PHASE I
PUBLIC WATER & SEWER FINAL CONSTRUCTION PLANS
FOR
ESTATES AT PATAPSCO PARK

LOCATION OF SITE

ROGERS AVENUE
TAX MAP 17, GRID 5, 6, 11 & 12
HOWARD COUNTY, MARYLAND
ZONING: R-ED AND R-20, 2ND ELECTION DISTRICT
CONTRACT NO. 14-4803-D

LEGEND

- PROPOSED FIRE HYDRANT
- PROPOSED WATER MAIN
- PROPOSED SANITARY SEWER
- PROPOSED SANITARY MANHOLE
- PROPOSED SANITARY TERMINAL MANHOLE
- EXISTING WATER MAIN
- EXISTING SANITARY SEWER
- EXISTING SANITARY MANHOLE
- PROPOSED WATER VALVE
- EXISTING WATER VALVE
- PROPOSED WATER BEND
- PROPOSED SEWER HOUSE CONNECTION
- PROPOSED WATER HOUSE CONNECTION
- DOMESTIC WATER METER
- SEWER CLEANOUT
- UTILITY TEST PIT LOCATION

SHEET INDEX

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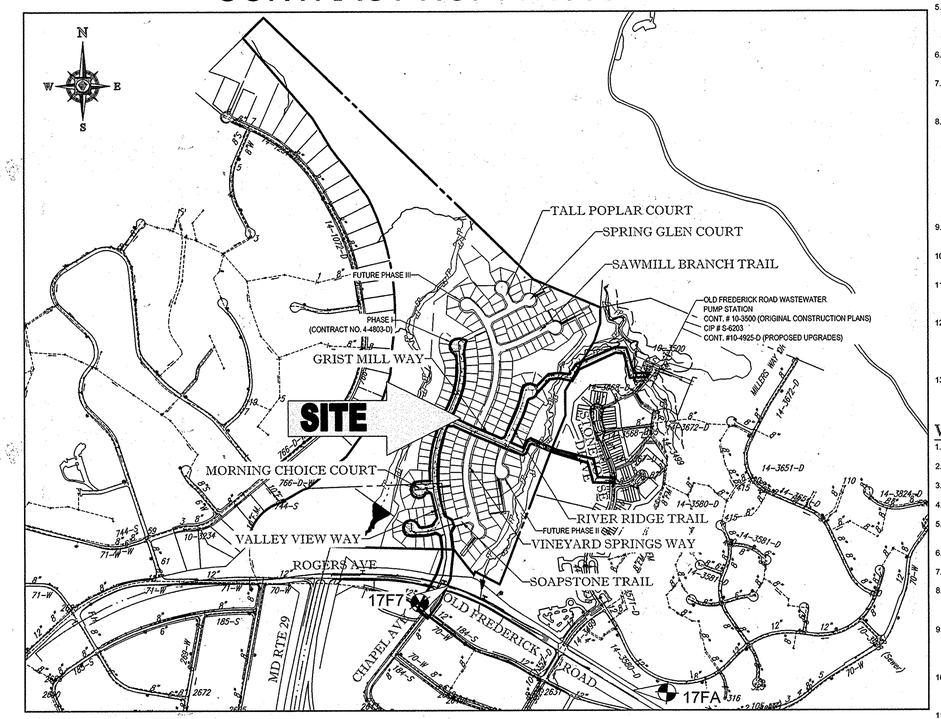
QUANTITIES TABLE

ITEMS	QUANTITIES ESTIMATED	QUANTITIES	AS-BUILT TYPE	MANUFACTURER / SUPPLIER
1/8" BEND	11			
1/16 " BEND	9			
1/32 " BEND	28			
1 1/2 WHC	59 EA.			
1 1/2 COPPER WATERLINE	2125 L.F.			
12" DR 18 C900 PVC WATER	3101 L.F.			
12" DIP CL 54 WATER	236 L.F.			
8" DR 18 C900 PVC WATER	1002 L.F.			
6" DR 18 C900 PVC WATER	170 L.F.			
4" DR 18 C900 PVC WATER	190 L.F.			
12" VALVE	9 EA.			
8" VALVE	9 EA.			
6" VALVE	8 EA.			
4" VALVE	2 EA.			
FIRE HYDRANTS	9 EA.			
12"X8" TEE	4 EA.			
12" x6" TEE	5 EA.			
12"X8" CROSS	2 EA.			
8" x6" TEE	4 EA.			
8"X4" REDUCER	2 EA.			
4" SHC	76 EA.			
4" SCH. 40 PVC SHC	2700 L.F.			
8" DIP CLASS 52 SAN. LINE	1014 L.F.			
8" SDR 35 PVC SAN. LINE	3241 L.F.			
SANITARY MANHOLE	25 EA.			
SAN DROP MANHOLE	4 EA			
TAPPING SLEEVE & VALVE	2 EA.			
AIR RELEASE VALVE	3 EA			
BLOW-OFF VALVE	2 EA.			
8" TEMPORARY CAP & BUTTRESS	4 EA.			
8" TEMPORARY BLOW-OFF, PLUG & BUTTRESS	2 EA.			
NAME OF UTILITY CONTRACTOR				
			CHECK BOX	
			AS-BUILT DATE	
			SURVEY AND DRAFTING DIVISION	



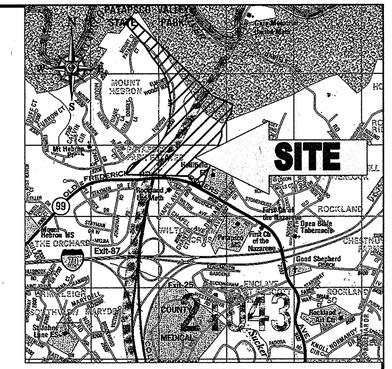
VICINITY MAP

SCALE: 1"=600'

TYPE OF BUILDING : RESIDENTIAL
DRAINAGE AREA : PATAPSCO
NUMBER OF LOTS/PARCELS/UNITS: 59
AREA OF RESIDENTIAL LOT/PARCEL: 113.23 AC
NUMBER OF W.H.C.: 59 (PHASE I)
NUMBER OF S.H.C.: 76 (PHASE I)
WATER ZONE: 630 W
TEST GRADIENT: 780 PSI

REFERENCE DRAWINGS

SP-13-008
WP-13-048
F-14-124
CONT. 14-4966-D (PHASE II W&S)
CONT. 14-4967-D (PHASE III W&S)



VICINITY MAP

COPYRIGHT ADC THE MAP PEOPLE
PERMIT USE NO. 20602153-5
SCALE: 1"=2000'
ADC MAP COORDINATES:4815/J2

GENERAL NOTES

1. APPROXIMATE LOCATIONS OF EXISTING MAINS ARE SHOWN. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PROTECT EXISTING MAINS AND SERVICES AND MAINTAIN UNINTERRUPTED SERVICE. ANY DAMAGE INCURRED SHALL BE REPAIRED IMMEDIATELY TO THE SATISFACTION OF THE ENGINEER AT THE CONTRACTOR'S EXPENSE.
2. TOPOGRAPHIC FIELD SURVEYS WERE PERFORMED ON JANUARY, 2009 BY AERO-METRIC.
3. THE COORDINATES SHOWN HEREON ARE BASED UPON THE HOWARD COUNTY GEODETIC CONTROL WHICH IS BASED UPON THE MARYLAND STATE PLAN COORDINATE SYSTEM. HORIZONTAL AND VERTICAL CONTROL DATUM ARE BASED ON HOWARD COUNTY MONUMENT NOS. 17FA AND 17F7 WHICH WERE USED FOR THIS PROJECT.

   HOWARD COUNTY MONUMENT NO: 17FA ELEV. = 476.72
   HOWARD COUNTY MONUMENT NO: 17F7 ELEV. = 469.40
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 MONIES OWED BY 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 TP AT THE LOCATIONS OF THE TEST PITS. A NOTE OR NOTES CONTAINING THE RESULTS OF THE TEST PIT OR PITS IN INCLUDED ON THE DRAWINGS. EXISTING UTILITIES IN THE VICINITY OF THE PROPOSED WORK FOR WHICH TEST PITS HAVE NOT BEEN DUG SHALL BE LOCATED BY THE CONTRACTOR TWO WEEKS IN ADVANCE OF CONSTRUCTION OPERATIONS AT HIS OWN EXPENSE.
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 (CONSTRUCTION SERVICES) 410-637-8713
   BGE (EMERGENCY) 410-685-0123
   BUREAU OF UTILITIES 410-313-4900
   COLONIAL PIPELINE COMPANY 410-795-1390
   MISS UTILITY 1-800-257-7777
   STATE HIGHWAY ADMINISTRATION 410-531-5533
   VERIZON 1-800-743-0033
9. TREES AND SHRUBS ARE TO BE PROTECTED FROM DAMAGE TO THE MAXIMUM EXTENT. TREES AND SHRUBS LOCATED WITHIN THE CONSTRUCTION STRIP ARE NOT 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. HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS, IN A LETTER DATED JANUARY 21, 2015, APPROVED A WAIVER REQUEST OF THE REQUIREMENTS OF SECTION 4.3.B.3.B AND 4.5.E FOR LOTS 61 (NEW 263) THROUGH 66 (NEW 268), LOTS 71 (NEW 273) THROUGH 74 (NEW 276), 97 (NEW 299), AND 101 (NEW 303) (NO BASEMENT GRAVITY SERVICE). AS A RESULT OF TOPOGRAPHY CAUSING DEPTHS OF SEWER IN EXCESS OF 20 FEET, BASEMENT SEWER SERVICE CANNOT BE PROVIDED TO THESE LOTS. FOR THESE LOTS: GRAVITY SEWER SERVICE TO BE PROVIDED TO FIRST FLOOR ONLY; BASEMENT SERVICE TO BE PROVIDED BY PRIVATE ON-SITE PUMP. THE APPROVAL AND INSPECTION OF ON-SITE PUMPING UNITS INCLUDES THE DEPARTMENT OF INSPECTION, LICENSES AND PERMITS (DILP).
13. HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS, IN A LETTER DATED JANUARY 21, 2015, APPROVED A WAIVER REQUEST OF THE REQUIREMENTS OF SECTION 3.3.B.5 (DEPTH OF COVER OVER WATER MAINS). THE WAIVER REQUEST TO ALLOW AN INCREASED DEPTH OF COVER OVER THE WATER MAIN CROSSING IN THE FOREST CONSERVATION EASEMENT, BETWEEN STATION 13+23 AND STATION 14+00 OF WATERLINE 'E', TO TEN (10) FEET IS APPROVED WITH THE FOLLOWING LIMITATIONS:
   - DR-14, C-900 PVC PIPE, WITH RESTRAINED JOINTS, SHALL BE USED BETWEEN STATION 13+06 AND STATION 14+20.
   - THE MAXIMUM COVER WITHIN THE LIMITS DESCRIBED ABOVE SHALL NOT EXCEED TEN (10) FEET.

WATER NOTES

1. ALL WATER MAINS TO BE P.V.C. C900 UNLESS OTHERWISE NOTED.
2. TOPS OF ALL WATER MAINS TO HAVE A MINIMUM OF 3'-6" OF COVER UNLESS OTHERWISE NOTED.
3. VALVES ADJACENT TO TEES SHALL BE STRAPPED TO TEES.
4. ALL FITTINGS SHALL BE BUTTRESSED OR ANCHORED WITH CONCRETE IN ACCORDANCE WITH THE STANDARD DETAILS UNLESS OTHERWISE PROVIDED FOR ON THE DRAWINGS.
5. FIRE HYDRANTS SHALL BE SET TO THE BURY LINE ELEVATIONS SHOWN ON THE DRAWINGS. ALL FIRE HYDRANTS SHALL BE RESTRAINED AND BUTTRESSED WITH CONCRETE IN ACCORDANCE WITH THE STANDARD DETAILS. THE SOIL AROUND THE FIRE HYDRANT SHALL BE COMPACTED IN ACCORDANCE WITH SECTION 1000 AND 1005 OF THE STANDARD SPECIFICATIONS.
6. THE CONTRACTOR SHALL NOT OPERATE ANY WATER MAIN VALVES ON THE EXISTING WATER SYSTEM.
7. TRACER WIRES AND CONTINUITY TEST STATION SHALL BE INSTALLED ON ALL DIP AND PVC WATER MAINS IN ACCORDANCE WITH HOWARD COUNTY DESIGN MANUAL.
8. FOR PVC WATER MAINS, ALL RECORDS FOR THE QUALITY CONTROL AND QUALIFICATIONS TEST REQUIREMENTS NOTED IN SECTION 5.1 OF THE AWWA STANDARD C900 FOR PVC PRESSURE PIPE SHALL BE SUBMITTED WITH PIPE MATERIALS CERTIFICATIONS OR SHOP DRAWING PRIOR TO APPROVAL OF THE MATERIAL FOR USE. THE TEST RECORDS SHALL BE FOR THE PIPE TO BE INSTALLED UNDER THIS CONTRACT. ALL PVC PIPE SHALL CONTAIN MARKINGS TO ALLOW CROSS REFERENCING OF THE PIPE SUPPLIED TO THE TEST RECORDS RECEIVED.
9. UNLESS OTHERWISE NOTED ON THE PLANS OR IN THE SPECIFICATIONS SACRIFICIAL ANODES SHALL BE ON ALL VALVES AND METALLIC FITTINGS USED WITH PVC WATER MAINS IN ACCORDANCE WITH VOLUME IV, STANDARD SPECIFICATIONS AND DETAILS FOR CONSTRUCTION. SEVENTEEN (17) POUND MAGNESIUM ANODES SHALL BE INSTALLED ON ALL VALVES AND DUCTILE IRON FITTINGS INCLUDING RESTRAINTS AND HARNESSES. TWELVE (12) POUND ZINC ANODES SHALL BE INSTALLED ON ALL STAINLESS STEEL FITTINGS AND SADDLES USED WITH PVC MAINS. ALL "TEES" USED WITH PVC MAINS SHALL BE DUCTILE IRON.
10. PROPER ASSEMBLY OF GASKETED PVC PIPE JOINTS: THE MANUFACTURER'S INSERTION LINE OF GASKETED PVC PIPE JOINTS INDICATES THE MAXIMUM DEPTH OF INSERTION OF THE SPIGOT INTO THE BELL. AFTER ASSEMBLY OF THE JOINT, THE INSERTION LINE SHALL REMAIN VISIBLE. DUAL INSERTION LINES ON GASKETED PVC PIPE INDICATE THE MAXIMUM AND MINIMUM DEPTH OF INSERTION OF THE SPIGOT INTO THE BELL. THE CONTRACTOR SHALL NOT OVER INSERT OR OVER HOME THE SPIGOT INTO THE BELL OF PVC PIPE.
11. ALL CHANGES IN HORIZONTAL OR VERTICAL DIRECTION OF PVC WATER PIPE SHALL BE MADE WITH STANDARD BENDS, 5-DEGREE SWEEPS OR HIGH DEFLECTION (HD) COUPLINGS. NO BENDING OF THE PIPE OR DEFLECTING OF PVC PIPE JOINTS IS PERMITTED. WHERE HIGH DEFECTION COUPLINGS OR 5-DEGREE SWEEPS ARE PERMITTED, THE CONTRACTOR SHALL PROVIDE ONE FULL PIPE LENGTH (20-FOOT LONG) ON EITHER SIDE OF THE HIGH DEFLECTION COUPLING OR 5-DEGREE SWEEP. THE CONTRACTOR SHALL USE A VIBRATORY PLATE COMPACTOR OR OTHER APPROVED MEANS TO THOROUGHLY COMPACT THE #57 STONE ON BOTH SIDES OF THE HIGH DEFECTION COUPLING OR 5-DEGREE SWEEP, TAKING CARE NOT TO USE COMPACTION EQUIPMENT DIRECTLY OVER THE FITTING.

    PVC HIGH DEFLECTION COUPLINGS SHALL BE LIMITED TO A TOTAL DEFECTION OF 3-DEGREES (1 ½-DEGREE ON EITHER END OF THE COUPLING), SHALL BE RATED FOR A MINIMUM 200 PSI MEETING THE REQUIREMENTS OF AWWA C900, SHALL HAVE A MINIMUM LAY LENGTH OF 9-INCHES AND SHALL HAVE CENTER STOPS. PVC HIGH DEFLECTION COUPLINGS SHALL BE CERTAINTEED PVC HIGH DEFLECTION (HD) STOP COUPLINGS OR EQUAL.

    FIVE DEGREE SWEEPS SHALL BE BELL BY SPIGOT, RATED FOR A MINIMUM 225 PSI, DR18 MEETING THE REQUIREMENTS OF AWWA C900 AND SHALL BE MULTI FITTINGS (IPEX) BLUE BRUTE DR18 OR EQUAL.
12. WHEN PVC HIGH DEFECTION COUPLINGS OR PVC 5-DEGREE SWEEPS ARE USED TO FACILITATE CHANGES IN HORIZONTAL OR VERTICAL ALIGNMENTS OF AWWA C-900 PVC PIPELINES, THE CONTRACTOR SHALL INSTALL DEVICES FOR THE PREVENTION OF OVER-INSERTION OF THE PVC PIPE SPIGOTS OR PLAIN ENDS INTO THE PUSH ON BELL JOINT ON BOTH SIDES OF THE HIGH DEFECTION COUPLINGS AND 5 DEGREE SWEEPS. BELL STOPS SHALL BE PLACED AT THE PROPER INSERTION LINE FOR THE FITTING. THE BELL STOP SHALL BE MANUFACTURED OF DUCTILE IRON AND INCORPORATE AN EXPANSION RETENTION SPRING TO ALLOW FOR PIPE EXPANSION AND CONTRACTION. THE BELL STOPS SHALL BE SERIES 5000 MEGA-STOP, AS MANUFACTURED BY EBAA IRON, INC. OR APPROVED EQUAL.
13. EACH DWELLING WILL BE SERVED BY A 1-1/2" DIAMETER WHC. WITH A 1" METER WHICH WILL BE LOCATED AT THE PROPERTY LINE. THE PREFERRED LOCATION OF THE OUTSIDE WATER METER SETTING IS IN A GRASS AREA WITH THE ROAD RIGHT-OF-WAY AND OUTSIDE OF TRAFFIC BEARING AREAS.
14. THE 12" TAPPING CONNECTION ALONG STONE HOUSE DRIVE WILL RESULT IN SERVICE INTERRUPTION TO THE UNITS LOCATED AT THE FOLLOWING ADDRESSES: 8781, 8783, 8784, 8785, 8786, 8787, 8788, 8789, 8790, 8791, 8792, 8794, 8795, 8797, 8798, 8799, 8800, 8801, 8802, 8803, 8804, 8807, 8809, 8811, 8813, 8815, 8817, 882,1 8823, 8825, 8827, AND 88229. THE EXISTING SERVICE TO THESE UNITS SHALL BE INTERRUPTED ON A WEEKDAY, ONLY BETWEEN THE HOURS OF 9:00AM AND 2:00PM. SHOULD THE TAPPING WORK EXTEND MULTIPLE DAYS, SERVICE MUST BE RESTORED BETWEEN WORKING DAYS. TWO (2) WEEK NOTICE OF SERVICE INTERRUPTION SHALL BE PROVIDED BY THE CONTRACTOR, IN WRITING, TO ALL UNITS IMPACTED BY THE INTERRUPTION.

