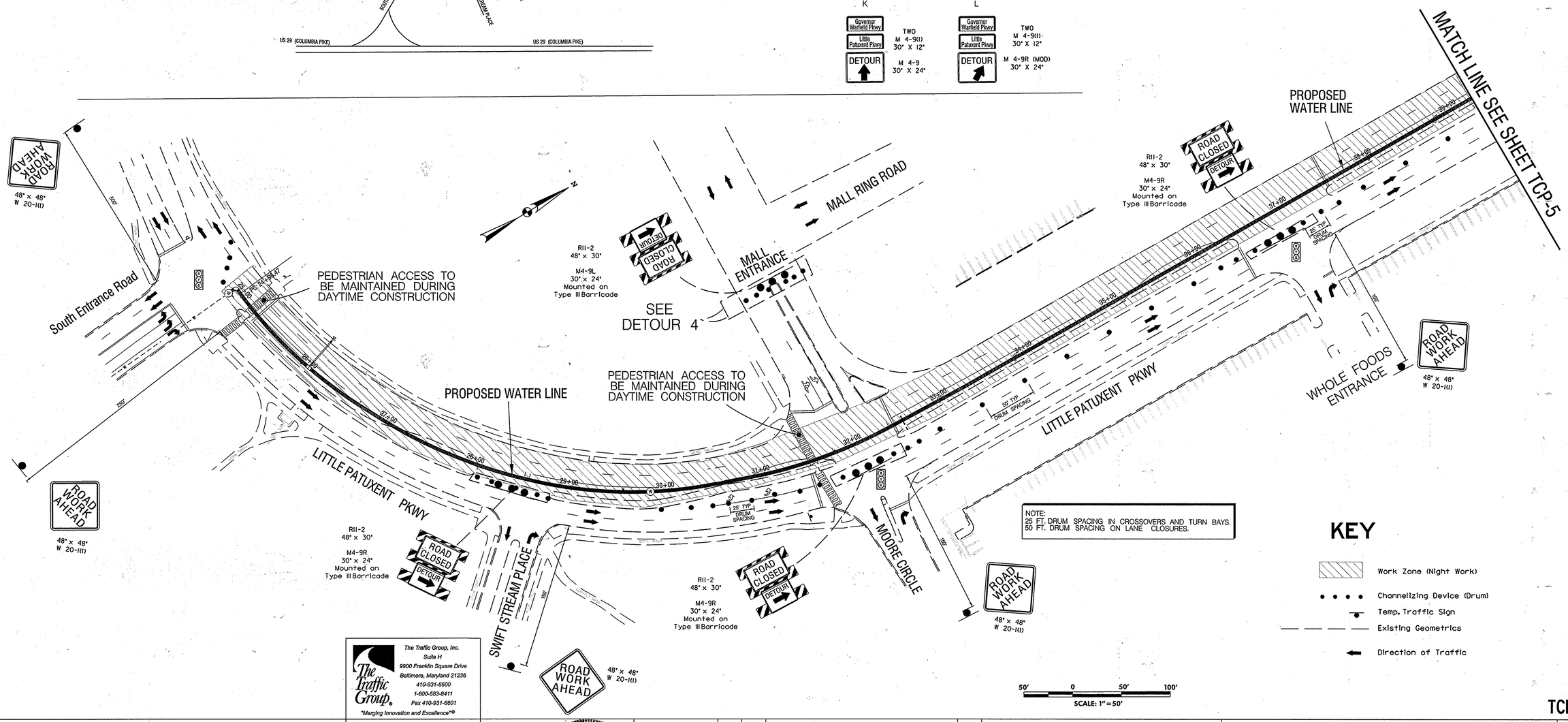




NOTE:

DETOUR #4 SHALL BE IN PLACE PRIOR TO THE BEGINING OF THIS PHASE OF THE MOT



TCP-4

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HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 10/1/15
CHIEF - BUREAU OF ENGINEERING — DATE 9/30/15
CHIEF, BUREAU OF UTILITIES — DATE 10/1/15
CHIEF, UTILITY DESIGN DIVISION — DATE 9/30/15

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BOWIE, MD 20716
PHONE: 301-731-5622

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STATE OF MARYLAND — MARK YU CHEN — No. 33316 — PROFESSIONAL ENGINEER

DSN. BY:	F. HOECKEL
DRN. BY:	F. HOECKEL
CHK. BY:	J. DIRNDORFER
DATE:	SEPT 15, 2015

BY	NO.	REVISION	DATE

MAINTENANCE OF TRAFFIC PLAN

600' SCALE MAP NO. _____ BLOCK NO. _____

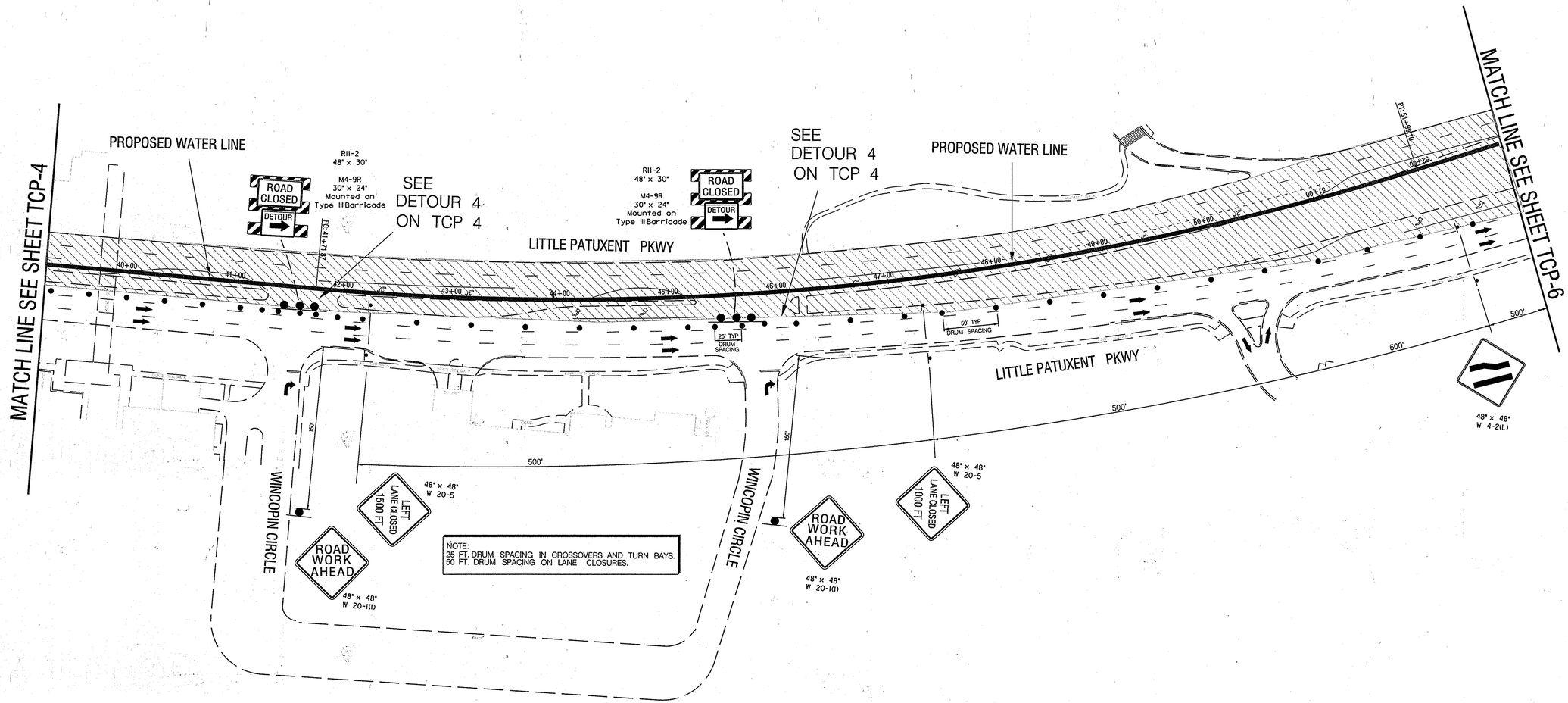
US ROUTE 29 WATER TRANSMISSION MAIN
SOUTH ENTRANCE TO LITTLE PATUXENT PARKWAY

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

SCALE AS SHOWN

SHEET 36 OF 48

PLOTTED: Thursday, September 17 2015 AT 02:15 PM
FILE: P:\2000\2000-0211\Task 016 - MOT\TCP-5\TCP-5_MOT-HOEC6.dgn



KEY

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

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

TCP-5

The Traffic Group, Inc.
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CHIEF, BUREAU OF UTILITIES	DATE 10/1/15	CHIEF, UTILITY DESIGN DIVISION PED	DATE 9/30/15

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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 7/13/16