BENCHMARK

GEODETIC SURVEY CONTROL -17FA
ELEV. 476.721'
N 594,948.426
E 1,364,626.770

GEODETIC SURVEY CONTROL - 17F7
ELEV. 469.399'
N 595,828.688
E 1,363,088.330

SEDIMENT CONTROL MEASURES FOR THIS CONTRACT WILL BE IMPLEMENTED IN ACCORDANCE WITH SECTION 308 OF THE SPECIFICATIONS AND AS SHOWN ON F-14-124

SEWER NOTES

1. ALL SEWER MAINS SHALL BE SDR 35 OR SCH. 40 PVC UNLESS OTHERWISE NOTED.
2. ALL MANHOLES SHALL BE 4' - 0" INSIDE DIAMETER UNLESS OTHERWISE NOTED.
3. FORCE MAINS SHALL BE D.I.P. ONLY.
4. MANHOLES SHOWN WITH 12" AND 16" WALLS ARE FOR BRICK MANHOLES ONLY.
5. MANHOLES DESIGNATED W.T. IN PLAN AND PROFILE SHALL HAVE WATERTIGHT FRAME AND COVERS, STANDARD DETAIL G5.52. WHERE WATERTIGHT FRAME AND COVER IS USED, SET TOP OF FRAME 1" - 6" ABOVE FINISHED GRADE UNLESS OTHERWISE NOTED ON THE DRAWINGS.
6. HOUSE(S) WITH THE SYMBOL "C.N.S." INDICATES THAT CELLAR CANNOT BE SERVED.

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

JOHN R. ROBERTSON 4/29/16
HOWARD SCD DATE

OWNER

ESTATES AT PATAPSCO PARK, LLC
24012 FREDERICK ROAD
CLARKSBURG, MD 20861

CONTACT: MR. DAN SNYDER
PHONE: (301) 674-8509

DEVELOPER

ESTATES AT PATAPSCO PARK, LLC
24012 FREDERICK ROAD
CLARKSBURG, MD 20861

CONTACT: MR. DAN SNYDER
PHONE: (301) 674-8509

PROFESSIONAL CERTIFICATION
I, BRANDON R. ROWE, 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. 40806, EXPIRATION DATE: 7/3/2017

THE FOLLOWING STATES REQUIRE NOTIFICATION BY EXCAVATORS, DESIGNERS, OR ANY PERSON PREPARING TO DISTURB THE EARTH'S SURFACE ANYWHERE IN THE STATE. IN VIRGINIA, MARYLAND, THE DISTRICT OF COLUMBIA, AND DELAWARE CALL - 811
(WV 1-800-245-4848) (PA 1-800-242-1776) (DC 1-800-257-7777) (VA 1-800-552-7001) (MD 1-800-257-7777) (DE 1-800-282-8555)

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND

4/25/16
CHIEF, BUREAU OF UTILITIES DATE

DEPARTMENT OF PLANNING & ZONING HOWARD COUNTY, MARYLAND

5.17.16
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

BOHLER ENGINEERING
901 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21204
Phone: (410) 821-7900
Fax: (410) 821-7987
www.BohlerEngineering.com

STATE OF MARYLAND BRANDON R. ROWE No. 40806 PROFESSIONAL ENGINEER

DES: J.A.				
DRN: R.L.B.				
CHK: B.R.R.	2	4/13/16	REDLINE REVISION - PHASED PLAN	BRR
DATE: 2/12/16	1	10/21/15	REDLINE REVISION - LOT ADJUSTMENT	BRR
	REV.	DATE	DESCRIPTION	BY

PHASE I
TITLE SHEET

PARCEL NO. N/A
600' SCALE MAP NO. 17 BLOCK NO. --

ESTATES AT PATAPSCO PARK
ROGERS AVENUE
BUILDABLE LOTS 203 - 248 & 373 - 385 (W&S)
BUILDABLE LOTS 321 - 337 (SAN. ONLY)
6TH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND
CONTRACT NO.: 14-4803-D

SCALE AS SHOWN

SHEET 1 OF 16

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

HOWARD SCD 4/29/16 DATE

OWNER

ESTATES AT PATAPSCO PARK, LLC
24012 FREDERICK ROAD
CLARKSBURG, MD 20861

CONTACT: MR. DAN SNYDER
PHONE: (301) 674-8509

DEVELOPER

ESTATES AT PATAPSCO PARK, LLC
24012 FREDERICK ROAD
CLARKSBURG, MD 20861

CONTACT: MR. DAN SNYDER
PHONE: (301) 674-8509

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SEDIMENT CONTROL MEASURES FOR THIS CONTRACT WILL BE IMPLEMENTED IN ACCORDANCE WITH SECTION 308 OF THE SPECIFICATIONS AND AS SHOWN ON F-14-124.

TEST PIT NOTE

TP CONTRACTOR TO TEST PIT FOR EXACT LOCATION OF EXISTING UTILITY AND SUBMIT ANY DISCREPANCIES TO BOHLER ENGINEERING IN WRITING.

100 50 25 0 100
1"= 100'

DIG WITH CARE — CALL BEFORE YOU DIG

THE FOLLOWING STATES REQUIRE NOTIFICATION BY EXCAVATORS, DESIGNERS, OR ANY PERSON PREPARING TO DISTURB THE EARTH'S SURFACE ANYWHERE IN THE STATE. IN VIRGINIA, MARYLAND, THE DISTRICT OF COLUMBIA, AND DELAWARE CALL - 811
(WV 1-800-245-4848) (PA 1-800-242-1776) (DC 1-800-257-7777)
(VA 1-800-552-7001) (MD 1-800-257-7777) (DE 1-800-282-8555)

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND

CHIEF, BUREAU OF UTILITIES 4/25/16 DATE

DEPARTMENT OF PLANNING & ZONING HOWARD COUNTY, MARYLAND

CHIEF, DEVELOPMENT ENGINEERING DIVISION 5.12.16 DATE

BOHLER ENGINEERING
901 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21204
Phone: (410) 821-7900
Fax: (410) 821-7987
www.BohlerEngineering.com

B.R. ROWE — PROFESSIONAL ENGINEER — STATE OF MARYLAND — LICENSE NO. 40808

DES: J.A.				
DRN: R.L.B.				
CHK: B.R.R.	2	4/13/16	REDLINE REVISION - PHASED PLAN	BRR
	1	10/21/15	REDLINE REVISION - LOT ADJUSTMENT	BRR
DATE: 2/12/16	REV.	DATE	DESCRIPTION	BY

PHASE I
COMPREHENSIVE PLAN VIEW

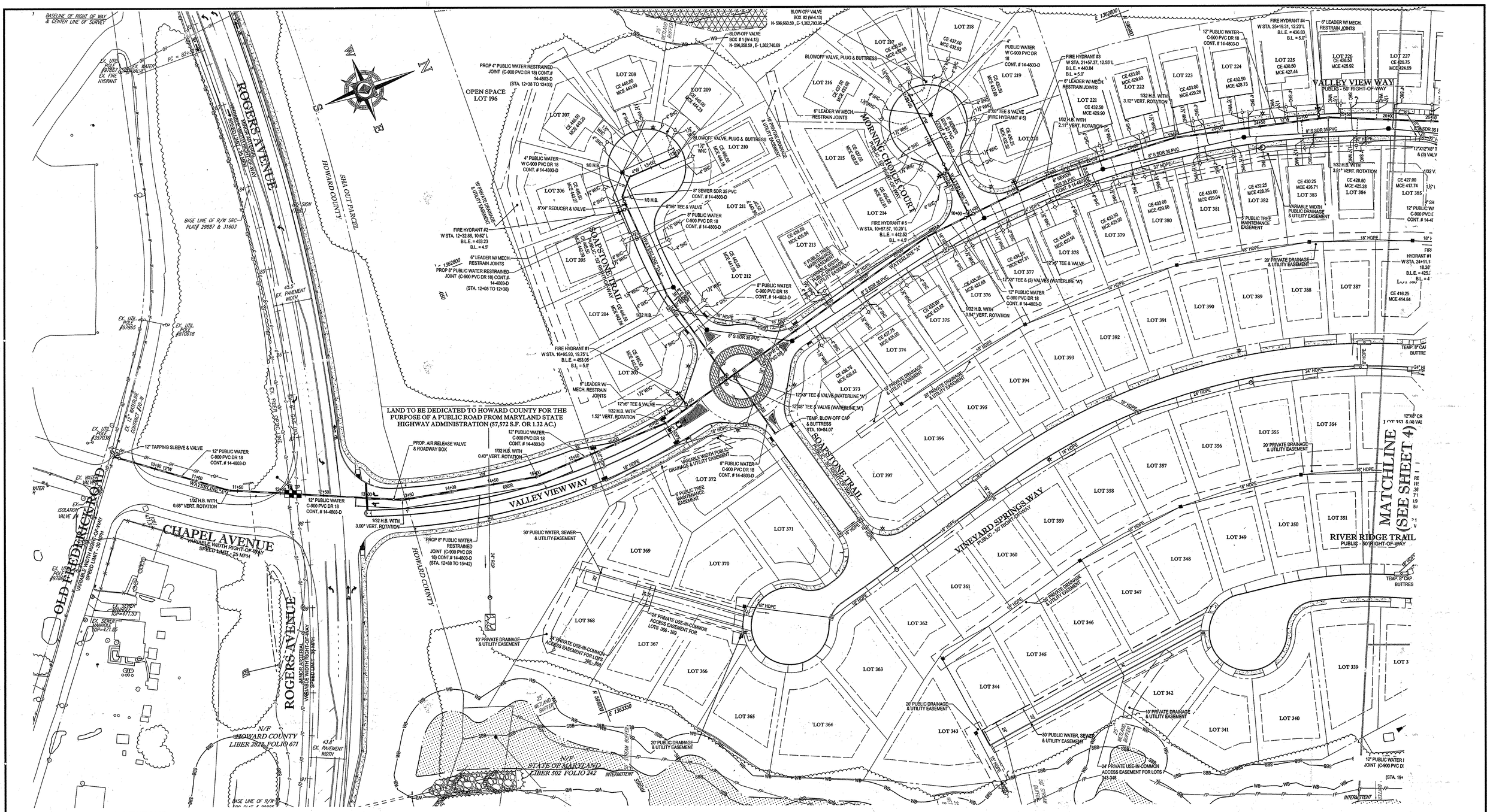
PARCEL NO. N/A
600' SCALE MAP NO. 17 BLOCK NO. –

ESTATES AT PATAPSCO PARK

ROGERS AVENUE
BUILDABLE LOTS 203 - 248 & 373 - 385 (W&S)
BUILDABLE LOTS 321 - 337 (SAN. ONLY)
6TH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND
CONTRACT NO.: 14-4803-D

SCALE 1" = 100'

SHEET 2 OF 16



SEDIMENT CONTROL MEASURES FOR THIS CONTRACT WILL BE IMPLEMENTED IN ACCORDANCE WITH SECTION 308 OF THE SPECIFICATIONS AND AS SHOWN ON F-14-124.

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

HOWARD SCD 4/29/16

OWNER

ESTATES AT PATAPSCO PARK, LLC
24012 FREDERICK ROAD
CLARKSBURG, MD 20861

CONTACT: MR. DAN SNYDER
PHONE: (301) 674-8509

DEVELOPER

ESTATES AT PATAPSCO PARK, LLC
24012 FREDERICK ROAD
CLARKSBURG, MD 20861

CONTACT: MR. DAN SNYDER
PHONE: (301) 674-8509

PROFESSIONAL CERTIFICATION
I, BRANDON R. ROWE, 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. 40608, EXPIRATION DATE: 7/3/2017

TEST PIT NOTE

TP CONTRACTOR TO TEST PIT FOR EXACT LOCATION OF EXISTING UTILITY AND SUBMIT ANY DISCREPANCIES TO BOHLER ENGINEERING IN WRITING.

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(WV 1-800-245-4848) (PA 1-800-242-1776) (DC 1-800-257-7777) (VA 1-800-552-7001) (MD 1-800-257-7777) (DE 1-800-282-8555)

1" = 50'

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND

4/25/16
CHIEF, BUREAU OF UTILITIES DATE

DEPARTMENT OF PLANNING & ZONING HOWARD COUNTY, MARYLAND

5-12-16
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

BOHLER ENGINEERING
901 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21204
Phone: (410) 821-7900
Fax: (410) 821-7987
www.BohlerEngineering.com

PROFESSIONAL ENGINEER
BRANDON R. ROWE
No. 40608

DES: J.A.
DRN: R.L.B.
CHK: B.R.R.
DATE: 2/12/16

REV.	DATE	DESCRIPTION	BY
2	4/13/16	REDLINE REVISION - PHASED PLAN	BRR
1	10/21/15	REDLINE REVISION - LOT ADJUSTMENT	BRR

PHASE I
PUBLIC WATER AND SEWER PLAN

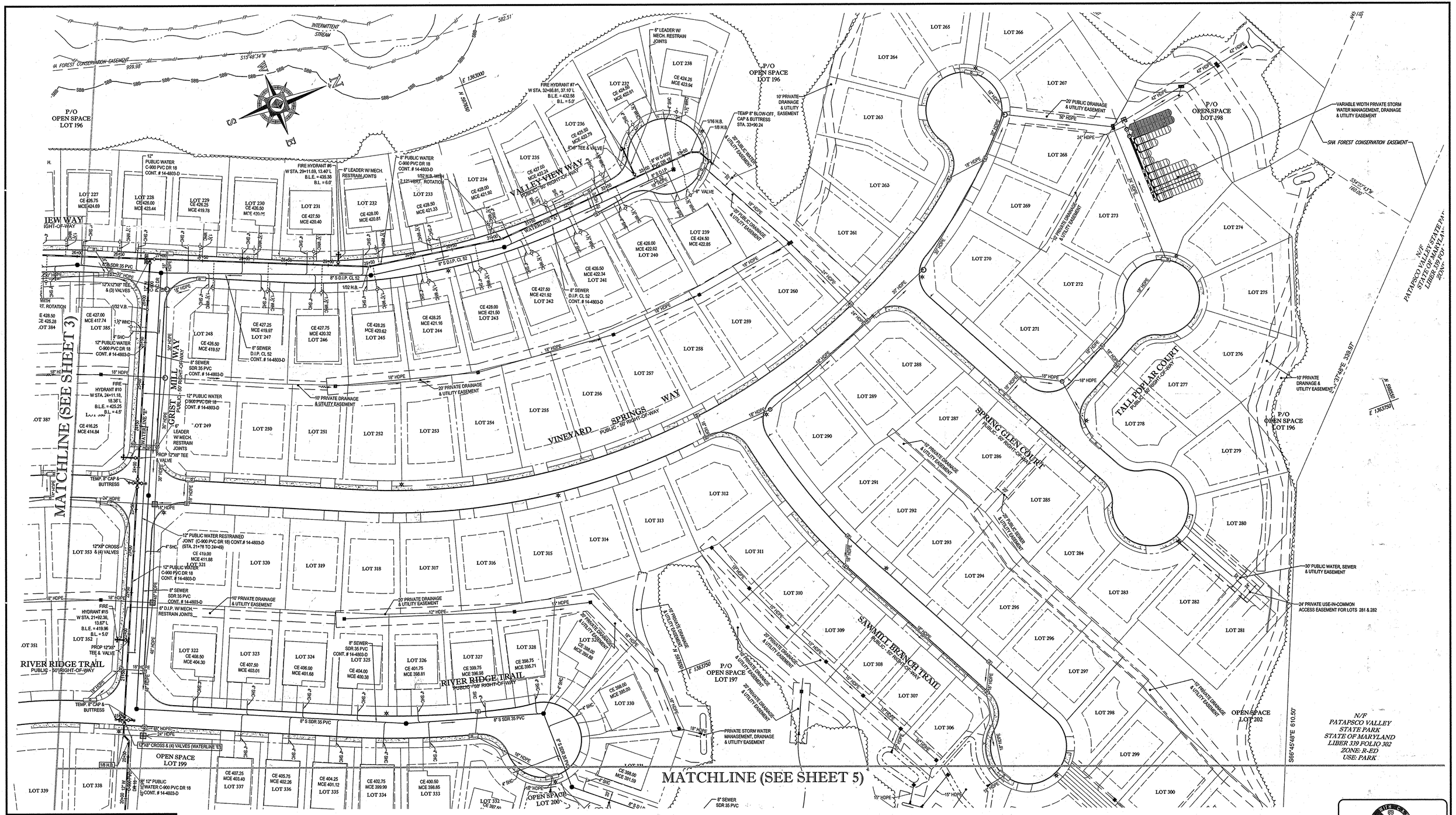
PARCEL NO. N/A
600' SCALE MAP NO. 17 BLOCK NO. --

ESTATES AT PATAPSCO PARK

ROGERS AVENUE
BUILDABLE LOTS 203 - 248 & 373 - 385 (W&S)
BUILDABLE LOTS 321 - 337 (SAN. ONLY)
6TH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND
CONTRACT NO.: 14-4803-D

SCALE 1" = 50'

SHEET 3 OF 16



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

HOWARD SCD — DATE 4/29/16

SEDIMENT CONTROL MEASURES FOR THIS CONTRACT WILL BE IMPLEMENTED IN ACCORDANCE WITH SECTION 308 OF THE SPECIFICATIONS AND AS SHOWN ON F-14-124.

OWNER

ESTATES AT PATAPSCO PARK, LLC
24012 FREDERICK ROAD
CLARKSBURG, MD 20861

CONTACT: MR. DAN SNYDER
PHONE: (301) 674-8509

DEVELOPER

ESTATES AT PATAPSCO PARK, LLC
24012 FREDERICK ROAD
CLARKSBURG, MD 20861

CONTACT: MR. DAN SNYDER
PHONE: (301) 674-8509

PROFESSIONAL CERTIFICATION
I, BRANDON R. ROWE, 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. 40898, EXPIRATION DATE: 7/3/2017

TEST PIT NOTE

CONTRACTOR TO TEST PIT FOR EXACT LOCATION OF EXISTING UTILITIES AND SUBMIT ANY DISCREPANCIES TO BOHLER ENGINEERING IN WRITING.

50 25 12.5 0 50
1" = 50'

THE FOLLOWING STATES REQUIRE NOTIFICATION BY EXCAVATORS, DESIGNERS, OR ANY PERSON PREPARING TO DISTURB THE EARTH'S SURFACE ANYWHERE IN THE STATE. IN VIRGINIA, MARYLAND, THE DISTRICT OF COLUMBIA, AND DELAWARE CALL - 811
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(VA 1-800-552-7001) (MD 1-800-257-7777) (DE 1-800-282-8555)

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND

CHIEF, BUREAU OF UTILITIES — DATE 4/29/16

DEPARTMENT OF PLANNING & ZONING HOWARD COUNTY, MARYLAND

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 5-12-16

BOHLER ENGINEERING
901 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21204
Phone: (410) 821-7900
Fax: (410) 821-7987
www.BohlerEngineering.com

STATE OF MARYLAND — BRANDON R. ROWE — PROFESSIONAL ENGINEER — No. 40898

DES: J.A.				
DRN: R.L.B.				
CHK: B.R.R.	2	4/13/16	REDLINE REVISION - PHASED PLAN	BRR
	1	10/21/13	REDLINE REVISION - LOT ADJUSTMENT	BRR
DATE: 2/12/16	REV.	DATE	DESCRIPTION	BY

PHASE I
PUBLIC WATER AND SEWER PLAN

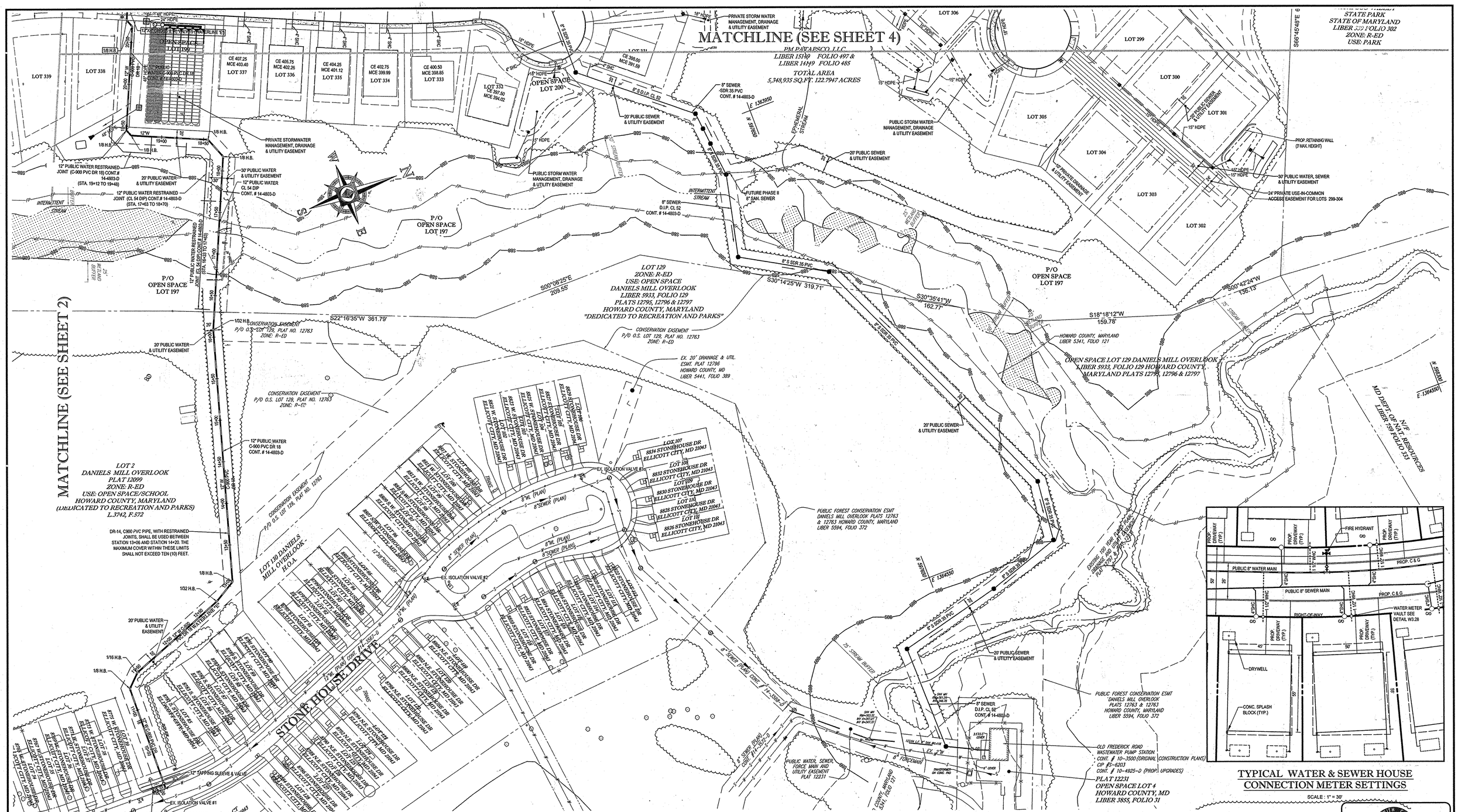
PARCEL NO. N/A
600' SCALE MAP NO. 17 BLOCK NO. –

ESTATES AT PATAPSCO PARK

ROGERS AVENUE
BUILDABLE LOTS 203 - 248 & 373 - 385 (W&S)
BUILDABLE LOTS 321 - 337 (SAN. ONLY)
6TH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND
CONTRACT NO.: 14-4803-D

SCALE 1" = 50'

SHEET 4 OF 16



OWNER

ESTATES AT PATAPSCO PARK, LLC
24012 FREDERICK ROAD
CLARKSBURG, MD 20861

CONTACT: MR. DAN SNYDER
PHONE: (301) 674-8509

DEVELOPER

ESTATES AT PATAPSCO PARK, LLC
24012 FREDERICK ROAD
CLARKSBURG, MD 20861

CONTACT: MR. DAN SNYDER
PHONE: (301) 674-8509

SEDIMENT CONTROL MEASURES FOR THIS CONTRACT WILL BE IMPLEMENTED IN ACCORDANCE WITH SECTION 308 OF THE SPECIFICATIONS AND AS SHOWN ON F-14-124.

PROFESSIONAL CERTIFICATION
I, BRANDON R. ROWE, 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. 40838, EXPIRATION DATE: 7/3/2017

TEST PIT NOTE

CONTRACTOR TO TEST PIT FOR EXACT LOCATION OF EXISTING UTILITY AND SUBMIT ANY DISCREPANCIES TO BOHLER ENGINEERING IN WRITING.

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

HOWARD SCD — DATE

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(VA 1-800-552-7001) (MD 1-800-257-7777) (DE 1-800-282-8555)

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND

CHIEF, BUREAU OF UTILITIES — DATE 4/20/16

DEPARTMENT OF PLANNING & ZONING HOWARD COUNTY, MARYLAND

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 5-12-16

BOHLER ENGINEERING
901 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21204
Phone: (410) 821-7900
Fax: (410) 821-7987
www.BohlerEngineering.com

B.R. ROWE — PROFESSIONAL ENGINEER

DES: J.A.				
DRN: R.L.B.				
CHK: B.R.R.	2	4/13/16	REDLINE REVISION - PHASED PLAN	BRR
	1	10/21/15	REDLINE REVISION - LOT ADJUSTMENT	BRR
DATE: 2/12/16	REV.	DATE	DESCRIPTION	BY

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PUBLIC WATER AND SEWER PLAN

PARCEL NO. N/A
600' SCALE MAP NO. 17 BLOCK NO. —

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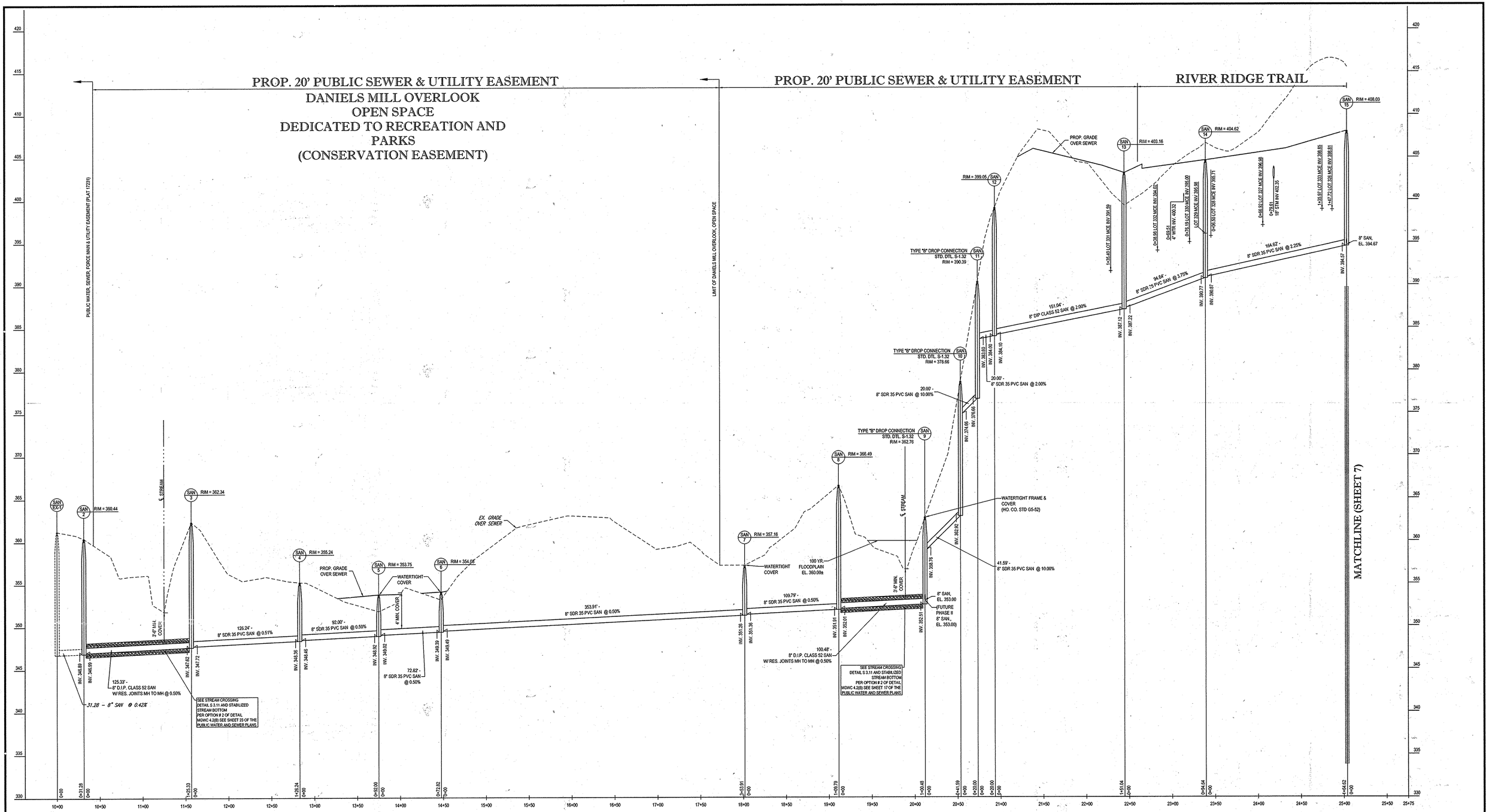
ROGERS AVENUE
BUILDABLE LOTS 203 - 248 & 373 - 385 (W&S)
BUILDABLE LOTS 321 - 337 (SAN. ONLY)
6TH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND
CONTRACT NO.: 14-4803-D

SCALE 1" = 50'

SHEET 5 OF 16



PROPOSED SANITARY PROFILE (EX-1 TO SAN-15)

SCALE: 1"= 50' HORIZONTAL
1"= 5' VERTICAL

PROFESSIONAL CERTIFICATION
I, BRANDON R. ROWE, 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. 40808, EXPIRATION DATE: 7/3/2017

50 25 12.5 0 50
1"= 50'

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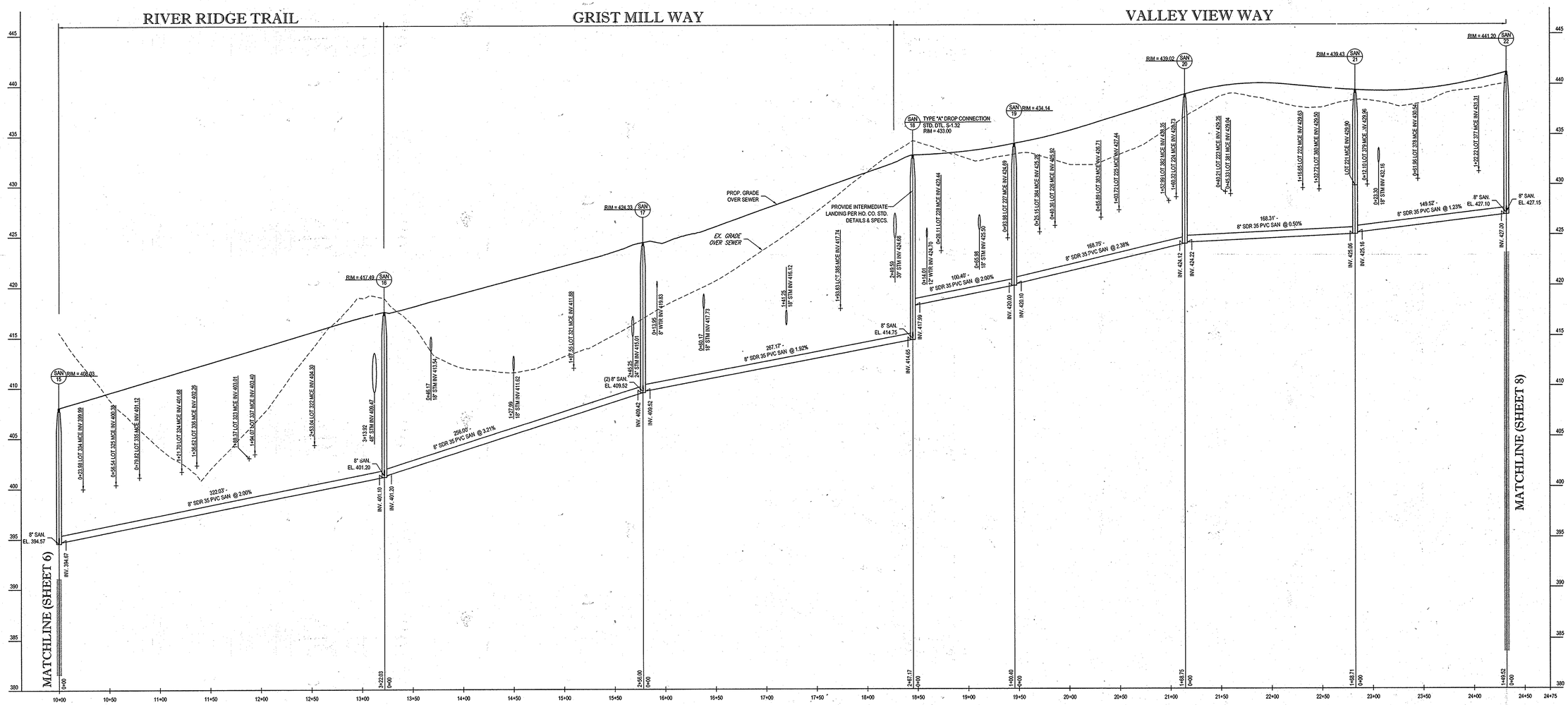
DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND 4/25/16 CHIEF, BUREAU OF UTILITIES DATE	DEPARTMENT OF PLANNING & ZONING HOWARD COUNTY, MARYLAND 5.12.16 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE	BOHLER ENGINEERING 901 DULANEY VALLEY ROAD, SUITE 801 TOWSON, MARYLAND 21204 Phone: (410) 821-7900 Fax: (410) 821-7987 www.BohlerEngineering.com	B.R. ROWE PROFESSIONAL ENGINEER 4/14/16	DES: J.A. DRN: R.L.B. CHK: B.R.R. DATE: 2/12/16	2	4/13/16	REDLINE REVISION - PHASED PLAN	BRR
					1	10/21/15	REDLINE REVISION - LOT ADJUSTMENT	BRR
					REV.	DATE	DESCRIPTION	BY

PHASE I
PUBLIC SANITARY
SEWER PROFILES

PARCEL NO. N/A
600' SCALE MAP NO. 17 BLOCK NO. --

ESTATES AT PATAPSCO PARK
ROGERS AVENUE
BUILDABLE LOTS 203 - 248 & 373 - 385 (W&S)
BUILDABLE LOTS 321 - 337 (SAN. ONLY)
6TH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND
CONTRACT NO.: 14-4803-D

SCALE AS SHOWN
SHEET 6 OF 16



PROPOSED SANITARY PROFILE (SAN-15 TO SAN-22)

SCALE: 1"= 50' HORIZONTAL
1"= 5' VERTICAL

50 25 12.5 0 50
1"= 50'

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DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND

4/25/16
CHIEF, BUREAU OF UTILITIES DATE

DEPARTMENT OF PLANNING & ZONING HOWARD COUNTY, MARYLAND

5-12-16
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

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B.R. ROWE
PROFESSIONAL ENGINEER

DES: J.A.				
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	1	10/21/15	REDLINE REVISION - LOT ADJUSTMENT	BRR
DATE: 2/12/16	REV.	DATE	DESCRIPTION	BY

PHASE I
PUBLIC SANITARY
SEWER PROFILES

PARCEL NO. N/A
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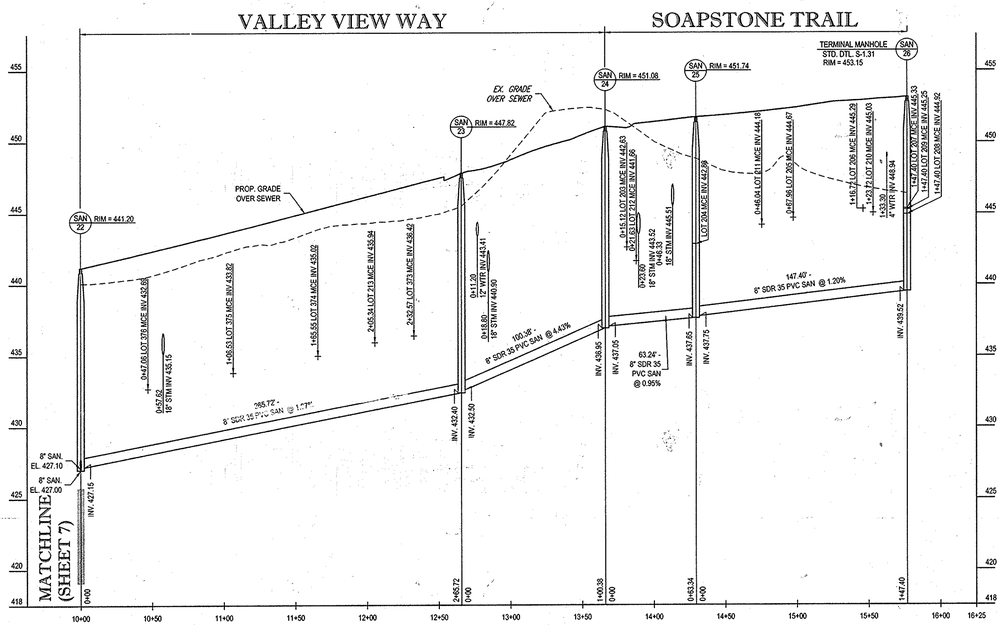
6TH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND
CONTRACT NO.: 14-4803-D