STATE OF MARYLAND — MING-YU CHIEN — No. 33316 — PROFESSIONAL ENGINEER

DSN. BY:	F. HOECKEL
DRN. BY:	F. HOECKEL
CHK. BY:	J. DIRNDORFER
DATE:	SEPT 15, 2015

BY	NO.	REVISION	DATE

MAINTENANCE OF TRAFFIC PLAN

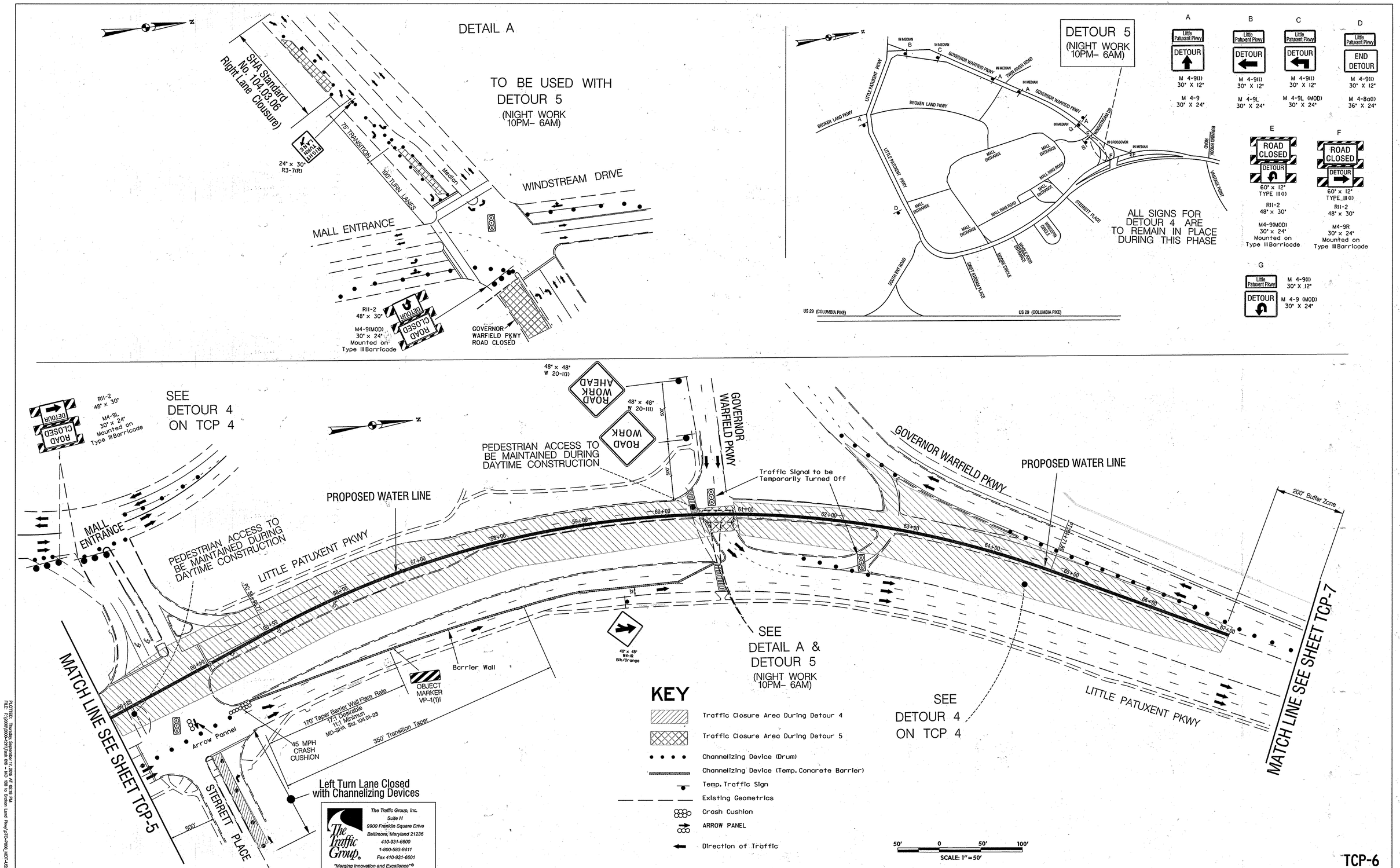
600' SCALE MAP NO. _____ BLOCK NO. _____

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

SCALE AS SHOWN

SHEET 37 OF 48

PLOTTED: Thursday, September 24, 2015 @ 3:36 PM
FILE: P:\2000\2009-0211\Task 011 - MOT\ 29 to Little Land Pkwy\TC-PX06_MOT-US29.dgn



TCP-6

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©

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

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 7/13/16

STATE OF MARYLAND BING-YU CHEN No. 33316 PROFESSIONAL ENGINEER

DSN. BY:	F. HOECKEL
DRN. BY:	F. HOECKEL
CHK. BY:	J. DIRNDORFER
DATE:	SEPT 15, 2015

BY	NO.	REVISION	DATE

600' SCALE MAP NO. _____ BLOCK NO. _____

MAINTENANCE OF TRAFFIC PLAN

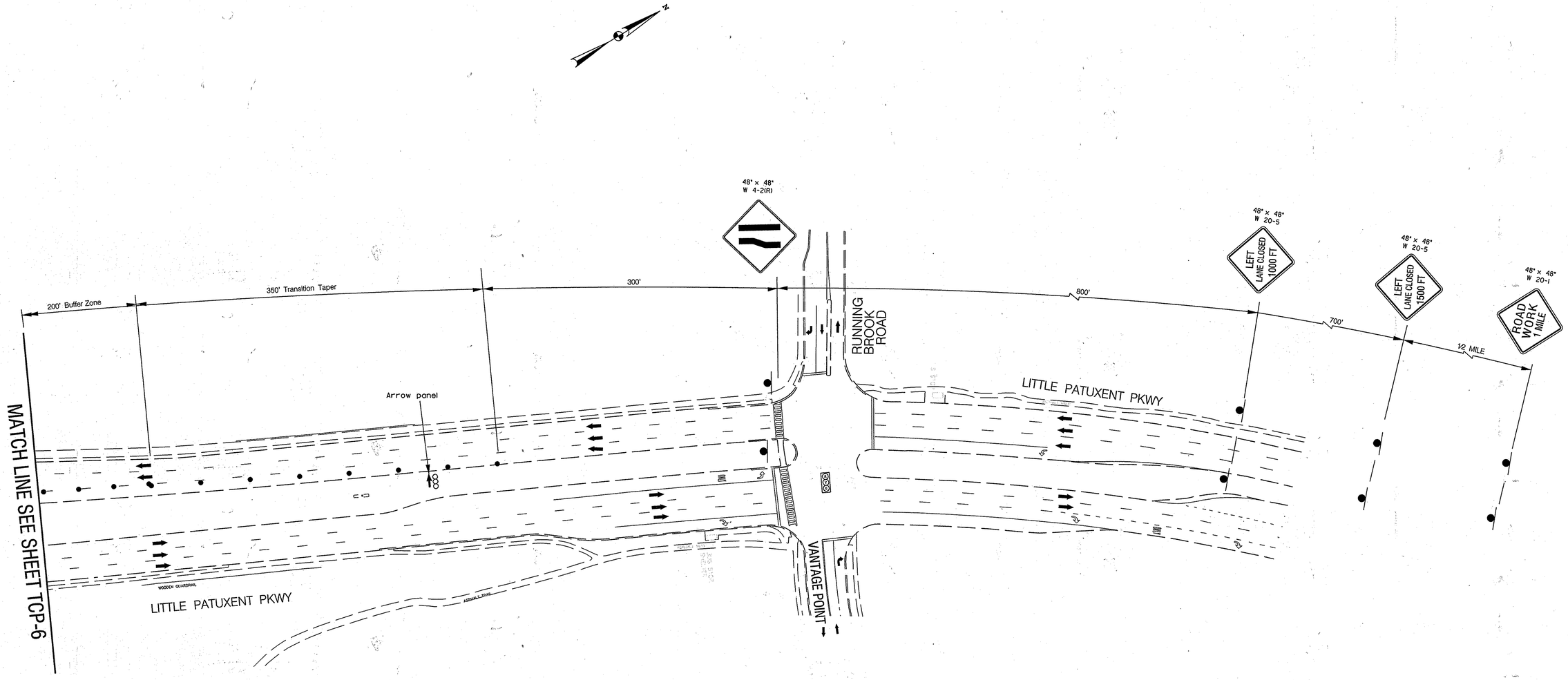
US ROUTE 29 WATER TRANSMISSION MAIN
SOUTH ENTRANCE TO LITTLE PATUXENT PARKWAY

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

SCALE AS SHOWN

SHEET 38 OF 48

PLOTTED: Thursday, September 17, 2015, 12:33:18 PM
FILE: F:\2000\2000-001\Task 00 - HC 29 Broken Land Pkwy\PC-PROM_MOT-4838.dgn



KEY

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

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

TCP-7

The Traffic Group, Inc.
Suite H
9900 Franklin Square Drive
Baltimore, Maryland 21236
410-931-6600
1-800-583-8411
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DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS	DATE 10/6/15	CHIEF - BUREAU OF ENGINEERING	DATE 9/30/15
CHIEF, BUREAU OF UTILITIES	DATE 10/1/15	CHIEF, UTILITY DESIGN DIVISION PSD	DATE 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. 33316 EXPIRATION DATE 7/13/16