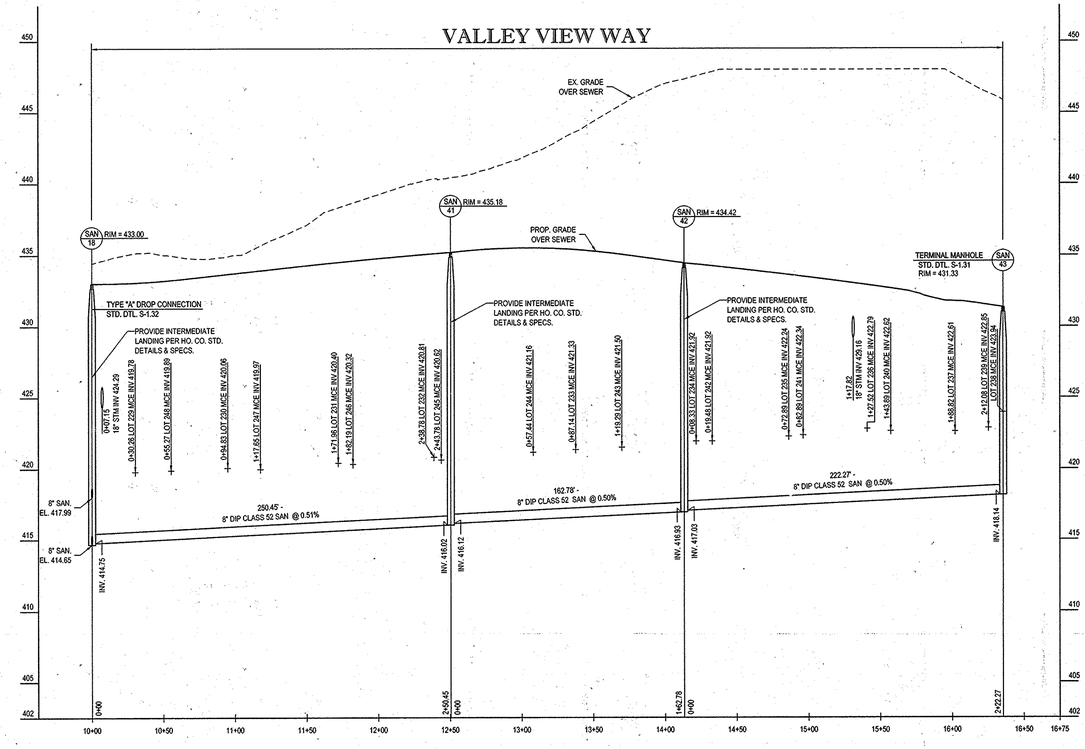
SCALE AS SHOWN

SHEET 7 OF 16



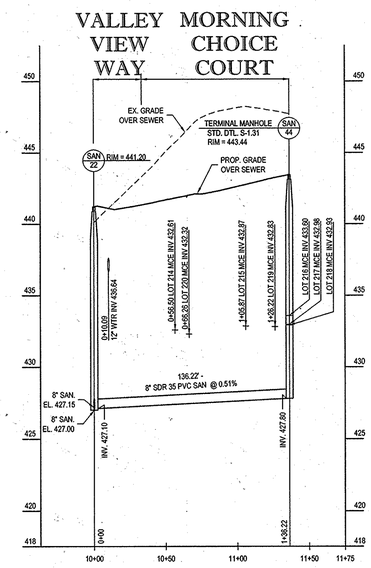
PROPOSED SANITARY PROFILE (SAN-22 TO SAN-26)

SCALE: 1"= 50' HORIZONTAL
1"= 5' VERTICAL



PROPOSED SANITARY PROFILE (SAN-18 TO SAN-43)

SCALE: 1"= 50' HORIZONTAL
1"= 5' VERTICAL



PROPOSED SANITARY PROFILE (SAN-22 TO SAN-44)

SCALE: 1"= 50' HORIZONTAL
1"= 5' VERTICAL

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50 25 12.5 0 50
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STATE OF MARYLAND — BRANDON R. ROWE — No. 40808 — PROFESSIONAL ENGINEER

DES: J.A.
DRN: R.L.B.
CHK: B.R.R.
DATE: 2/12/16

REV.	DATE	DESCRIPTION	BY
2	4/13/16	REDLINE REVISION - PHASED PLAN	BRR
1	10/21/15	REDLINE REVISION - LOT ADJUSTMENT	BRR

PHASE I
PUBLIC SANITARY SEWER PROFILES

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600' SCALE MAP NO. 17 BLOCK NO. --

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6TH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND
CONTRACT NO.: 14-4803-D

SCALE AS SHOWN

SHEET 8 OF 16

SANITARY STRUCTURE SCHEDULE

NAME	TYPE	NORTHING EASTING	RIM ELEV. (FT.)	INVERTS
2	STANDARD 48" MANHOLE (HO. CO. STD G-5.12)	N 597596.52 E 1364745.93	360.44	INV IN = 346.99, INV OUT = 346.89
3	STANDARD 48" MANHOLE (HO. CO. STD G-5.12)	N 597594.72 E 1364620.61	362.34	INV IN = 347.72 INV OUT = 347.62
4	STANDARD 48" MANHOLE (HO. CO. STD G-5.12)	N 597717.20 E 1364590.03	355.24	INV IN = 348.46 INV OUT = 348.36
5	SHALLOW 48" MANHOLE (HO. CO. STD G-5.12)	N 597804.42 E 1364560.75	353.75	INV IN = 349.02 INV OUT = 348.92
6	SHALLOW 48" MANHOLE (HO. CO. STD G-5.12)	N 597812.12 E 1364488.34	354.08	INV IN = 349.49 INV OUT = 349.39
7	SHALLOW 48" MANHOLE (HO. CO. STD G-5.12)	N 597669.19 E 1364164.57	357.16	INV IN = 351.36 INV OUT = 351.26
8	STANDARD 48" MANHOLE (HO. CO. STD G-5.12)	N 597574.24 E 1364109.46	365.49	INV IN = 352.01 INV OUT = 351.91
9	48" MANHOLE DROP CONN. TYPE 'B' (HO. CO. STD S-1.32)	N 597596.19 E 1364011.41	362.76	INV IN = 358.76 INV IN = 353.00 INV OUT = 352.51
10	48" MANHOLE DROP CONN. TYPE 'A' (HO. CO. STD S-1.32)	N 597591.96 E 1363970.03	378.66	INV IN = 374.66 INV OUT = 362.92
11	48" MANHOLE DROP CONN. TYPE 'A' (HO. CO. STD S-1.32)	N 597589.92 E 1363950.13	390.39	INV IN = 383.60 INV OUT = 376.66
12	STANDARD 48" MANHOLE (HO. CO. STD G-5.12)	N 597587.88 E 1363930.24	399.05	INV IN = 384.10 INV OUT = 384.00
13	STANDARD 48" MANHOLE (HO. CO. STD G-5.12)	N 597472.10 E 1363833.24	403.16	INV IN = 387.22 INV OUT = 387.12
14	STANDARD 48" MANHOLE (HO. CO. STD G-5.12)	N 597472.05 E 1363738.60	404.62	INV IN = 390.87 INV OUT = 390.77
15	STANDARD 48" MANHOLE (HO. CO. STD G-5.12)	N 597314.42 E 1363691.15	408.03	INV IN = 394.67 INV OUT = 394.57
16	STANDARD 48" MANHOLE (HO. CO. STD G-5.12)	N 597020.40 E 1363559.77	417.49	INV IN = 401.20 INV IN = 401.20 INV OUT = 401.10
17	STANDARD 48" MANHOLE (HO. CO. STD G-5.12)	N 597124.80 E 1363326.03	424.33	INV IN = 409.52 INV IN = 409.52 INV IN = 409.52 INV OUT = 409.42
18	48" MANHOLE DROP CONN. TYPE 'A' (HO. CO. STD S-1.32) PROVIDE INTERMEDIATE LANDING PER HO. CO. STD. DETAILS & SPECS.	N 597233.76 E 1363082.08	433.00	INV IN = 417.99 INV IN = 414.75 INV OUT = 414.65
19	STANDARD 48" MANHOLE (HO. CO. STD G-5.12)	N 597143.91 E 1363037.27	434.14	INV IN = 420.10 INV OUT = 420.00
20	STANDARD 48" MANHOLE (HO. CO. STD G-5.12)	N 596982.95 E 1362986.61	439.02	INV IN = 424.22 INV OUT = 424.12
21	STANDARD 48" MANHOLE (HO. CO. STD G-5.12)	N 596816.27 E 1362963.20	439.43	INV IN = 425.16 INV OUT = 425.06
22	STANDARD 48" MANHOLE (HO. CO. STD G-5.12)	N 596666.82 E 1362967.11	441.20	INV IN = 427.15 INV IN = 427.10 INV OUT = 427.00
23	STANDARD 48" MANHOLE (HO. CO. STD G-5.12)	N 596406.81 E 1363022.39	447.82	INV IN = 432.50 INV OUT = 432.40
24	STANDARD 48" MANHOLE (HO. CO. STD G-5.12)	N 596318.57 E 1362974.54	451.08	INV IN = 437.05 INV OUT = 436.95

SANITARY STRUCTURE SCHEDULE

NAME	TYPE	NORTHING EASTING	RIM ELEV. (FT.)	INVERTS
25	STANDARD 48" MANHOLE (HO. CO. STD G-5.12)	N 596299.85 E 1362914.13	451.70	INV IN = 437.75 INV OUT = 437.65
26	TERMINAL MANHOLE (HO. CO. STD S-1.31)	N 596292.24 E 1362766.93	453.15	INV OUT = 439.52
41	STANDARD 48" MANHOLE (HO. CO. STD. G-5.12) PROVIDE INTERMEDIATE LANDING PER HO. CO. STD. DETAILS & SPECS.	N 597466.57 E 1363174.38	435.18	INV IN = 416.12 INV OUT = 416.02
42	STANDARD 48" MANHOLE (HO. CO. STD. G-5.12) PROVIDE INTERMEDIATE LANDING PER HO. CO. STD. DETAILS & SPECS.	N 597627.42 E 1363199.39	434.42	INV IN = 417.03 INV OUT = 416.93
43	TERMINAL MANHOLE (HO. CO. STD S-1.31)	N 597849.19 E 1363184.48	431.33	INV OUT = 418.14
44	TERMINAL MANHOLE (HO. CO. STD S-1.31)	N 596651.67 E 1362832.24	443.44	INV OUT = 427.80

SHC TABLE

LOT	FF ELEV.	CELLAR ELEV.	INV. @ MAIN	SHC LENGTH TO ROW (FT)	SHC SLOPE WITHIN ROW	INVERT @ ROW	SHC SLOPE WITHIN LOT	MAX. SHC LENGTH (FT)	2.50 FT BELOW CELLAR	MIN. CELLAR ELEV. (MCE)	CONNECTION TYPE
203	456.50	446.50	437.19	30.26	4.0%	438.40	4.0%	116.60	2.50	445.56	STD SHC
204	456.50	446.50	437.75	30.26	4.0%	438.96	4.0%	100.34	2.50	445.47	STD SHC
205	456.50	446.50	438.57	31.67	3.0%	439.52	3.0%	89.30	2.50	444.67	STD SHC
206	456.50	446.50	439.15	28.33	3.0%	440.00	3.0%	92.99	2.50	445.29	STD SHC
207	456.50	446.50	439.52	34.67	3.0%	440.57	3.0%	75.30	2.50	445.33	STD SHC
208	456.00	446.00	439.52	66.30	2.0%	440.85	2.0%	78.50	2.50	444.92	STD SHC
209	456.00	446.00	439.52	74.83	2.0%	441.02	2.0%	86.50	2.50	445.25	STD SHC
210	456.00	446.00	439.23	81.11	2.0%	440.85	2.0%	93.80	2.50	445.03	STD SHC
211	455.50	445.50	438.30	17.85	2.0%	438.66	2.0%	150.50	2.50	444.18	STD SHC
212	455.00	445.00	437.25	19.35	4.0%	438.02	4.0%	76.20	2.50	443.57	STD SHC
213	449.00	439.00	431.21	28.71	4.0%	432.24	4.0%	82.60	2.50	438.16	STD SHC
214	446.00	436.00	427.39	32.00	4.0%	428.67	4.0%	104.00	2.50	435.33	STD SHC
215	447.00	437.00	427.64	57.94	4.0%	429.96	4.0%	78.50	2.50	435.60	STD SHC
216	447.50	437.50	427.90	55.60	4.0%	430.12	4.0%	104.30	2.50	436.80	STD SHC
217	446.50	436.50	427.90	47.80	4.0%	429.81	4.0%	81.00	2.50	435.55	STD SHC
218	447.00	437.00	427.90	44.70	4.5%	429.91	4.5%	82.00	2.50	436.10	STD SHC
219	446.50	436.50	427.75	48.32	4.0%	429.68	4.0%	79.40	2.50	435.36	STD SHC
220	446.25	436.25	427.44	18.90	4.5%	428.29	4.5%	100.00	2.50	435.29	STD SHC
221	442.50	432.50	425.16	27.40	3.5%	426.12	3.5%	84.80	2.50	431.59	STD SHC
222	443.00	433.00	424.80	31.70	4.0%	426.07	4.0%	84.80	2.50	431.96	STD SHC
223	443.00	433.00	424.42	32.06	4.0%	425.70	4.0%	84.80	2.50	431.59	STD SHC
224	442.50	432.50	423.92	30.49	4.0%	425.14	4.0%	84.80	2.50	431.03	STD SHC
225	440.50	430.50	422.57	33.50	4.0%	423.91	4.0%	84.80	2.50	429.80	STD SHC
226	438.50	428.50	421.06	33.00	3.5%	422.22	3.5%	84.80	2.50	427.68	STD SHC
227	436.75	426.75	419.87	31.16	3.0%	420.80	3.0%	84.80	2.50	425.85	STD SHC
228	436.00	426.00	418.55	34.50	2.0%	419.24	3.0%	84.80	2.50	424.28	STD SHC
229	436.25	426.25	414.00	34.30	5.0%	416.62	5.0%	84.80	2.50	423.36	DROP TYPE A
230	436.50	426.50	415.23	31.50	5.0%	416.81	5.0%	84.80	2.50	423.55	DROP TYPE A
231	437.50	427.50	415.62	28.90	5.0%	417.07	5.0%	85.00	2.50	423.82	DROP TYPE A
232	438.00	428.00	415.97	32.17	5.0%	417.58	5.0%	84.80	2.50	424.32	DROP TYPE A
233	439.50	429.50	416.56	28.00	5.0%	417.96	5.0%	85.70	2.50	424.75	DROP TYPE A
234	438.00	428.00	417.07	31.90	5.0%	418.67	5.0%	85.50	2.50	425.44	DROP TYPE A
235	437.00	427.00	417.39	28.80	5.0%	418.83	5.0%	89.50	2.50	425.76	STD SHC
236	435.50	425.50	417.67	31.00	3.0%	418.60	3.0%	100.00	2.50	424.10	STD SHC
237	434.50	424.50	417.97	65.40	2.0%	419.28	2.0%	83.00	2.50	423.44	STD SHC
238	434.25	424.25	418.24	71.80	2.0%	419.68	2.0%	88.40	2.50	423.94	STD SHC
239	434.50	424.50	418.09	37.30	2.5%	419.02	2.5%	75.80	2.50	423.42	STD SHC
240	436.00	426.00	417.75	19.40	4.0%	419.53	4.0%	99.00	2.50	424.99	STD SHC
241	436.50	426.50	417.44	22.80	4.5%	418.47	4.5%	97.00	2.50	425.33	STD SHC
242	437.50	427.50	417.13	20.90	5.0%	418.18	5.0%	93.80	2.50	425.37	STD SHC
243	438.00	428.00	416.72	22.40	5.0%	417.84	5.0%	91.40	2.50	424.91	DROP TYPE A
244	438.25	428.25	416.41	23.20	5.0%	417.57	5.0%	89.50	2.50	424.55	DROP TYPE A
245	438.25	428.25	415.99	19.30	5.0%	416.96	5.0%	87.10	2.50	423.81	DROP TYPE A
246	437.75	427.75	415.67	22.70	5.0%	416.81	5.0%	84.30	2.50	423.55	DROP TYPE A
247	437.25	427.25	415.35	21.10	5.0%	416.41	5.0%	84.30	2.50	423.15	DROP TYPE A
248	436.50	426.50	415.01	18.40	5.0%	415.93	5.0%	84.70	2.50	422.67	DROP TYPE A
321	429.00	419.00	407.22	18.60	5.0%	408.16	5.0%	89.00	2.50	415.11	DROP TYPE A
322	418.50	408.50	399.72	18.90	5.0%	400.67	5.0%	85.00	2.50	407.42	STD SHC
323	417.50	407.50	398.43	18.90	5.0%	399.38	5.0%	85.00	2.50	406.13	STD SHC
324	416.00	406.00	397.10	18.90	5.0%	398.05	5.0%	85.00	2.50	404.80	STD SHC
325	414.00	404.00	395.80	18.90	5.0%	396.75	5.0%	85.30	2.50	403.51	STD SHC
326	411.75	401.75	394.19	20.70	4.0%	395.02	4.0%	85.50	2.50	400.94	STD SHC
327	409.75	399.75	392.37	20.10	3.5%	393.07	3.5%	85.50	2.50	399.57	STD SHC
328	408.75	398.75	391.02	23.85	4.0%	391.97	4.0%	85.50	2.50	397.89	STD SHC
329	408.00	398.00	390.87	24.50	3.0%	391.61	3.0%	106.00	2.50	397.29	STD SHC
330	408.00	398.00	390.08	42.90	3.5%	391.58	3.5%	78.00	2.50	396.81	STD SHC
331	408.00	398.00	386.81	16.80	5.0%	387.60	5.0%	99.00	2.50	395.00	DROP TYPE A
332	407.50	397.50	388.68	61.70	4.0%	391.15	4.0%	80.50	2.50	396.87	STD SHC
333	410.50	400.50	393.93	31.80	2.0%	394.57	2.0%	89.00	2.50	398.85	STD SHC
334	412.75	402.75	395.15	31.80	3.5%	396.26	3.5%	85.30	2.50	401.75	STD SHC
335	414.25	404.25	396.26	32.80	4.0%	397.57	4.0%	85.00	2.50	403.47	STD SHC
336	415.75	405.75	397.40	32.80	4.0%	398.71	4.0%	85.00	2.50	404.61	STD SHC
337	417.25	407.25	398.54	32.80	4.5%	400.02	4.5%	85.00	2.50	406.34	STD SHC
373	440.75	438.75	431.75	23.50	3.0%	432.46	3.0%	85.00	2.50	437.51	STD SHC
374	447.75	437.75	430.42	20.20	3.5%	431.13	3.5%	85.00	2.50	436.60	STD SHC
375	445.50	435.50	429.26	18.10	2.5%	429.71	2.5%	85.00	2.50	434.34	STD SHC
376	445.25	435.25	428.08	19.60	3.5%	428.77	3.5%	85.80	2.50	434.27	STD SHC
377	444.25	434.25	426.66	21.80	4.0%	427.53	4.0%	85.00	2.50	433.46	STD SHC
378	443.00	433.00	425.92	20.60	3.5%	426.64	3.5%	85.60	2.50	432.14	STD SHC
379	442.50	432.50	425.31	22.50	3.5%	426.10	3.5%	85.00	2.50	431.57	STD SHC
380	443.00	433.00	424.88	20.90	4.5%	425.82	4.5%	85.00	2.50	432.15	STD SHC
381	443.00	433.00	424.45	19.40	5.0%	425.42	5.0%	85.00	2.50	432.17	STD SHC
382	442.25	432.25	423.74	20.70	5.0%	424.78	5.0%	85.00	2.50	431.53	STD SHC
383	440.25	430.25	422.15	17.80	4.5%	422.95	4.5%	85.00	2.50	429.28	STD SHC
384	438.50	428.50	420.70	19.20	4.0%	421.47	4.0%	85.00	2.50	427.37	STD SHC
385	437.00	427.00	413.28	33.00	5.0%	414.93	5.0%	65.00	2.50	420.68	DROP TYPE A

=== Denotes Lot with SHC connection to San. MH

LOT	Δ BETWEEN CE & MCE	INV. OF DHC @ MAIN	SHC SLOPE WITHIN ROW	INVERT @ ROW	CELLAR GRAVITY SERVICE	FLOOR TO FLOOR
203	0.94				YES	10-FT
204	1.03				YES	10-FT
205	1.83				YES	10-FT
206	1.21				YES	10-FT
207	1.17				YES	10-FT
208	1.08				YES	10-FT
209	0.75				YES	10-FT
210	0.97				YES	10-FT
211	1.32				YES	10-FT
212	1.43				YES	10-FT
213	0.84				YES	10-FT
214	0.67				YES	10-FT
215	1.40				YES	10-FT
216	0.70				YES	10-FT
217	0.95				YES	10-FT
218	0.90				YES	10-FT
219	1.14				YES	10-FT
220	0.96				YES	10-FT
221	0.91				YES	10-FT
222	1.04				YES	10-FT
223	1.41				YES	10-FT
224	1.47				YES	10-FT
225	0.70				YES	10-FT
226	0.82				YES	10-FT
227	0.90				YES	10-FT
228	1.72				YES	10-FT
229	2.50	417.00	2.0%	418.48	YES	10-FT
230	2.35	418.19	2.0%	418.82	YES	10-FT
231	3.69	419.31	2.0%	419.88	YES	10-FT
232	3.68	419.65	2.0%	420.29	YES	10-FT
233	3.76	420.32	2.0%	420.88	YES	10-FT
234	2.56	419.63	2.0%	420.27	YES	10-FT
235	1.25				YES	10-FT
236	1.40				YES	10-FT
237	1.06				YES	10-FT
238	0.31				YES	10-FT
239	1.08				YES	10-FT
240	1.01				YES	10-FT
241	1.17				YES	10-FT
242	2.13				YES	10-FT
243	3.09	419.81	2.0%	420.26	YES	10-FT
244	3.70	420.12	2.0%	420.58	YES	10-FT
245	4.44	420.43	2.0%	420.82	YES	10-FT
246	4.20	419.87	2.0%	420.32	YES	10-FT
247	4.10	419.45	2.0%	419.87	YES	10-FT
248	3.83	418.85	2.0%	419.21	YES	10-FT
321	3.89	411.11	2.0%	411.49	YES	10-FT
322	1.08				YES	10-FT
323	1.38				YES	10-FT
324	1.20				YES	10-FT
325	0.49				YES	10-FT
326	0.81				YES	10-FT
327	1.18				YES	10-FT
328	0.86				YES	10-FT
329	0.71				YES	10-FT
330	1.19				YES	10-FT
331	3.00	389.81	2.0%	390.13	YES	10-FT
332	0.63				YES	10-FT
333	1.65				YES	10-FT
334	1.00				YES	10-FT
335	0.78				YES	10-FT
336	1.14				YES	10-FT
337	0.91				YES	10-FT
373	1.25				YES	10-FT
374	1.15				YES	10-FT
375	1.16				YES	10-FT
376	0.98				YES	10-FT
377	0.79				YES	10-FT
378	0.86				YES	10-FT
379	0.93				YES	10-FT
380	0.85				YES	10-FT
381	0.83				YES	10-FT
382	0.72				YES	10-FT
383	0.97				YES	10-FT
384	1.13				YES	10-FT
385	6.32	419.60	2.0%	420.26	YES	10-FT

PROFESSIONAL CERTIFICATION
I, BRANDON R. ROWE, 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. 40608, EXPIRATION DATE: 7/3/2017

THE FOLLOWING STATES REQUIRE NOTIFICATION BY EXCAVATORS, DESIGNERS, OR ANY PERSON PREPARING TO DISTURB THE EARTHS SURFACE ANYWHERE IN THE STATE, IN VIRGINIA, MARYLAND, THE DISTRICT OF COLUMBIA, AND DELAWARE CALL - 811
(NV 1-800-245-4848) (PA 1-800-242-1776) (DC 1-800-257-7777)
(VA 1-800-552-7001) (MD 1-800-257-7777) (DE 1-800-282-8555)

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND

4/28/16
CHIEF, BUREAU OF UTILITIES DATE

DEPARTMENT OF PLANNING & ZONING HOWARD COUNTY, MARYLAND

5-12-16
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

BOHLER ENGINEERING
901 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21204
Phone: (410) 821-7900
Fax: (410) 821-7987
www.BohlerEngineering.com

B.R. ROWE
PROFESSIONAL ENGINEER

DES: J.A.
DRN: R.L.B.
CHK: B.R.R.
DATE: 2/12/16

REV.	DATE	DESCRIPTION	BY
2	4/13/16	REDLINE REVISION - PHASED PLAN	BRR
1	10/21/15	REDLINE REVISION - LOT ADJUSTMENT	BRR

PHASE I
PUBLIC SANITARY SEWER
STRUCTURE SCHEDULES

PARCEL NO. N/A
600' SCALE MAP NO. 17 BLOCK NO. –

ESTATES AT PATAPSCO PARK
ROGERS AVENUE
BUILDABLE LOTS 203 - 248 & 373 - 385 (W&S)
BUILDABLE LOTS 321 - 337 (SAN. ONLY)
6TH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND
CONTRACT NO.: 14-4803-D

SCALE AS SHOWN

SHEET 9 OF 16

PROPOSED WATERLINE 'A' PROFILE - (10+00 - 25+50)

SCALE: 1"= 50 ' HORIZONTAL
1"= 5 ' VERTICAL

TEST PIT NOTE

TP CONTRACTOR TO TEST PIT FOR EXACT LOCATION OF EXISTING UTILITY AND SUBMIT ANY DISCREPANCIES TO BOHLER ENGINEERING IN WRITING.

50 25 12.5 0 50
1"= 50'

5 2.5 1.25 0 5
1"= 5'

DIG WITH CARE — CALL BEFORE YOU DIG

THE FOLLOWING STATES REQUIRE NOTIFICATION BY EXCAVATORS, DESIGNERS, OR ANY PERSON PREPARING TO DISTURB THE EARTH'S SURFACE ANYWHERE IN THE STATE. IN VIRGINIA, MARYLAND, THE DISTRICT OF COLUMBIA, AND DELAWARE CALL - 811
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PROFESSIONAL CERTIFICATION
I, BRANDON R. ROWE, 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. 40808, EXPIRATION DATE: 7/3/2017

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND

[signature] 4/25/16
CHIEF, BUREAU OF UTILITIES DATE

DEPARTMENT OF PLANNING & ZONING HOWARD COUNTY, MARYLAND

[signature] 5-12-16
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

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901 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21204
Phone: (410) 821-7900
Fax: (410) 821-7987
www.BohlerEngineering.com

B.R. ROWE — STATE OF MARYLAND — PROFESSIONAL ENGINEER

DES: J.A.
DRN: R.L.B.
CHK: B.R.R.
DATE: 2/12/16

REV.	DATE	DESCRIPTION	BY
2	4/13/16	REDLINE REVISION - PHASED PLAN	BRR
1	10/21/15	REDLINE REVISION - LOT ADJUSTMENT	BRR

PHASE I
PUBLIC WATER PROFILES

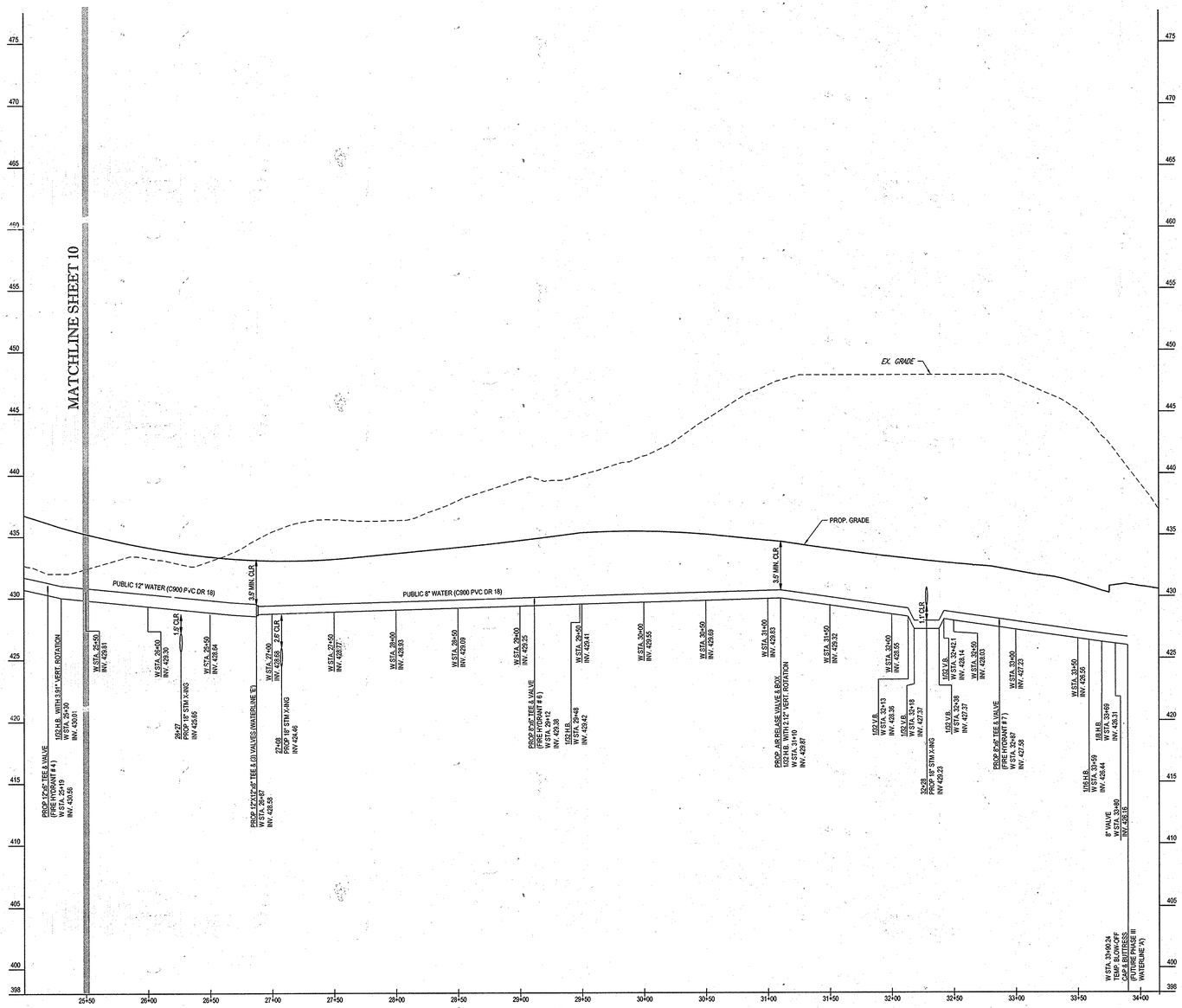
PARCEL NO. N/A
600' SCALE MAP NO. 17 BLOCK NO. --

ESTATES AT PATAPSCO PARK

ROGERS AVENUE
BUILDABLE LOTS 203 - 248 & 373 - 385 (W&S)
BUILDABLE LOTS 321 - 337 (SAN. ONLY)
6TH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND
CONTRACT NO.: 14-4803-D

SCALE: AS SHOWN

SHEET



PROPOSED WATERLINE 'A' PROFILE - (25+50 - 33+90.24)

SCALE: 1"= 50' HORIZONTAL
1"= 5' VERTICAL

50 25 12.5 0 50
1"= 50'

5 2.5 1.25 0 5
1"= 5'

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DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND

4/25/16
CHIEF, BUREAU OF UTILITIES DATE

DEPARTMENT OF PLANNING & ZONING HOWARD COUNTY, MARYLAND

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STATE OF MARYLAND B.R. ROWE 40808 PROFESSIONAL ENGINEER
PROFESSIONAL ENGINEER
4/13/16

DES: J.A.
DRN: R.L.B.
CHK: B.R.R.
DATE: 2/12/16

REV.	DATE	DESCRIPTION	BY
2	4/13/16	REDLINE REVISION - PHASED PLAN	BRR
1	10/21/15	REDLINE REVISION - LOT ADJUSTMENT	BRR

PHASE I
PUBLIC WATER PROFILES

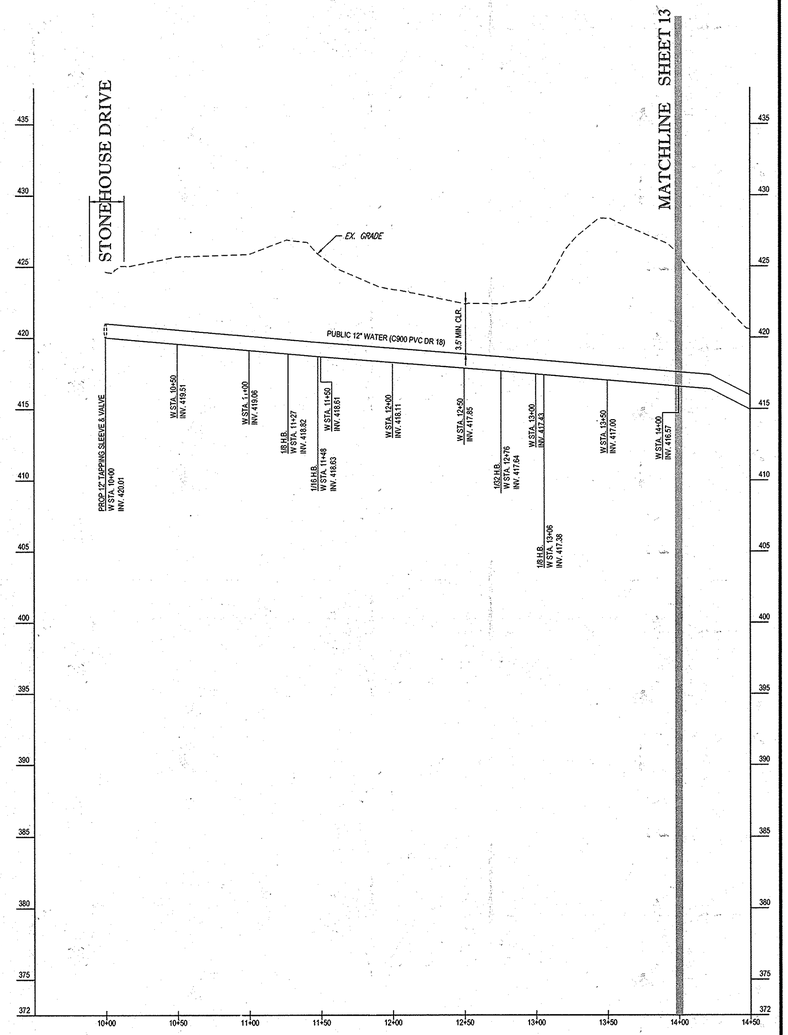
PARCEL NO. N/A
600' SCALE MAP NO. 17 BLOCK NO. –

ESTATES AT PATAPSCO PARK

ROGERS AVENUE
BUILDABLE LOTS 203 - 248 & 373 - 385 (W&S)
BUILDABLE LOTS 321 - 337 (SAN. ONLY)
6TH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND
CONTRACT NO.: 14-4803-D

SCALE AS SHOWN

SHEET 11 OF 16



PROPOSED WATERLINE 'E' PROFILE (10+00 - 14+00)

SCALE: 1"= 50' HORIZONTAL
1"= 5' VERTICAL

NOTE: DR-14, C900 PVC PIPE, WITH RESTRAINED JOINTS, SHALL BE USED BETWEEN STATION 13+06 AND STATION 14+20. THE MAXIMUM COVER WITHIN THESE LIMITS SHALL NOT EXCEED TEN (10) FEET.