STATE OF MARYLAND
MING-YU CHIANG
No. 33316
PROFESSIONAL ENGINEER

DSN. BY:	F. HOECKEL
DRN. BY:	F. HOECKEL
CHK. BY:	J. DIRNDORFER
DATE:	SEPT 15, 2015

BY	NO.	REVISION	DATE

MAINTENANCE OF TRAFFIC PLAN

600' SCALE MAP NO. _____ BLOCK NO. _____

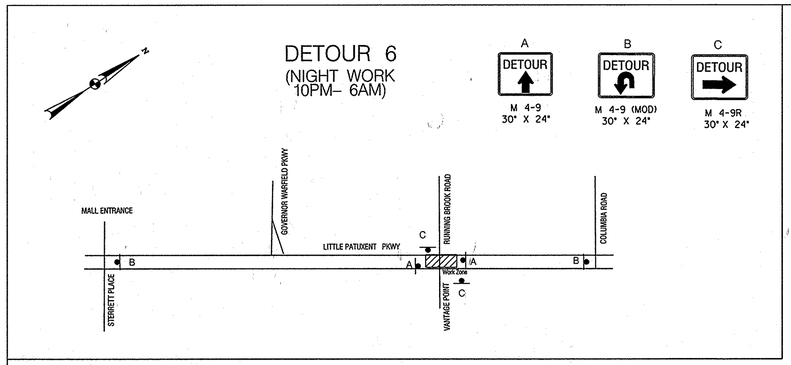
US ROUTE 29 WATER TRANSMISSION MAIN
SOUTH ENTRANCE TO LITTLE PATUXENT PARKWAY

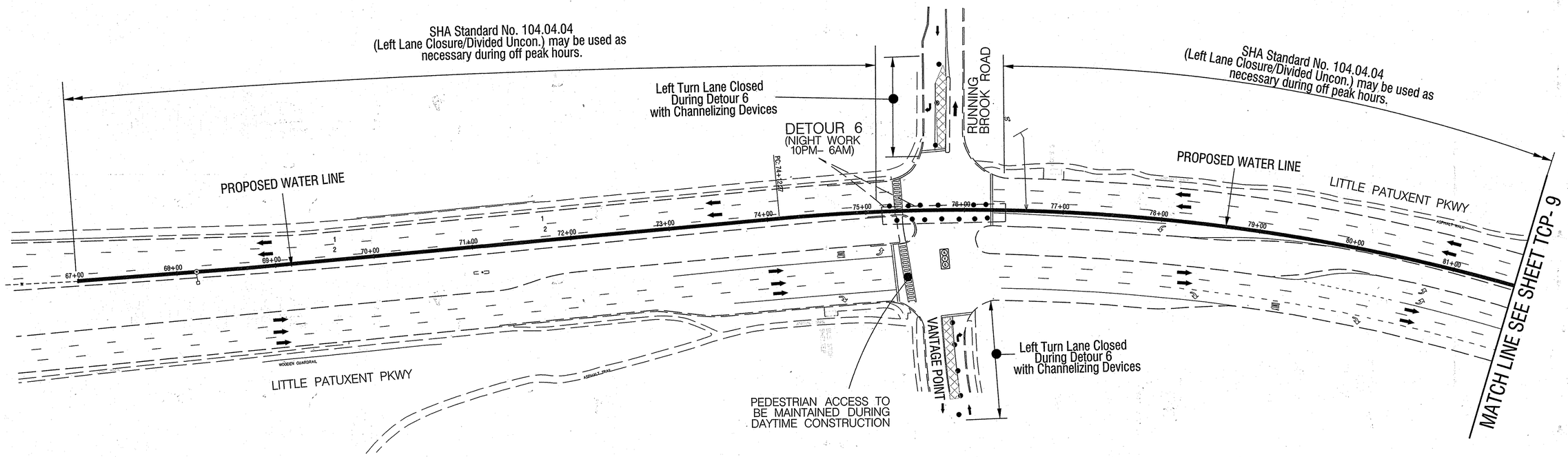
CAPITAL PROJECT: W-8296
CONTRACT NO.:44-4776
ELECTION DISTRICT: 5
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

SHEET 39 OF 48

PLOTTED: Thursday, September 17, 2015 AT 02:19 PM
FILE: F:\2000\2000-0211\tsc 015 - 100 to Brown Land Pkwy\TCP-7W07_MOT-15528.dgn





KEY

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

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

TCP-8

The Traffic Group, Inc.
Suite H
9900 Franklin Square Drive
Baltimore, Maryland 21236
410-931-6600
1-800-583-8411
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DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 10/1/15
CHIEF - BUREAU OF ENGINEERING — DATE 9/30/15
CHIEF, BUREAU OF UTILITIES — DATE 10/1/15
CHIEF, UTILITY DESIGN DIVISION — DATE 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. 33316
EXPIRATION DATE 7/13/16

STATE OF MARYLAND — WING-YU CHEN — NO. 33316 — PROFESSIONAL ENGINEER

DSN. BY:	F. HOECKEL
DRN. BY:	F. HOECKEL
CHK. BY:	J. DIRNDORFER
DATE:	SEPT 15, 2015

BY	NO.	REVISION	DATE

MAINTENANCE OF TRAFFIC PLAN

600' SCALE MAP NO. _____ BLOCK NO. _____

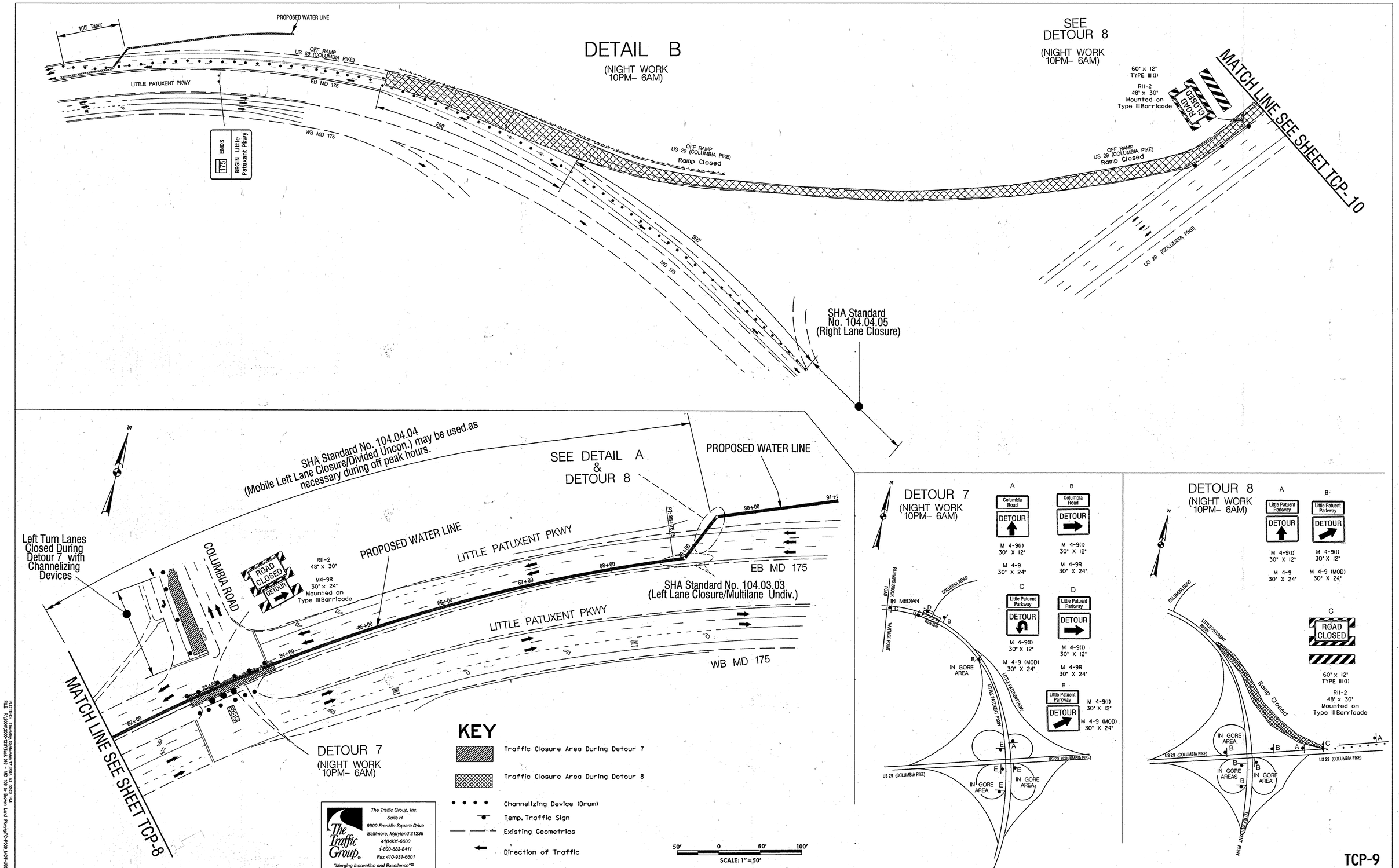
US ROUTE 29 WATER TRANSMISSION MAIN
SOUTH ENTRANCE TO LITTLE PATUXENT PARKWAY

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

SCALE AS SHOWN

SHEET 40 OF 48

PLOTTED: Thursday, September 17, 2015, 01:19 PM
FILE: P:\2005\2005-067\Task 005 - MD 108 to Stevens Lane Pkwy\PC-P008_MOT-LB39.dgn



TCP-9

The Traffic Group, Inc.
Suite H
9900 Franklin Square Drive
Baltimore, Maryland 21236
410-931-6600
1-800-583-8411
Fax 410-931-6601
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DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS	DATE 10/1/15	CHIEF, BUREAU OF ENGINEERING	DATE 9/30/15
CHIEF, BUREAU OF UTILITIES	DATE 10/1/15	CHIEF, UTILITY DESIGN DIVISION PSD	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 7/13/16

STATE OF MARYLAND
BING-YU CHEN
NO. 33316
PROFESSIONAL ENGINEER

DSN. BY:	F. HOECKEL
DRN. BY:	F. HOECKEL
CHK. BY:	J. DIRNDORFER
DATE:	SEPT 15, 2015

BY	NO.	REVISION	DATE

MAINTENANCE OF TRAFFIC PLAN

600' SCALE MAP NO. _____ BLOCK NO. _____

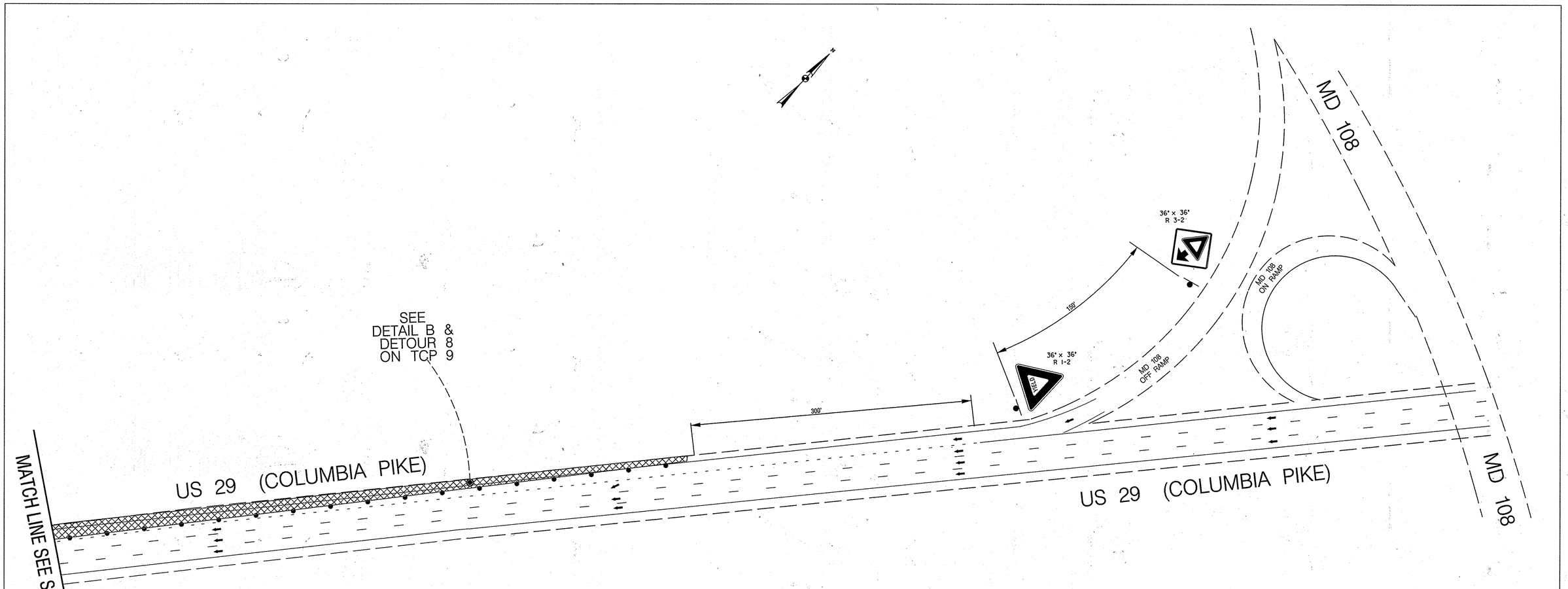
US ROUTE 29 WATER TRANSMISSION MAIN
SOUTH ENTRANCE TO LITTLE PATUXENT PARKWAY

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 02:23 PM
FILE: P:\2000\2004-2011\ba\ W8 - MD 175 to Brown Land Pkwy\TC-P009_MOT-15538.dgn



KEY

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

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

TCP-10

The Traffic Group, Inc.
Suite H
9900 Franklin Square Drive
Baltimore, Maryland 21236
410-931-6600
1-800-583-8411
Fax 410-931-6601
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DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS	10/1/15 DATE	CHIEF - BUREAU OF ENGINEERING	9/30/15 DATE
CHIEF, BUREAU OF UTILITIES	10/1/15 DATE	CHIEF, UTILITY DESIGN DIVISION	9/30/15 DATE

PSD

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 7/13/16

STATE OF MARYLAND — FRANK V. HOECKEL — No. 33316 — PROFESSIONAL ENGINEER

DSN. BY:	F. HOECKEL
DRN. BY:	F. HOECKEL
CHK. BY:	J. DIRNDORFER
DATE:	SEPT 15, 2015

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 42 OF 48

PLOTTED: Thursday, September 17, 2015 AT 02:26 PM
FILE: P:\2000\2000-S01\Sec 29, 108 & Brown Land Pkwy\STC-P110_MOT-U2639.dgn

PROJECT DESCRIPTION

GENERAL

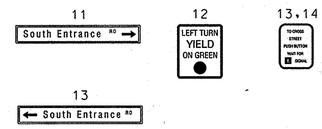
THIS PROJECT INVOLVES THE INSTALLATION OF A NEW VIDEO DETECTION CAMERA FOR THE NORTHTBOUND DIRECTION OF LITTLE PATUXENT PARKWAY. THE EXISTING SIGNAL LOCATED IN HOWARD COUNTY TO REMAIN IN THE SAME OPERATION. LITTLE PATUXENT PARKWAY IS CONSIDERED TO RUN IN A NORTH/SOUTH DIRECTION.

EQUIPMENT LIST

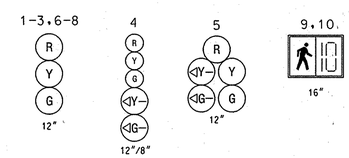
EQUIPMENT TO BE FURNISHED AND/OR INSTALLED BY THE CONTRACTOR.

QUANTITY	LFUNITS	DESCRIPTION
LUMP SUM	LS	MAINTENANCE OF TRAFFIC
LUMP SUM	LS	MOBILIZATION
1	EA	VIDEO DETECTOR CAMERA (TERRA)
375	LF	VIDEO DETECTOR CAMERA CABLE