50 25 12.5 0 50
1"= 50'

5 2.5 1.25 0 5
1"= 5'

THE FOLLOWING STATES REQUIRE NOTIFICATION BY EXCAVATORS, DESIGNERS, OR ANY PERSON PREPARING TO DISTURB THE EARTH'S SURFACE ANYWHERE IN THE STATE. IN VIRGINIA, MARYLAND, THE DISTRICT OF COLUMBIA, AND DELAWARE CALL - 811
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PROFESSIONAL CERTIFICATION
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DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND

4/25/16
CHIEF, BUREAU OF UTILITIES DATE

DEPARTMENT OF PLANNING & ZONING HOWARD COUNTY, MARYLAND

5.12.16
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

BOHLER ENGINEERING
801 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21204
Phone: (410) 821-7900
Fax: (410) 821-7987
www.BohlerEngineering.com

BRANDON R. ROWE
STATE OF MARYLAND
PROFESSIONAL ENGINEER
No. 40858
EXPIRATION DATE: 7/3/2017

DES: J.A.
DRN: R.L.B.
CHK: B.R.R.
DATE: 2/12/16

REV.	DATE	DESCRIPTION	BY
2	4/13/16	REDLINE REVISION - PHASED PLAN	BRR
1	10/21/15	REDLINE REVISION - LOT ADJUSTMENT	BRR

PHASE I
PUBLIC WATER PROFILES

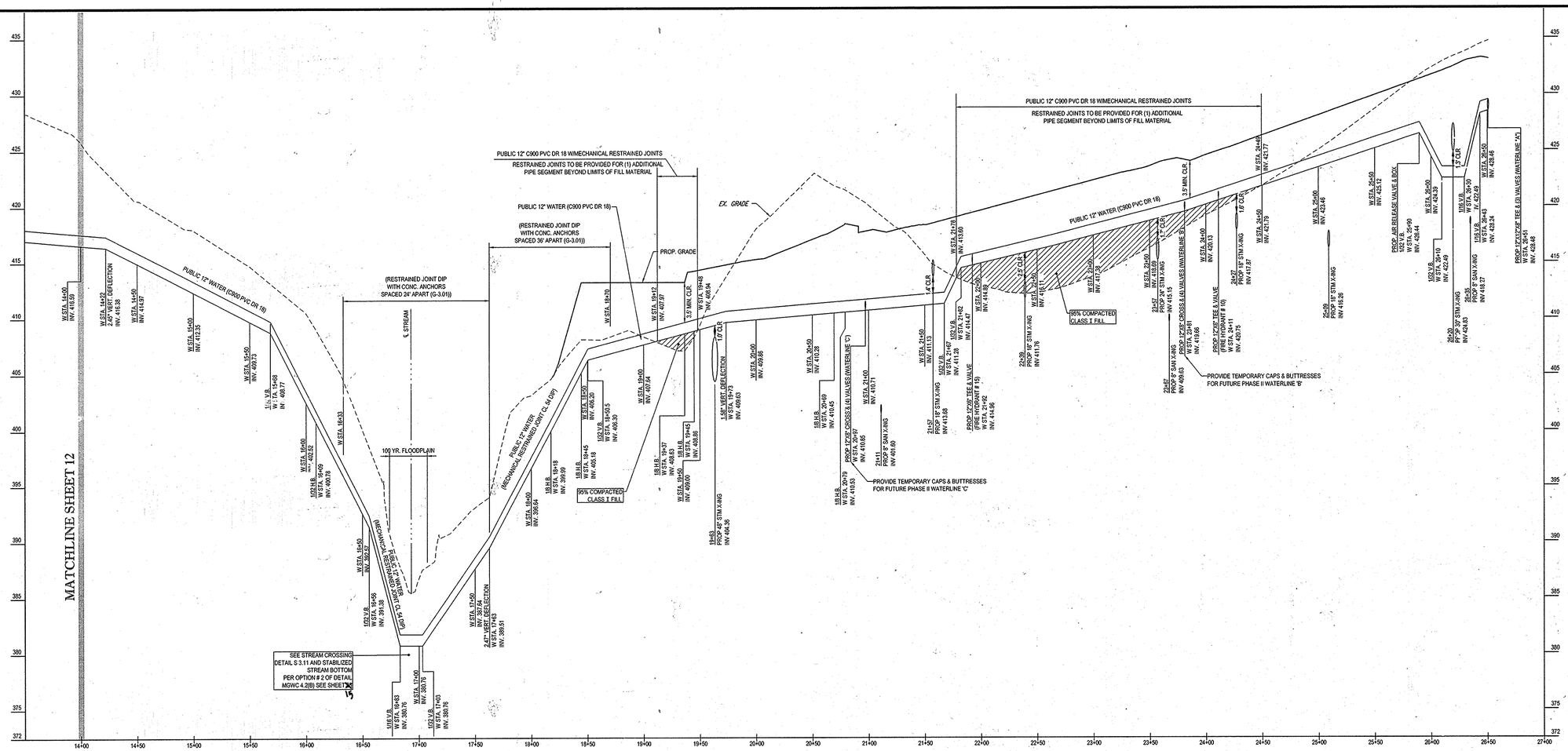
PARCEL NO. N/A
600' SCALE MAP NO. 17 BLOCK NO. --

ESTATES AT PATAPSCO PARK

ROGERS AVENUE
BUILDABLE LOTS 203 - 248 & 373 - 385 (W&S)
BUILDABLE LOTS 321 - 337 (SAN. ONLY)
6TH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND
CONTRACT NO.: 14-4803-D

SCALE AS SHOWN

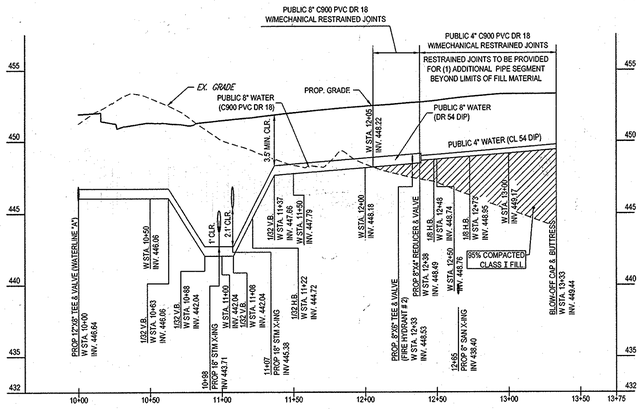
SHEET 12 OF 16



NOTE: DR-14, C900 PVC PIPE, WITH RESTRAINED JOINTS, SHALL BE USED BETWEEN STATION 13+06 AND STATION 14+20. THE MAXIMUM COVER WITHIN THESE LIMITS SHALL NOT EXCEED TEN (10) FEET.

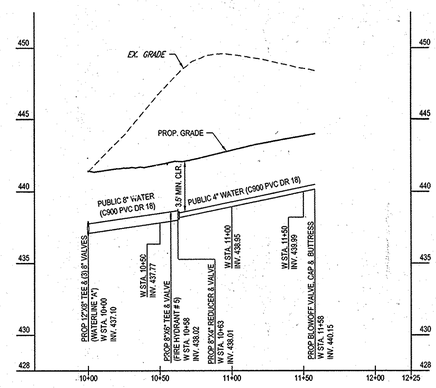
PROPOSED WATERLINE 'E' PROFILE (14+00 - 26+50.62)

SCALE: 1"= 50' HORIZONTAL
1"= 5' VERTICAL



PROPOSED WATERLINE 'D-A' PROFILE

SCALE: 1"= 50' HORIZONTAL
1"= 5' VERTICAL



PROPOSED WATERLINE 'F' PROFILE

SCALE: 1"= 50' HORIZONTAL
1"= 5' VERTICAL

50 25 12.5 0 50
1"= 50'

5 2.5 1.25 0 5
1"= 5'

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DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND

4/25/16
CHIEF, BUREAU OF UTILITIES DATE

DEPARTMENT OF PLANNING & ZONING HOWARD COUNTY, MARYLAND

5-12-16
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

BOHLER ENGINEERING
901 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21204
Phone: (410) 821-7900
Fax: (410) 821-7987
www.BohlerEngineering.com

STATE OF MARYLAND B.R. ROWE No. 40608 PROFESSIONAL ENGINEER

DES: J.A.				
DRN: R.L.B.				
CHK: B.R.R.	2	4/13/16	REDLINE REVISION - PHASED PLAN	BRR
	1	10/21/15	REDLINE REVISION - LOT ADJUSTMENT	BRR
DATE: 2/12/16	REV.	DATE	DESCRIPTION	BY

PHASE I
PUBLIC WATER PROFILES

PARCEL NO. N/A
600' SCALE MAP NO. 17 BLOCK NO. --

ESTATES AT PATAPSCO PARK
ROGERS AVENUE
BUILDABLE LOTS 203 - 248 & 373 - 385 (W&S)
BUILDABLE LOTS 321 - 337 (SAN. ONLY)
6TH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND
CONTRACT NO.: 14-4803-D

SCALE AS SHOWN

SHEET 13 OF 16

WATER FITTING CHART

WATER MAIN CL STATION	FITTING	NORTHING EASTING
10+00.00 WATERLINE - 'A'	12" TAPPING SLEEVE & VALVE	N 595620.61 E 1362866.36
11+39.43 WATERLINE - 'A'	1/32 H.B. WITH 0.68" VERT. ROTATION	N 595731.38 E 1362961.04
11+45.61 WATERLINE - 'A'	1/16 V.B. WITH 4.21" HOR. ROTATION	N 595737.02 E 1362953.57
11+54.20 WATERLINE - 'A'	1/16 V.B. WITH 4.11" HOR. ROTATION	N 595744.86 E 1362957.09
11+74.20 WATERLINE - 'A'	1/16 V.B.	N 595763.10 E 1362965.27
11+86.20 WATERLINE - 'A'	1/16 V.B.	N 595774.05 E 1362970.19
13+31.92 WATERLINE - 'A'	AIR RELEASE VALVE & ROADWAY BOX	N 595907.00 E 1363029.84
13+41.92 WATERLINE - 'A'	1/32 H.B. W/ 6.56" VERT. ROTATION	N 595916.13 E 1363033.93
15+01.79 WATERLINE - 'A'	1/32 H.B. WITH 0.43" VERT. ROTATION	N 596072.96 E 1363064.89
16+64.95 WATERLINE - 'A'	1/32 H.B. WITH 3.42" VERT. ROTATION	N 596236.06 E 1363059.67
16+95.93 WATERLINE - 'A'	12"X8" TEE & VALVE (FIRE HYDRANT #1)	N 596265.99 E 1363051.74
17+52.66 WATERLINE - 'A'	12"X8" TEE & VALVE (WATERLINE 'D-A')	N 596320.83 E 1363037.21
17+60.22 WATERLINE - 'A'	12"X8" TEE & VALVE (WATERLINE 'D-B')	N 596328.14 E 1363035.28
19+18.45 WATERLINE - 'A'	0.40" VERT. DEFLECTION	N 596384.44 E 1363020.37
20+37.64 WATERLINE - 'A'	1/32 H.B. WITH 0.94" VERT. ROTATION	N 596596.31 E 1362964.25
20+93.35 WATERLINE - 'A'	12"X8" TEE & (3) VALVES (WATERLINE 'F')	N 596651.77 E 1362958.92
21+57.37 WATERLINE - 'A'	PROP 12"X6" TEE & VALVE (FIRE HYDRANT #4)	N 596715.50 E 1362952.79
21+93.25 WATERLINE - 'A'	1/32 H.B. WITH 2.11" VERT. ROTATION	N 596751.21 E 1362949.35
23+50.77 WATERLINE - 'A'	1/32 H.B. WITH 3.12" VERT. ROTATION	N 596908.46 E 1362958.55
25+19.31 WATERLINE - 'A'	12"X8" TEE & VALVE (FIRE HYDRANT #3)	N 597072.45 E 1362997.46
25+30.02 WATERLINE - 'A'	1/32 H.B. WITH 3.91" VERT. ROTATION	N 597082.86 E 1362999.94
26+87.32 WATERLINE - 'A'	12"X12"X8" TEE & (3) VALVES (WATERLINE 'E')	N 597227.61 E 1363061.52
29+11.69 WATERLINE - 'A'	12"X6" TEE & VALVE (FIRE HYDRANT #6)	N 597434.07 E 1363149.36
29+48.36 WATERLINE - 'A'	1/32 H.B.	N 597467.83 E 1363163.73
31+10.45 WATERLINE - 'A'	1/32 H.B. WITH 2.12" VERT. ROTATION	N 597627.88 E 1363189.21
32+13.17 WATERLINE - 'A'	1/32 V.B.	N 597730.37 E 1363182.32
32+18.11 WATERLINE - 'A'	1/32 V.B.	N 597735.30 E 1363181.99
32+38.22 WATERLINE - 'A'	1/32 V.B.	N 597755.36 E 1363180.64
32+42.09 WATERLINE - 'A'	1/32 V.B.	N 597759.23 E 1363180.38
32+86.81 WATERLINE - 'A'	8"X6" TEE & VALVE (FIRE HYDRANT #7)	N 597803.84 E 1363177.37
33+59.06 WATERLINE - 'A'	1/16 H.B.	N 597875.93 E 1363172.52
33+69.33 WATERLINE - 'A'	1/8 H.B.	N 597885.55 E 1363176.13
33+80.24 WATERLINE - 'A'	8" VALVE	N 597958.09 E 1363315.61
33+90.24 WATERLINE - 'A'	TEMPORARY BLOW-OFF CAP & BUTTRESS	N 598007.38 E 1363410.38

WATER FITTING CHART

WATER MAIN CL STATION	FITTING	NORTHING EASTING
10+00.00 WATERLINE - 'D-A'	12"X8" TEE & VALVE (WATERLINE "A")	N 596320.83 E 1363037.21
10+62.82 WATERLINE - 'D-A'	1/32 V.B.	N 596304.75 E 1362976.49
10+88.01 WATERLINE - 'D-A'	1/32 V.B.	N 596298.30 E 1362952.14
11+08.01 WATERLINE - 'D-A'	1/32 V.B.	N 596293.18 E 1362932.80
11+21.51 WATERLINE - 'D-A'	1/32 H.B.	N 596289.73 E 1362919.76
12+32.88 WATERLINE - 'D-A'	8"X6" TEE & VALVE (FIRE HYDRANT #2)	N 596282.76 E 1362808.60
12+37.98 WATERLINE - 'D-A'	8"X4" REDUCER & VALVE	N 596282.44 E 1362803.52
12+47.87 WATERLINE - 'D-A'	1/8 H.B.	N 596281.82 E 1362793.64
12+72.87 WATERLINE - 'D-A'	1/8 H.B.	N 596298.36 E 1362774.89
13+33.25 WATERLINE - 'D-A'	BLOWOFF VALVE, PLUG & BUTTRESS	N 596358.66 E 1362771.78

WATER FITTING CHART

WATER MAIN CL STATION	FITTING	NORTHING EASTING
10+00.00 WATERLINE - 'D-B'	12"X8" TEE & VALVE (WATERLINE "A")	N 596328.14 E 1363035.28
10+84.07 WATERLINE - 'D-B'	TEMPORARY BLOW-OFF CAP & BUTTRESS	N 596349.66 E 1363116.55

WATER FITTING CHART

WATER MAIN CL STATION	FITTING	NORTHING EASTING
10+00.00 WATERLINE - 'E'	12" TAPPING SLEEVE & VALVE	N 596709.73 E 1364460.85
11+27.15 WATERLINE - 'E'	1/8 H.B.	N 596712.48 E 1364333.73
11+47.99 WATERLINE - 'E'	1/16 H.B.	N 596727.53 E 1364319.32
12+75.79 WATERLINE - 'E'	1/32 H.B.	N 596846.63 E 1364272.99
13+05.72 WATERLINE - 'E'	1/8 H.B.	N 596872.44 E 1364257.82
14+22.10 WATERLINE - 'E'	2.45" VERT. DEFLECTION	N 596905.59 E 1364146.26
15+68.38 WATERLINE - 'E'	1/32 V.B.	N 596947.25 E 1364000.03
16+08.76 WATERLINE - 'E'	1/32 H.B.	N 596958.76 E 1363987.33
16+55.94 WATERLINE - 'E'	1/32 V.B.	N 596978.00 E 1363924.25
16+83.16 WATERLINE - 'E'	1/16 V.B.	N 596989.10 E 1363899.40
17+03.16 WATERLINE - 'E'	1/32 V.B.	N 596997.26 E 1363881.14
17+62.74 WATERLINE - 'E'	2.47" VERT. DEFLECTION	N 597021.56 E 1363826.74
18+17.55 WATERLINE - 'E'	1/8 H.B.	N 597043.92 E 1363776.70
18+44.64 WATERLINE - 'E'	1/8 H.B.	N 597034.24 E 1363751.40
18+50.49 WATERLINE - 'E'	1/32 V.B.	N 597028.89 E 1363749.01
19+36.50 WATERLINE - 'E'	1/8 H.B.	N 596950.36 E 1363713.93
19+44.87 WATERLINE - 'E'	1/8 H.B.	N 596947.37 E 1363706.12
19+73.34 WATERLINE - 'E'	1.58" VERT. DEFLECTION	N 596958.98 E 1363680.12
20+69.28 WATERLINE - 'E'	1/8 H.B.	N 596998.11 E 1363592.53
20+79.18 WATERLINE - 'E'	1/8 H.B.	N 596994.57 E 1363583.28
20+97.18 WATERLINE - 'E'	12"X8" CROSS & (4) VALVES (WATERLINE 'C')	N 597001.91 E 1363566.65
21+67.35 WATERLINE - 'E'	1/32 V.B.	N 597030.53 E 1363502.78
21+82.36 WATERLINE - 'E'	1/32 V.B.	N 597036.65 E 1363489.06
21+92.36 WATERLINE - 'E'	12"X6" TEE & VALVE (FIRE HYDRANT #15)	N 597040.73 E 1363479.93
23+81.18 WATERLINE - 'E'	12"X8" CROSS & (4) VALVES (WATERLINE 'B')	N 597117.73 E 1363307.53
24+11.18 WATERLINE - 'E'	12"X6" TEE & VALVE (FIRE HYDRANT #10)	N 597129.96 E 1363280.14
25+89.61 WATERLINE - 'E'	PROP. AIR RELEASE VALVE & 1/32 V.B.	N 597202.73 E 1363117.22
26+09.62 WATERLINE - 'E'	1/32 V.B.	N 597210.89 E 1363098.95
26+29.62 WATERLINE - 'E'	1/16 V.B.	N 597219.05 E 1363080.69
26+43.48 WATERLINE - 'E'	1/16 V.B.	N 597224.70 E 1363068.03
26+50.62 WATERLINE - 'E'	12"X12"X8" TEE & (3) VALVES (WATERLINE "A")	N 597227.61 E 1363061.52

WATER FITTING CHART

WATER MAIN CL STATION	FITTING	NORTHING EASTING
10+00.00 WATERLINE - 'F'	12"X8" TEE & (3) VALVES (WATERLINE "A")	N 596551.77 E 1362958.92
10+57.57 WATERLINE - 'F'	PROP 8"X6" TEE & VALVE (FIRE HYDRANT #5)	N 596646.26 E 1362901.61
10+62.57 WATERLINE - 'F'	PROP 8"X4" REDUCER & VALVE	N 596645.78 E 1362896.63
11+57.95 WATERLINE - 'F'	BLOWOFF VALVE, CAP & BUTTRESS	N 596636.65 E 1362801.70

PROFESSIONAL CERTIFICATION
I, BRANDON R. ROWE, 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. 40808, EXPIRATION DATE: 7/3/2017

THE FOLLOWING STATES REQUIRE NOTIFICATION BY EXCAVATORS, DESIGNERS, OR ANY PERSON PREPARING TO DISTURB THE EARTHS SURFACE ANYWHERE IN THE STATE. IN VIRGINIA, MARYLAND, THE DISTRICT OF COLUMBIA, AND DELAWARE CALL - 811
(WV 1-800-245-4848) (PA 1-800-242-1776) (DC 1-800-257-7777) (VA 1-800-552-7001) (MD-1-800-257-7777) (DE 1-800-282-8555)

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND

4/27/16
CHIEF, BUREAU OF UTILITIES DATE

DEPARTMENT OF PLANNING & ZONING HOWARD COUNTY, MARYLAND

5-12-16
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

BOHLER ENGINEERING
901 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21204
Phone: (410) 821-7900
Fax: (410) 821-7987
www.BohlerEngineering.com