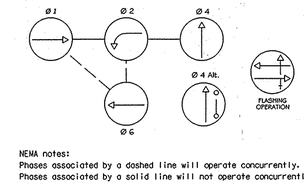
EXISTING SIGNS



EXISTING SIGNALS



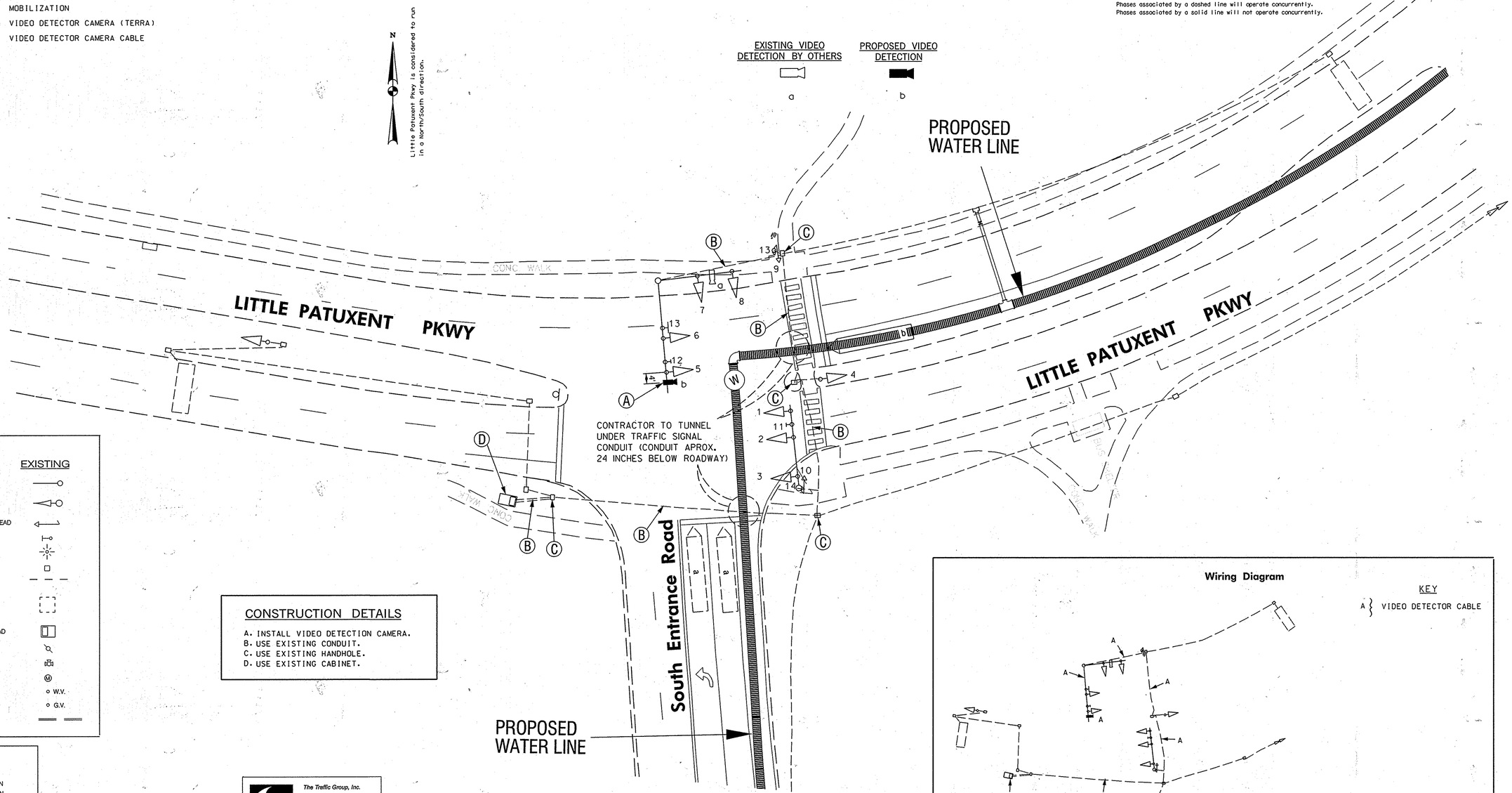
EXISTING NEMA PHASING



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

EXISTING VIDEO DETECTION BY OTHERS — a

PROPOSED VIDEO DETECTION — b



CONSTRUCTION DETAILS

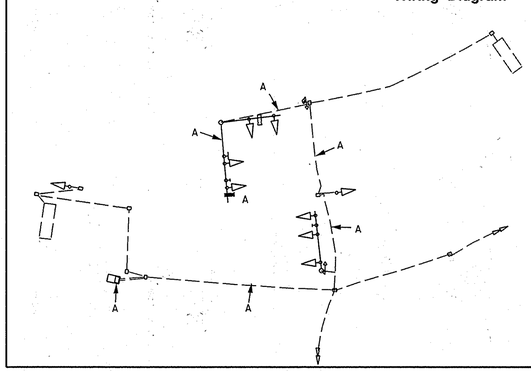
A. INSTALL VIDEO DETECTION CAMERA.
B. USE EXISTING CONDUIT.
C. USE EXISTING HANDHOLE.
D. USE EXISTING CABINET.

LEGEND

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

Wiring Diagram



KEY

A } VIDEO DETECTOR CABLE

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"

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 10/1/15
CHIEF - BUREAU OF ENGINEERING — DATE 9/30/15
CHIEF, BUREAU OF UTILITIES — DATE 10/1/15
CHIEF, UTILITY DESIGN DIVISION — PSD — DATE 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. 33316 EXPIRATION DATE 7/13/16

STATE OF MARYLAND — MING-YU CHEN — No. 33316 — PROFESSIONAL ENGINEER

DSN. BY:	FJH
DRN. BY:	FJH
CHK. BY:	JJD
DATE:	SEPT 15, 2015

BY	NO.	REVISION	DATE

600' SCALE MAP NO. _____ BLOCK NO. _____

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

PLOTTED: Thursday, September 17, 2015 AT 01:59 PM
FILE: P:\2000\2000-2571\dgn 026 - MD 100 to Broken Land Pkwy\TS -MD 175_SOUTH ENTRANCE ROAD.dgn

PROJECT DESCRIPTION

GENERAL

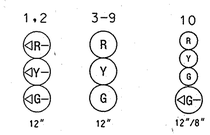
THIS PROJECT INVOLVES THE INSTALLATION OF A NEW VIDEO DETECTION CAMERA AN LOOP DETECTION FOR THE NORTHBOUND DIRECTION OF LITTLE PATUXENT PARKWAY. THE EXISTING SIGNAL LOCATED IN HOWARD COUNTY TO REMAIN IN THE SAME OPERATION. LITTLE PATUXENT PARKWAY IS CONSIDERED TO RUN IN A NORTH/ SOUTH DIRECTION.

EQUIPMENT LIST

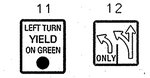
EQUIPMENT TO BE FURNISHED AND/OR INSTALLED BY THE CONTRACTOR.

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

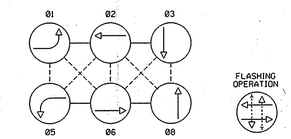
EXISTING SIGNALS



EXISTING SIGNS



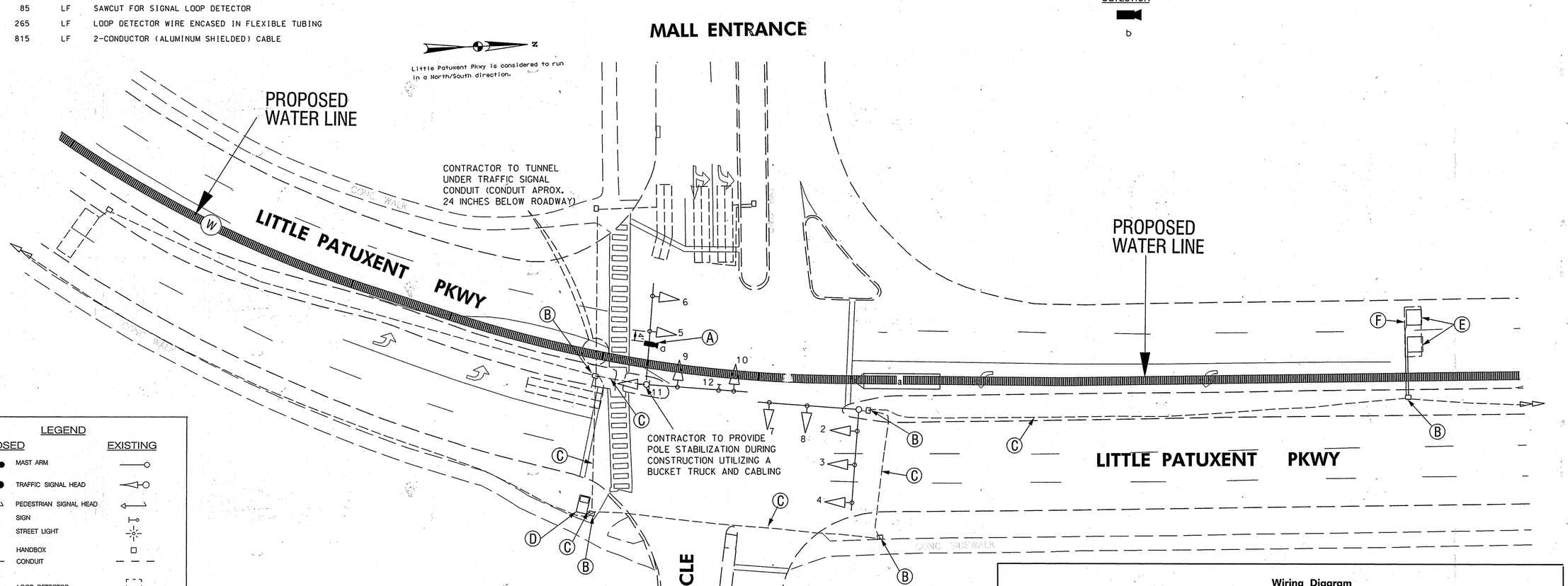
EXISTING NEMA PHASING



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

PROPOSED VIDEO DETECTION

b



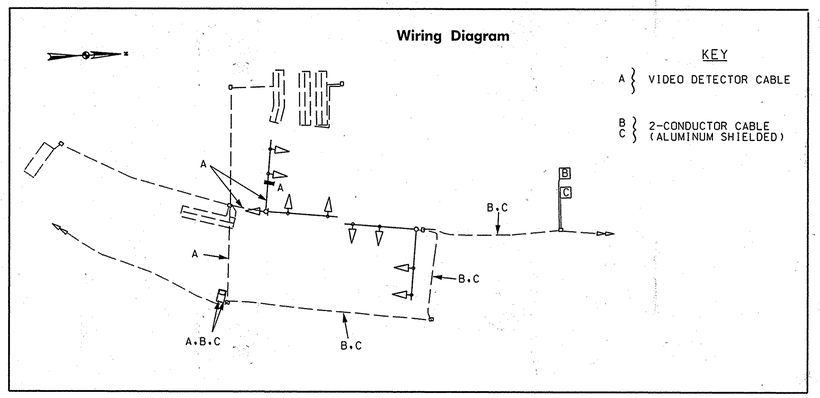
LEGEND

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

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.



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1-800-583-8411
Fax 410-931-6601
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DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 10/1/15
CHIEF - BUREAU OF ENGINEERING — DATE 9/30/15
CHIEF, BUREAU OF UTILITIES — DATE 10/1/15
CHIEF, UTILITY DESIGN DIVISION — DATE 9/30/15

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

PROFESSIONAL CERTIFICATION:
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STATE OF MARYLAND — MING YU CHEN — NO. 33316 — PROFESSIONAL ENGINEER

DSN. BY:	FJH
DRN. BY:	FJH
CHK. BY:	JJD
DATE:	SEPT 15, 2015

BY	NO.	REVISION	DATE

600' SCALE MAP NO. _____ BLOCK NO. _____

TRAFFIC SIGNAL
Little Patuxent Parkway
at
Moores 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

PLOTTED: Thursday, September 17, 2015 AT 01:58 PM
FILE: F:\2001\2000-027\Tasks 016 - MD 108 to Bethel Land Pkwy\TS -MD 175_ROUSE.DGN

PROJECT DESCRIPTION

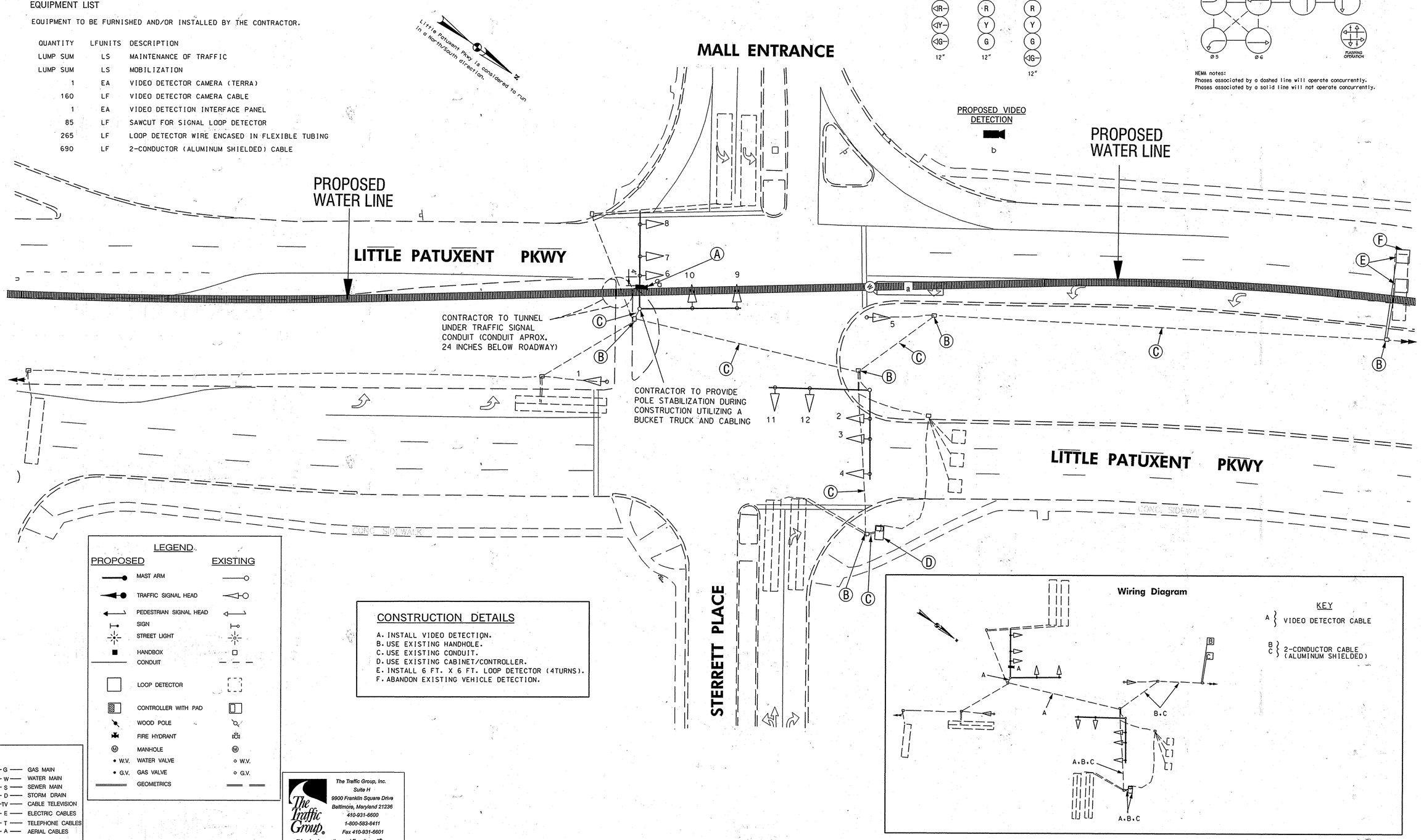
GENERAL

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	LFUNITS	DESCRIPTION
LUMP SUM	LS	MAINTENANCE OF TRAFFIC
LUMP SUM	LS	MOBILIZATION
1	EA	VIDEO DETECTOR CAMERA (TERRA)
160	LF	VIDEO DETECTOR CAMERA CABLE
1	EA	VIDEO DETECTION INTERFACE PANEL
85	LF	SAWCUT FOR SIGNAL LOOP DETECTOR
265	LF	LOOP DETECTOR WIRE ENCASED IN FLEXIBLE TUBING
690	LF	2-CONDUCTOR (ALUMINUM SHIELDED) CABLE



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.

LEGEND

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

The Traffic Group, Inc.
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1-800-583-8411
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DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 10/1/15
CHIEF - BUREAU OF ENGINEERING — DATE 9/30/15
CHIEF, BUREAU OF UTILITIES — DATE 10/1/15
CHIEF, UTILITY DESIGN DIVISION — DATE 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. 33316 EXPIRATION DATE 7/13/16

STATE OF MARYLAND — MING-YU CHIEN — NO. 33316 — PROFESSIONAL ENGINEER

DSN. BY:	FJH
DRN. BY:	FJH
CHK. BY:	JJD
DATE:	SEPT 15, 2015

BY	NO.	REVISION	DATE

TRAFFIC SIGNAL
Little Patuxent Parkway
at
Sterrett Place

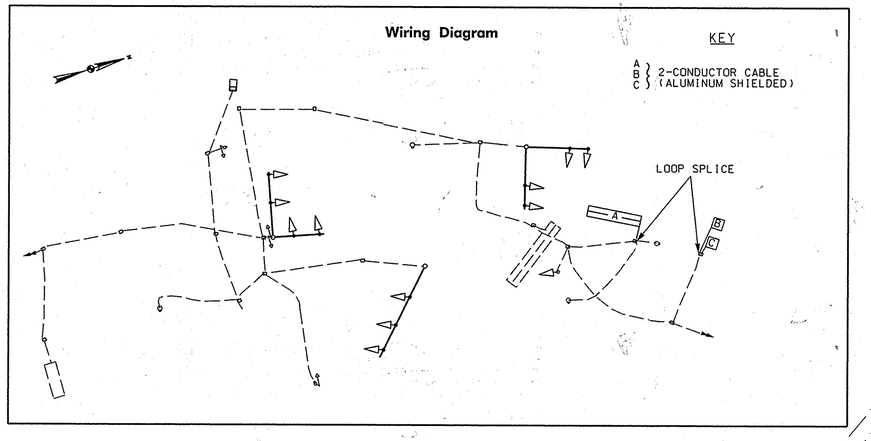
600' SCALE MAP NO. _____ BLOCK NO. _____

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

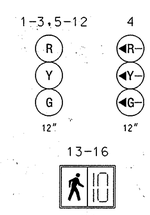
SCALE: 1"=20'

SHEET 45 OF 48

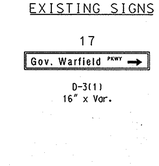
PLOTTED: Thursday, September 17, 2015, AT 10:59 PM
FILE: P:\2000\2000-4767\Task 006 - MD 108 to Broken Land Pkwy\TS - MD 175_ STERRETT PACE.dgn