STATE OF MARYLAND BRANDON R. ROWE No. 40808 PROFESSIONAL ENGINEER
PROFESSIONAL ENGINEER

DES: J.A.
DRN: R.L.B.
CHK: B.R.R.
DATE: 2/12/16

REV.	DATE	DESCRIPTION	BY
2	4/13/16	REDLINE REVISION - PHASED PLAN	BRR
1	10/21/15	REDLINE REVISION - LOT ADJUSTMENT	BRR

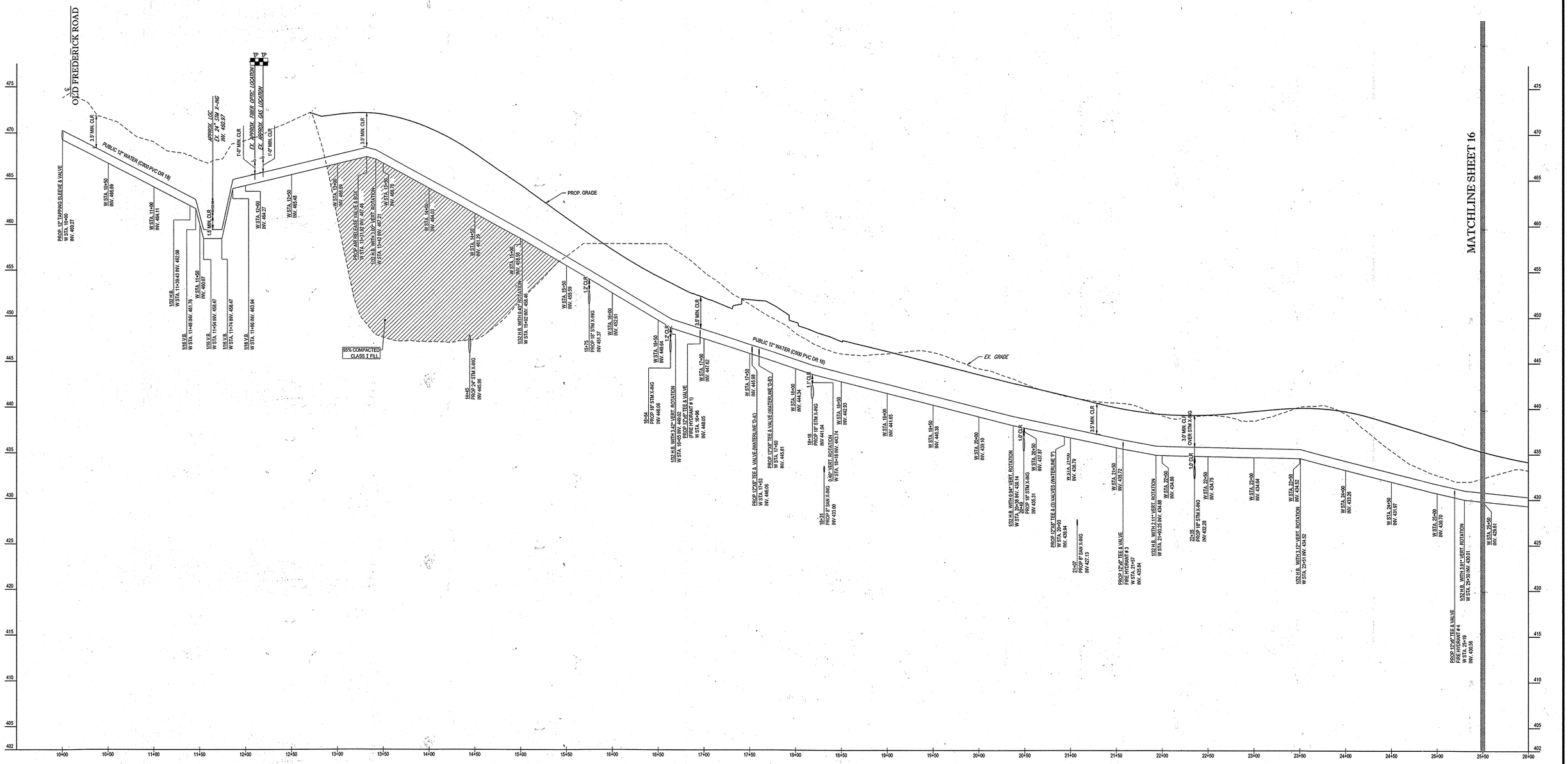
PHASE I
WATER FITTING CHARTS

PARCEL NO. N/A
600' SCALE MAP NO. 17 BLOCK NO. --

ESTATES AT PATAPSCO PARK
ROGERS AVENUE
BUILDABLE LOTS 203 - 248 & 373 - 385 (W&S)
BUILDABLE LOTS 321 - 337 (SAN. ONLY)
6TH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND
CONTRACT NO.: 14-4803-D

SCALE

SHEET 14 OF 16



PROPOSED WATERLINE 'A' PROFILE - (10+00 - 25+50)

SCALE: 1" = 50' HORIZONTAL
1" = 5' VERTICAL

TEST PIT NOTE

TP CONTRACTOR TO TEST PIT FOR EXACT LOCATION OF EXISTING UTILITY AND SUBMIT ANY DISCREPANCIES TO BOHLER ENGINEERING IN WRITING.

50 25 12.5 0 50
1" = 50'

5 2.5 1.25 0 5
1" = 5'

DIG WITH CARE
MISS UTILITY

THE FOLLOWING STATES REQUIRE NOTIFICATION BY EXCAVATORS, DESIGNERS, OR ANY PERSON PREPARING TO DISTURB THE EARTHS SURFACE ANYWHERE IN THE STATE IN VIRGINIA, MARYLAND, THE DISTRICT OF COLUMBIA, AND DELAWARE CALL - 811
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DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND

11/20/15
CHIEF, BUREAU OF UTILITIES DATE

DEPARTMENT OF PLANNING & ZONING HOWARD COUNTY, MARYLAND

11/20/15
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

BOHLER ENGINEERING
901 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21204
Phone: (410) 821-7900
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www.BohlerEngineering.com

STATE OF MARYLAND BRANDON R. ROWE No. 40808 PROFESSIONAL ENGINEER
11/20/15

DES: J.A.
DRN: R.L.B.
CHK: B.R.R.
DATE: 12/12/14

REV.	DATE	DESCRIPTION	BY
1	10/21/15	PER LOT,LINE, SHC & WHC ADJUSTMENTS	RLB

PUBLIC WATER PROFILES

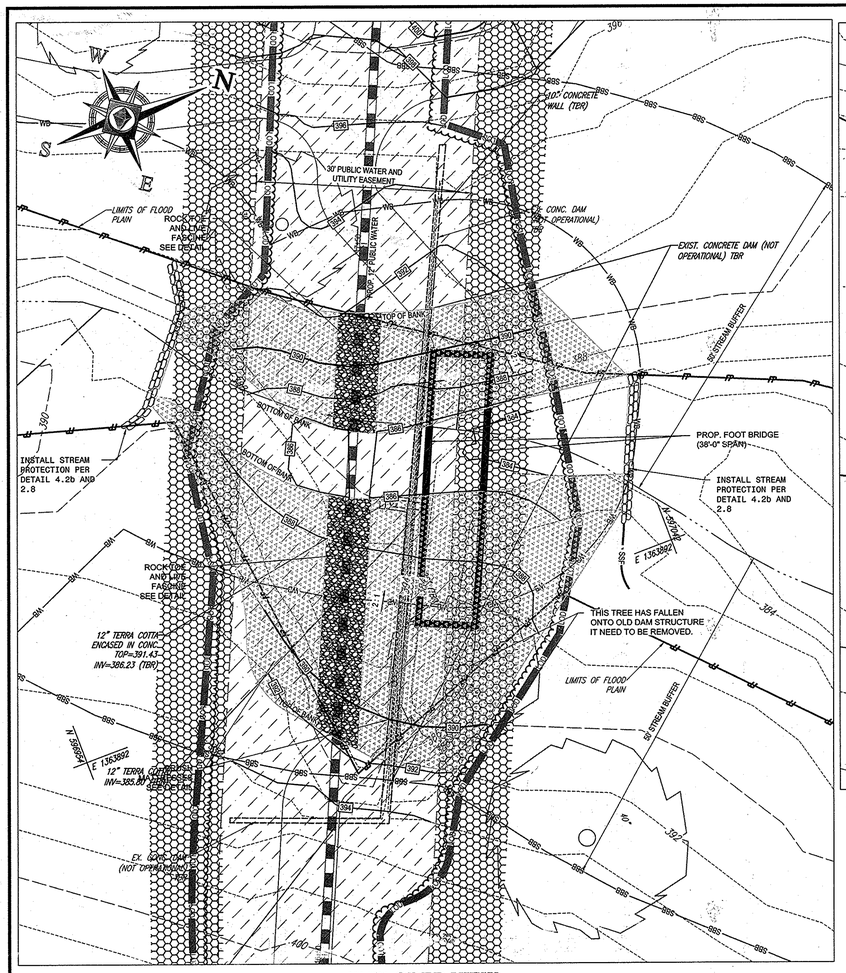
PARCEL NO. N/A
600' SCALE MAP NO. 17 BLOCK NO. --

ESTATES AT PATAPSCO PARK

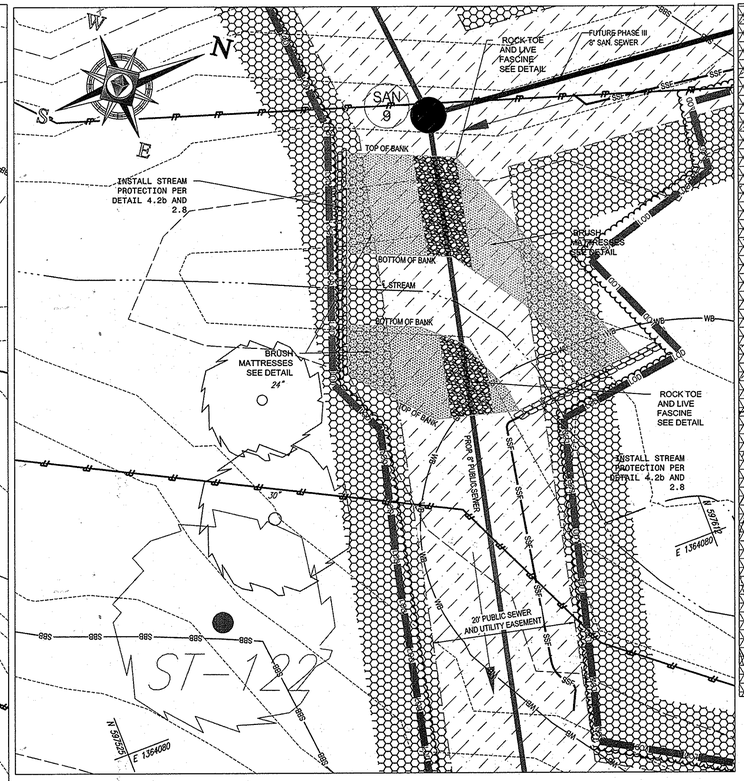
ROGERS AVENUE
BUILDABLE LOTS 203 - 397 AND OPEN SPACE LOTS 196 - 202
6TH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND
CONTRACT NO.: 14-4803-D

SCALE AS SHOWN

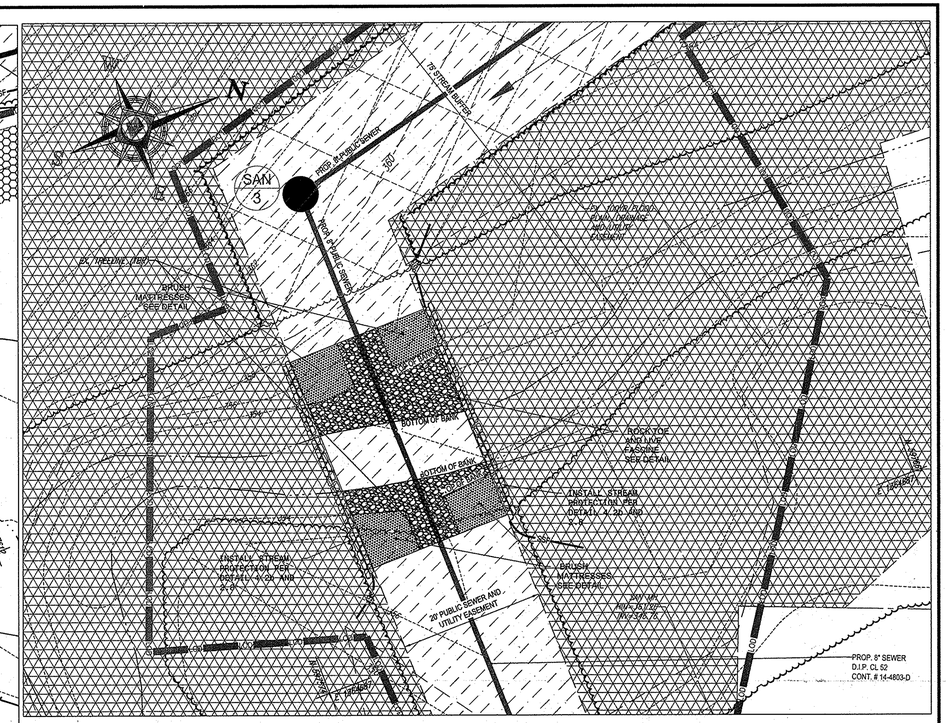
SHEET 15 OF 25



EXPLODED VIEW
SCALE: 1"=10'



EXPLODED VIEW
SCALE: 1"=10'



EXPLODED VIEW
SCALE: 1"=10'

SEQUENCE OF CONSTRUCTION

1. ACTIVITIES WITHIN STREAM CHANNELS ARE PROHIBITED AS DETERMINED BY THIS CLASSIFICATION OF STREAM (COMAR 26.08.02.08): PATAPSCO RIVER AREA - 02130900 IS A USE- I WATERWAY; IN-STREAM WORK MAY NOT BE CONDUCTED FROM MARCH 1 THROUGH JUNE 15 INCLUSIVE, OF ANY YEAR. REFER TO MDE'S LETTER OF AUTHORIZATION PERTAINING TO THIS CROSSING FOR ADDITIONAL DETAILS AND INFORMATION.
2. OBTAIN GRADING PERMIT.
3. ONCE ALL PERMITS ARE IN HAND SCHEDULE MEETING IN THE FIELD WITH THE SEDIMENT CONTROL INSPECTOR. - 1 DAY
4. INSTALL STABILIZED CONSTRUCTION ENTRANCE - 1 DAY
5. INSTALL SILT FENCE AND OTHER EROSION AND SEDIMENT CONTROL MEASURES. - 2 DAYS
6. INSTALL SUPER SILT FENCE PARALLEL TO THE STREAM BANKS AS SHOWN. - 1 DAY
7. INSTALL PUMP AROUND PRACTICE PER DETAIL MGWC 1.2. - 2 DAYS
8. INSTALL 8" WATER MAIN PIPE. CONSTRUCT ENOUGH FOR ONE DAY'S WORK, INCLUDING BACKFILL AND STABILIZING AREA DISTURBED. STABILIZE STREAM BOTTOM PER OPTION # 2 OF DETAIL MGWC 4.2(b). - 1 WEEK
9. INSTALL FOOT BRIDGE. 1 WEEK
10. STABILIZE SLOPES UP GRADIENT OF THE STREAM BOTTOM PROTECTION WITH BRUSH MATTRESSES PER DETAIL MGWC 2.8. 2 DAYS
11. SEED AND STABILIZE AREAS OUTSIDE OF THE STREAM BANKS PER "STANDARDS SPECIFICATIONS FOR VEGETATIVE STABILIZATION". - 2 DAYS
12. REMOVE TEMPORARY PUMP AROUND PRACTICE. - 1 DAY
13. ONCE SEDIMENT CONTROL INSPECTOR'S SATISFIED THAT THE DISTURBED AREAS HAVE BEEN STABILIZED REMOVE SEDIMENT CONTROL. - 3 DAYS

SEQUENCE OF CONSTRUCTION

1. ACTIVITIES WITHIN STREAM CHANNELS ARE PROHIBITED AS DETERMINED BY THIS CLASSIFICATION OF STREAM (COMAR 26.08.02.08): PATAPSCO RIVER AREA - 02130900 IS A USE- I WATERWAY; IN-STREAM WORK MAY NOT BE CONDUCTED FROM MARCH 1 THROUGH JUNE 15 INCLUSIVE, OF ANY YEAR. REFER TO MDE'S LETTER OF AUTHORIZATION PERTAINING TO THIS CROSSING FOR ADDITIONAL DETAILS AND INFORMATION.
2. OBTAIN GRADING PERMIT.
3. ONCE ALL PERMITS ARE IN HAND SCHEDULE MEETING IN THE FIELD WITH THE SEDIMENT CONTROL INSPECTOR. - 1 DAY
4. INSTALL STABILIZED CONSTRUCTION ENTRANCE - 1 DAY
5. INSTALL SILT FENCE AND OTHER EROSION AND SEDIMENT CONTROL MEASURES. - 2 DAYS
6. INSTALL SUPER SILT FENCE PARALLEL TO THE STREAM BANKS AS SHOWN. - 1 DAY
7. INSTALL PUMP AROUND PRACTICE PER DETAIL MGWC 1.2. - 2 DAYS
8. INSTALL 8" SEWER MAIN PIPE. CONSTRUCT ENOUGH FOR ONE DAY'S WORK, INCLUDING BACKFILL AND STABILIZING AREA DISTURBED. STABILIZE STREAM BOTTOM PER OPTION # 2 OF DETAIL MGWC 4.2(b). - 1 WEEK
9. STABILIZE SLOPES UP GRADIENT OF THE STREAM BOTTOM PROTECTION WITH BRUSH MATTRESSES PER DETAIL MGWC 2.8. 2 DAYS
10. SEED AND STABILIZE AREAS OUTSIDE OF THE STREAM BANKS PER "STANDARDS SPECIFICATIONS FOR VEGETATIVE STABILIZATION". - 2 DAYS
11. REMOVE TEMPORARY PUMP AROUND PRACTICE. - 1 DAY
12. ONCE SEDIMENT CONTROL INSPECTOR'S SATISFIED THAT THE DISTURBED AREAS HAVE BEEN STABILIZED REMOVE SEDIMENT CONTROL. - 3 DAYS

SEQUENCE OF CONSTRUCTION

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2. OBTAIN GRADING PERMIT.
3. ONCE ALL PERMITS ARE IN HAND SCHEDULE MEETING IN THE FIELD WITH THE SEDIMENT CONTROL INSPECTOR. - 1 DAY
4. INSTALL STABILIZED CONSTRUCTION ENTRANCE - 1 DAY
5. INSTALL SILT FENCE AND OTHER EROSION AND SEDIMENT CONTROL MEASURES. - 1 WEEK
6. INSTALL SUPER SILT FENCE PARALLEL TO THE STREAM BANKS AS SHOWN. - 3 DAYS
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11. REMOVE TEMPORARY PUMP AROUND PRACTICE. - 1 DAY
12. ONCE SEDIMENT CONTROL INSPECTOR'S SATISFIED THAT THE DISTURBED AREAS HAVE BEEN STABILIZED REMOVE SEDIMENT CONTROL. - 3 DAYS