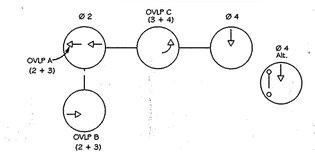
EXISTING SIGNALS

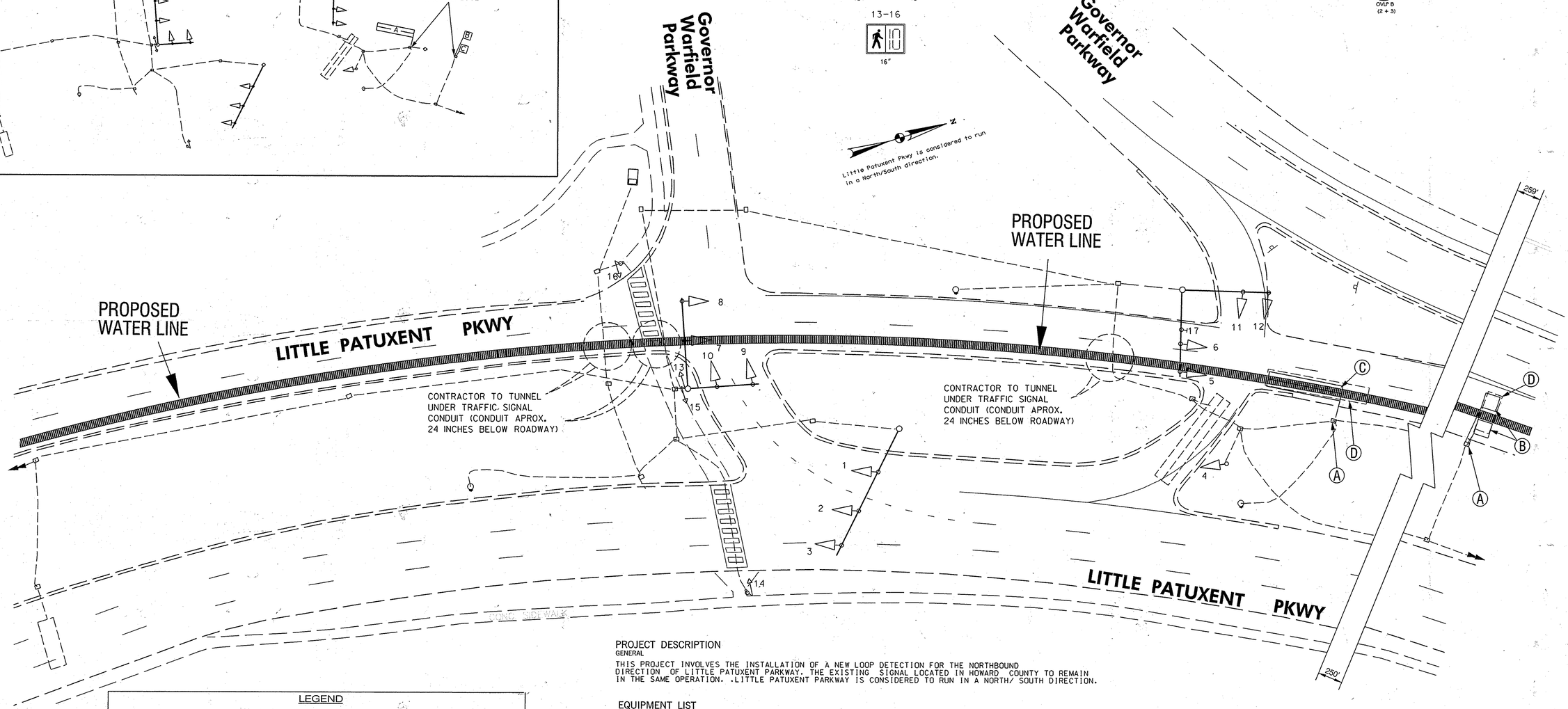


EXISTING SIGNS



EXISTING NEMA PHASING





PROJECT DESCRIPTION

GENERAL

THIS PROJECT INVOLVES THE INSTALLATION OF A NEW 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	LFUNITS	DESCRIPTION
LUMP SUM	LS	MAINTENANCE OF TRAFFIC
LUMP SUM	LS	MOBILIZATION
175	LF	SAWCUT FOR SIGNAL LOOP DETECTOR
575	LF	LOOP DETECTOR WIRE ENCASED IN FLEXIBLE TUBING
3	EA	LOOP DETECTOR SPLICE

CONSTRUCTION DETAILS

A. USE EXISTING HANDHOLE SPLICE EXISTING ALUMINIUM SHEILD 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.

LEGEND

PROPOSED	EXISTING	PROPOSED	EXISTING
STREET LIGHT		MAST ARM	
HANDBOX		TRAFFIC SIGNAL HEAD	
CONDUIT		PEDESTRIAN SIGNAL HEAD	
		SIGN	
LOOP DETECTOR		STREET LIGHT	
CONTROLLER WITH PAD		HANDBOX	
WOOD POLE			
FIRE HYDRANT			
MANHOLE			
W.V. WATER VALVE	W.V.		
G.V. GAS VALVE	G.V.		
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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DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 10/1/15
CHIEF - BUREAU OF ENGINEERING — DATE 9/30/15
CHIEF - BUREAU OF UTILITIES — DATE 10/1/15
CHIEF, UTILITY DESIGN DIVISION — DATE 9/30/15

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

PROFESSIONAL CERTIFICATION:
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STATE OF MARYLAND — MING-YU CHEN — NO. 33316 — PROFESSIONAL ENGINEER

DSN. BY:	FJH
DRN. BY:	FJH
CHK. BY:	JJD
DATE:	SEPT 15, 2015

BY	NO.	REVISION	DATE

TRAFFIC SIGNAL
Little Patuxent Parkway
at
Governor Warfield Parkway

600' SCALE MAP NO. _____ BLOCK NO. _____

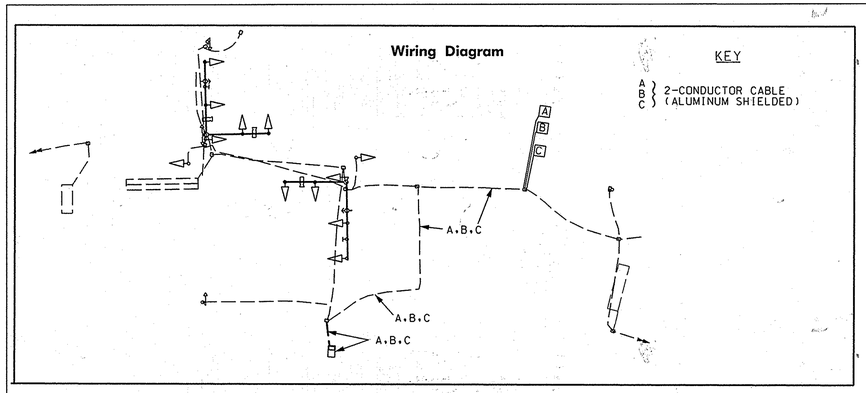
US ROUTE 29 WATER TRANSMISSION MAIN
SOUTH ENTRANCE TO LITTLE PATUXENT PARKWAY

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

SCALE: 1"=20'

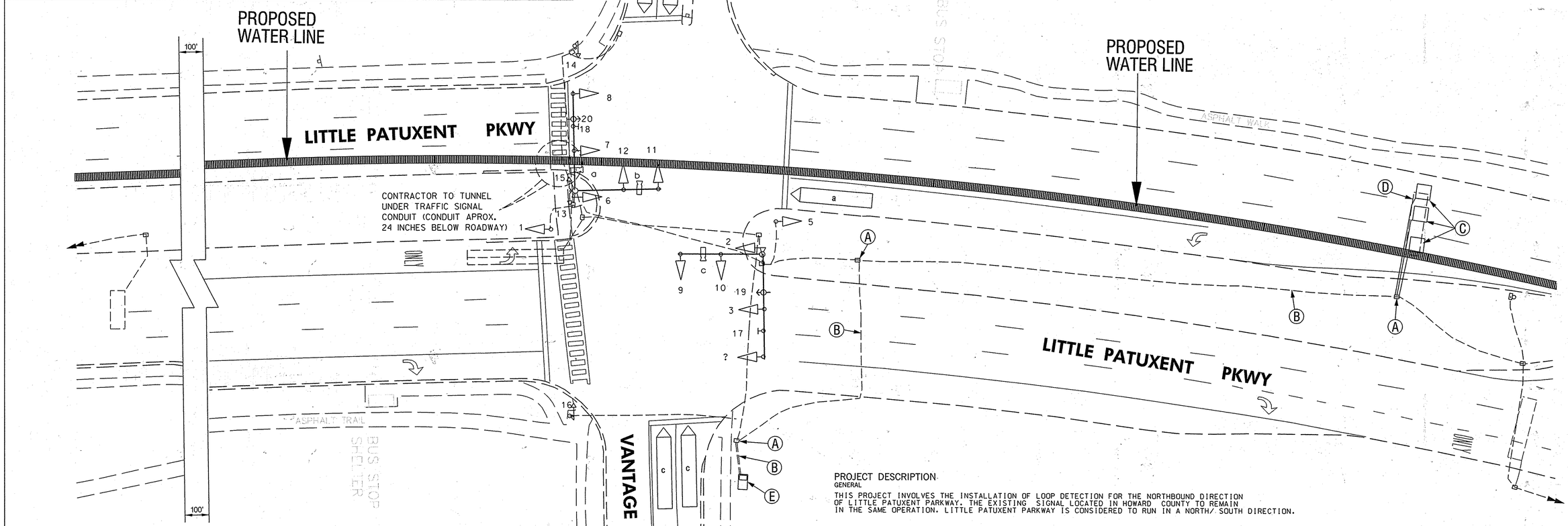
SHEET 46 OF 48

PLOTTED: Thursday, September 17, 2015 AT 0:07 PM
FILE: F:\2000\2000-0211\task 016 - MD 108 to Broken Land Pkwy\TS - MD 175, GOV WARFIELD PARKWAY.dgn



KEY

A, B, C — 2-CONDUCTOR CABLE (ALUMINUM SHIELDED)



EXISTING SIGNS

17: Vantage Point RD → / ← W. Running Brook RD — D-3(1) 32" x Var.

18: ← Vantage Point RD / W. Running Brook RD → — D-3(1) 32" x Var.

EXISTING OPTICOM

19, 20

EXISTING VIDEO DETECTION BY OTHERS

a, b, c

EXISTING SIGNALS

1, 2, 5, 6: R, Y, G — 12"

3, 4, 7–12: R, Y, G — 12"

13–16 — 16"

EXISTING NEMA PHASING

Ø1, Ø2, Ø4, Ø5, Ø6, Ø8

FLASHING OPERATION

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

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	LFUNITS	DESCRIPTION
LUMP SUM	LS	MAINTENANCE OF TRAFFIC
LUMP SUM	LS	MOBILIZATION
200	LF	SAWCUT FOR SIGNAL LOOP DETECTOR
530	LF	LOOP DETECTOR WIRE ENCASED IN FLEXIBLE TUBING
400	LF	2-CONDUCTOR (ALUMINUM SHIELDED) CABLE

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.

LEGEND

PROPOSED	EXISTING	PROPOSED	EXISTING
STREET LIGHT		MAST ARM	
HANDBOX		TRAFFIC SIGNAL HEAD	
CONDUIT		PEDESTRIAN SIGNAL HEAD	
LOOP DETECTOR		SIGN	
CONTROLLER WITH PAD		STREET LIGHT	
WOOD POLE		HANDBOX	
FIRE HYDRANT			
MANHOLE			
W.V. WATER VALVE	W.V.		
G.V. GAS VALVE	G.V.		
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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STATE OF MARYLAND — MING-YU CHIEN — No. 33316 — PROFESSIONAL ENGINEER

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 10/1/15
CHIEF - BUREAU OF ENGINEERING — DATE 9/30/15
CHIEF, BUREAU OF UTILITIES — DATE 10/1/15
CHIEF, UTILITY DESIGN DIVISION — DATE 9/30/15

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

DSN. BY:	FJH
DRN. BY:	FJH
CHK. BY:	JJD
DATE:	SEPT 15, 2015

BY	NO.	REVISION	DATE

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

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 47 OF 48

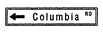
PLOTTED: Thursday, September 17, 2015, AT 02:09 PM
FILE: F:\2000\2000-0311\Task 016 - MD 108 to Broken Land Pkwy\TS - MD 175_ VANTAGE POINT W RUNNING BROOK.dgn

EXISTING SIGNS

9

R 3-8(7)
30" x 60"

10



11

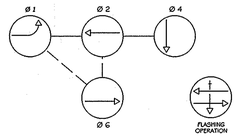
D-3(1)
16" x Var.

EXISTING SIGNALS

1,2 — R, Y, G — 12"

3-8 — R, Y, G — 12"

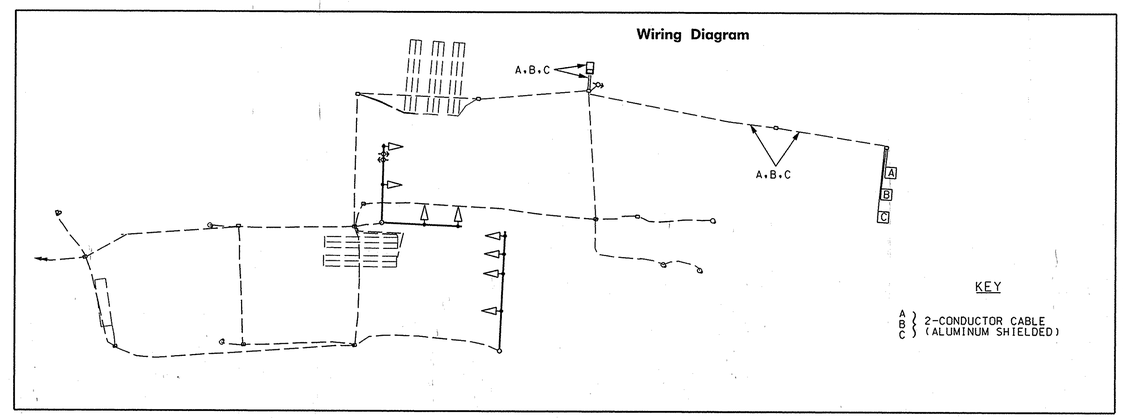
EXISTING NEMA PHASING

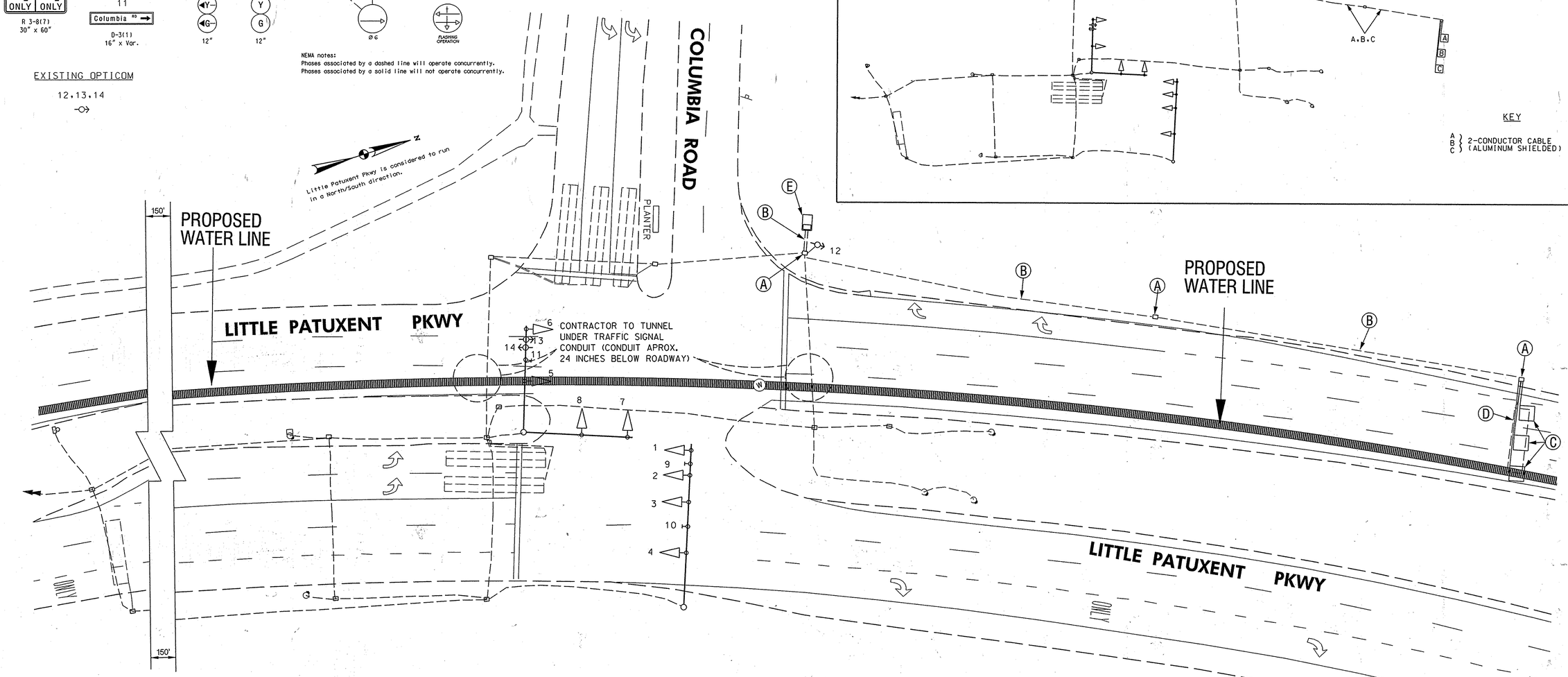


NEMA notes:
Phases associated by a dashed line will operate concurrently.
Phases associated by a solid line will not operate concurrently.

EXISTING OPTICOM

12,13,14





LEGEND

PROPOSED		EXISTING	PROPOSED		EXISTING
	STREET LIGHT			MAST ARM	
	HANDBOX			TRAFFIC SIGNAL HEAD	
	CONDUIT			PEDESTRIAN SIGNAL HEAD	
				SIGN	
	LOOP DETECTOR			STREET LIGHT	
	CONTROLLER WITH PAD			HANDBOX	
	WOOD POLE				
	FIRE HYDRANT				
	MANHOLE				
W.V.	WATER VALVE	W.V.			
G.V.	GAS VALVE	G.V.			
	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
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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	LFUNITS	DESCRIPTION
LUMP SUM	LS	MAINTENANCE OF TRAFFIC
LUMP SUM	LS	MOBILIZATION
200	LF	SAWCUT FOR SIGNAL LOOP DETECTOR
530	LF	LOOP DETECTOR WIRE ENCASED IN FLEXIBLE TUBING
325	LF	2-CONDUCTOR (ALUMINUM SHIELDED) CABLE

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.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 6/11/15
CHIEF - BUREAU OF ENGINEERING — DATE 9/30/15
CHIEF, BUREAU OF UTILITIES — DATE 10/1/15
CHIEF, UTILITY DESIGN DIVISION — DATE 9/2/15

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

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EXPIRATION DATE 7/13/16

STATE OF MARYLAND — KING-YU CHIEN — NO. 33316 — PROFESSIONAL ENGINEER

DSN. BY:	FJH
DRN. BY:	FJH
CHK. BY:	JJD
DATE:	SEPT 15, 2015

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

PLOTTED: Tuesday, September 01, 2015 07:40:00 PM
FILE: F:\0000\0000-0201\Task 016 - MD 108 @ Broken Land Pkwy\TS - MD 175_COLUMBIA RD.DGN