PROFESSIONAL CERTIFICATION
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DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND

4/20/16
CHIEF, BUREAU OF UTILITIES DATE

DEPARTMENT OF PLANNING & ZONING HOWARD COUNTY, MARYLAND

5-12-16
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

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901 DULANEY VALLEY ROAD, SUITE 801
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STATE OF MARYLAND BRANDON R. ROWE No. 40808 PROFESSIONAL ENGINEER

DES: J.A.				
DRN: R.L.B.				
CHK: B.R.R.	2	4/13/16	REDLINE REVISION - PHASED PLAN	BRR
DATE: 2/12/16	1	10/21/15	REDLINE REVISION - LOT ADJUSTMENT	BRR
	REV.	DATE	DESCRIPTION	BY

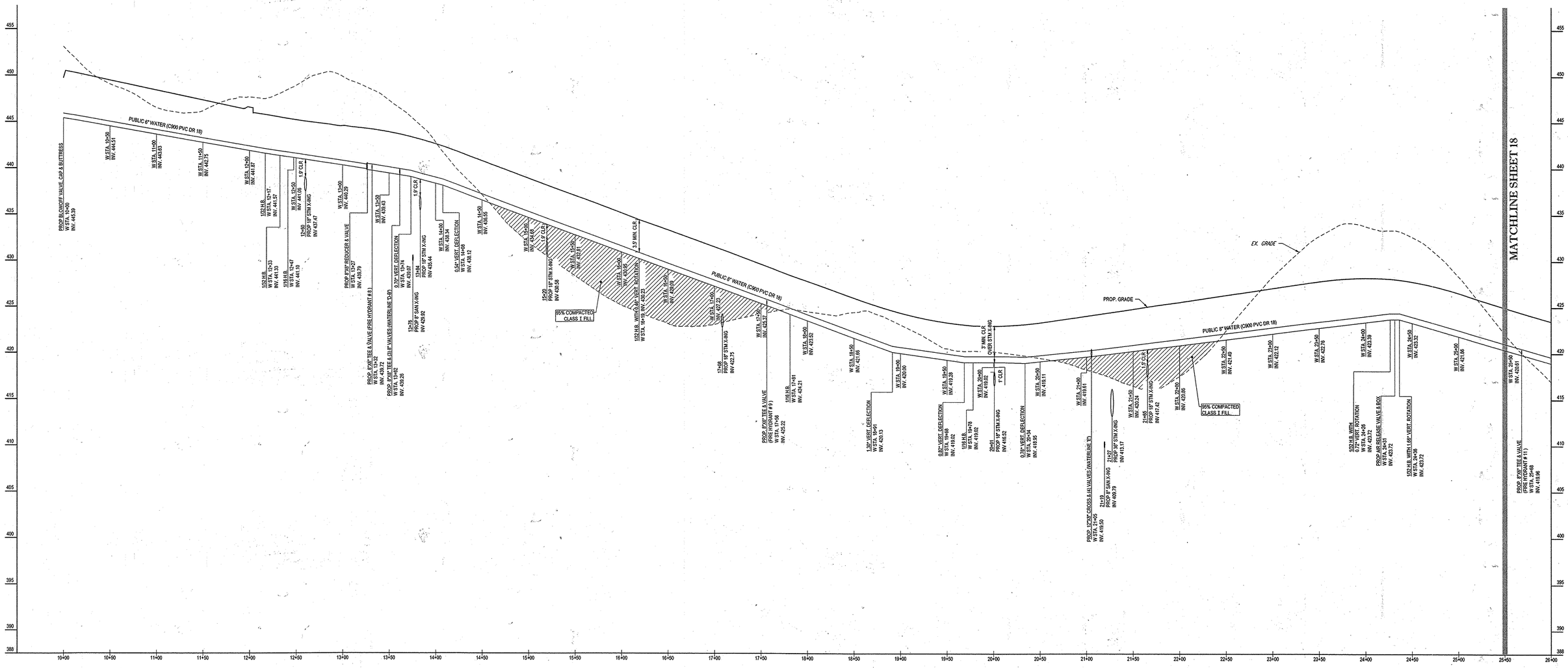
PHASE I
STREAM CROSSING DETAILS

PARCEL NO. N/A
600' SCALE MAP NO. 17 BLOCK NO. –

ESTATES AT PATAPSCO PARK
ROGERS AVENUE
BUILDABLE LOTS 203 - 248 & 373 - 385 (W&S)
BUILDABLE LOTS 321 - 337 (SAN. ONLY)
6TH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND
CONTRACT NO.: 14-4803-D

SCALE

SHEET 16 OF 16



PROPOSED WATERLINE 'B' PROFILE - (10+00 - 25+50)

SCALE: 1"= 50' HORIZONTAL
1"= 5' VERTICAL

50 25 12.5 0 50
1"= 50'

5 2.5 1.25 0 5
1"= 5'

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(WV 1-800-245-4848) (PA 1-800-242-1776) (DC 1-800-257-7777)
(VA 1-800-552-7001) (MD 1-800-257-7777) (DE 1-800-282-8555)

PROFESSIONAL CERTIFICATION
I, BRANDON R. ROWE, 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. 40809, EXPIRATION DATE: 7/3/2017

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND

11/23/15
CHIEF, BUREAU OF UTILITIES DATE

DEPARTMENT OF PLANNING & ZONING HOWARD COUNTY, MARYLAND

11/20/15
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

BOHLER ENGINEERING
901 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21204
Phone: (410) 821-7900
Fax: (410) 821-7987
www.BohlerEngineering.com

STATE OF MARYLAND
BRANDON R. ROWE
No. 40809
PROFESSIONAL ENGINEER
11/20/15

DES: J.A.
DRN: R.L.B.
CHK: B.R.R.
DATE: 12/12/14

REV.	DATE	DESCRIPTION	BY
1	10/21/15	PER LOT LINE, SHC & WHC ADJUSTMENTS	RLB

PUBLIC WATER PROFILES

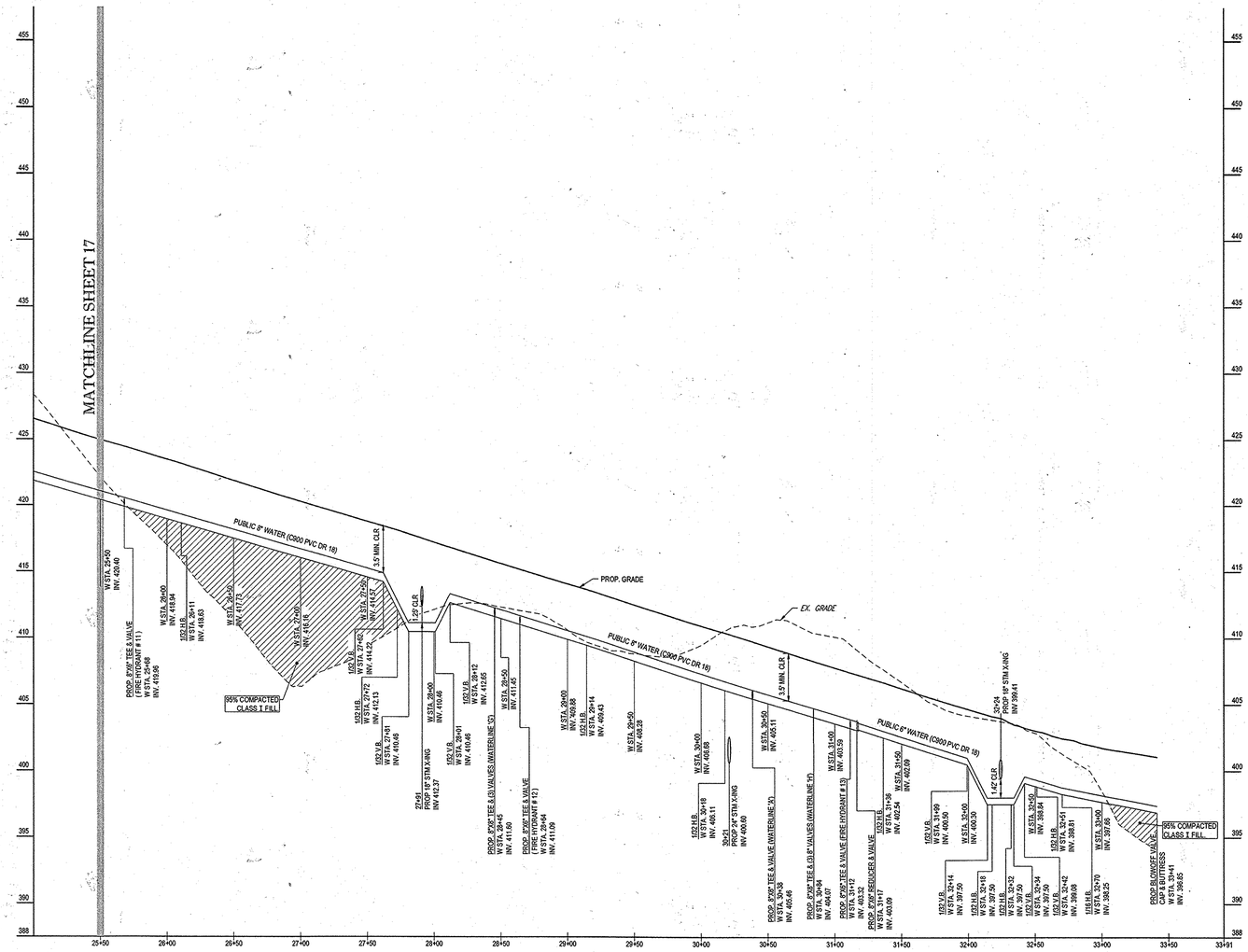
PARCEL NO. N/A
600' SCALE MAP NO. 17 BLOCK NO. –

ESTATES AT PATAPSCO PARK

ROGERS AVENUE
BUILDABLE LOTS 203 - 397 AND OPEN SPACE LOTS 196 - 202
6TH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND
CONTRACT NO.: 14-4803-D

SCALE AS SHOWN

SHEET 17 OF 25



PROPOSED WATERLINE 'B' PROFILE (25+50 - 33+41.17)

SCALE: 1"= 50' HORIZONTAL
1"= 5' VERTICAL

50 25 12.5 0 50
1"= 50'

5 2.5 1.25 0 5
1"= 5'

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DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND

11/20/15
CHIEF, BUREAU OF UTILITIES DATE

DEPARTMENT OF PLANNING & ZONING HOWARD COUNTY, MARYLAND

11/20/15
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

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B.R. ROWE
BRANDON R. ROWE
PROFESSIONAL ENGINEER
No. 40808

DES: J.A.	
DRN: R.L.B.	
CHK: B.R.R.	
DATE: 12/12/14	

REV.	DATE	DESCRIPTION	BY
1	10/21/15	PER LOT LINE, SHC & WHC ADJUSTMENTS	RLB

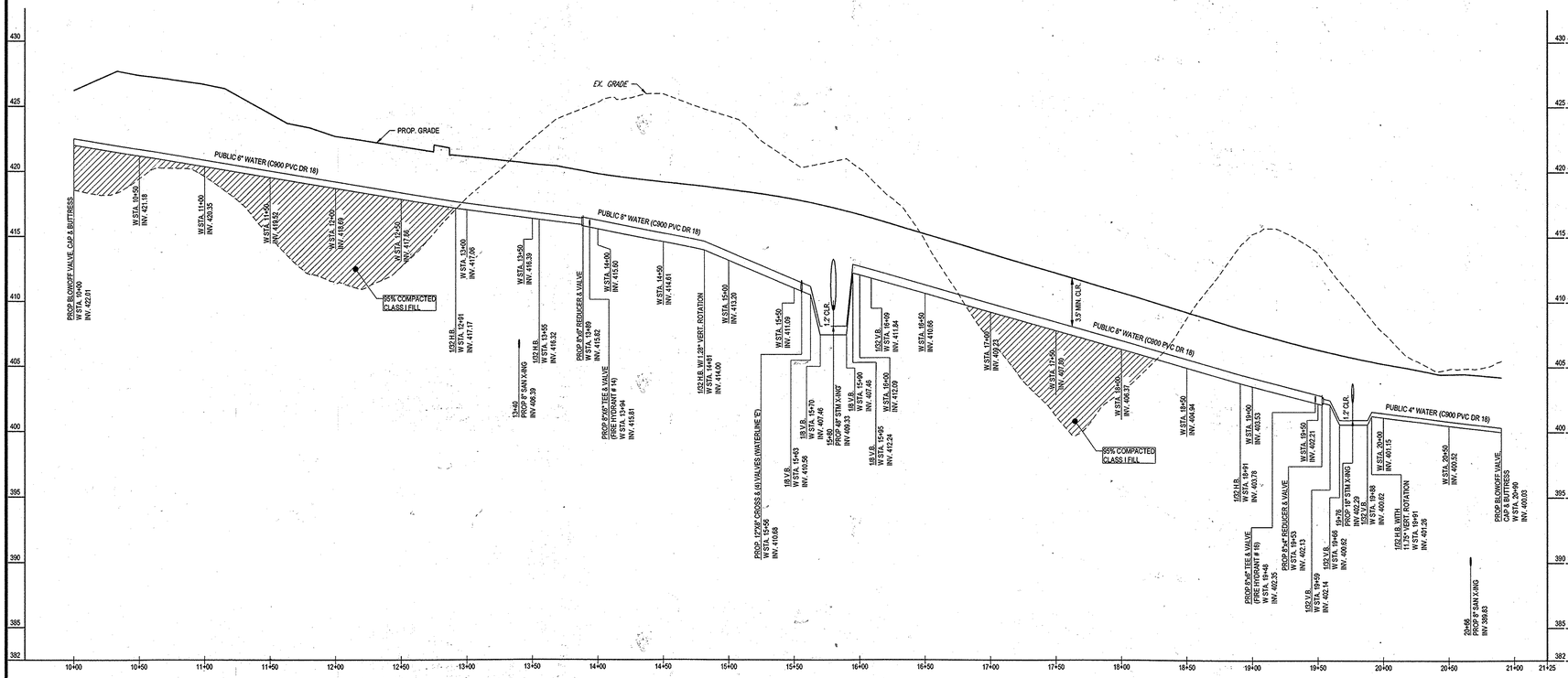
PUBLIC WATER PROFILES

PARCEL NO. N/A
600' SCALE MAP NO. 17 BLOCK NO. –

ESTATES AT PATAPSCO PARK
ROGERS AVENUE
BUILDABLE LOTS 203 - 397 AND OPEN SPACE LOTS 196 - 202
6TH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND
CONTRACT NO.: 14-4803-D

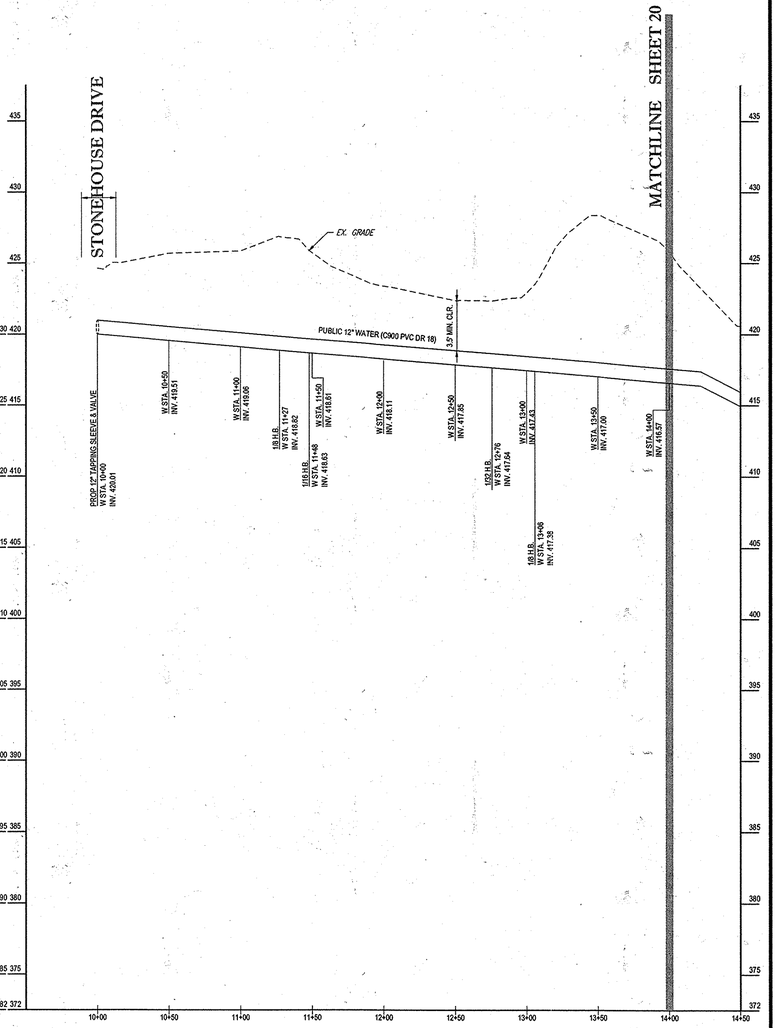
SCALE AS SHOWN

SHEET 18 OF 25



PROPOSED WATERLINE 'C' PROFILE - STA 10+00 TO 20+89.96

SCALE: 1"= 50 ' HORIZONTAL
1"= 5 ' VERTICAL



PROPOSED WATERLINE 'E' PROFILE (10+00 - 14+00)

SCALE: 1"= 50 ' HORIZONTAL
1"= 5 ' VERTICAL

NOTE: DR-14, C900 PVC PIPE, WITH RESTRAINED JOINTS, SHALL BE USED BETWEEN STATION 13+06 AND STATION 14+20. THE MAXIMUM COVER WITHIN THESE LIMITS SHALL NOT EXCEED TEN (10) FEET.

50 25 12.5 0 50
1"= 50'

5 2.5 1.25 0 5
1"= 5'

THE FOLLOWING STATES REQUIRE NOTIFICATION BY EXCAVATORS, DESIGNERS, OR ANY PERSON PREPARING TO DISTURB THE EARTH'S SURFACE ANYWHERE IN THE STATE. IN VIRGINIA, MARYLAND, THE DISTRICT OF COLUMBIA, AND DELAWARE CALL - 811
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DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND

11/24/15
CHIEF, BUREAU OF UTILITIES DATE

DEPARTMENT OF PLANNING & ZONING HOWARD COUNTY, MARYLAND

11/23/15
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

BOHLER ENGINEERING
901 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21204
Phone: (410) 821-7900
Fax: (410) 821-7987
www.BohlerEngineering.com

STATE OF MARYLAND B. R. ROWE No. 40808 PROFESSIONAL ENGINEER

DES: J.A.
DRN: R.L.B.
CHK: B.R.R.
DATE: 12/12/14

REV.	DATE	DESCRIPTION	BY
1	10/21/15	PER LOT LINE, SHC & WHC ADJUSTMENTS	RLB

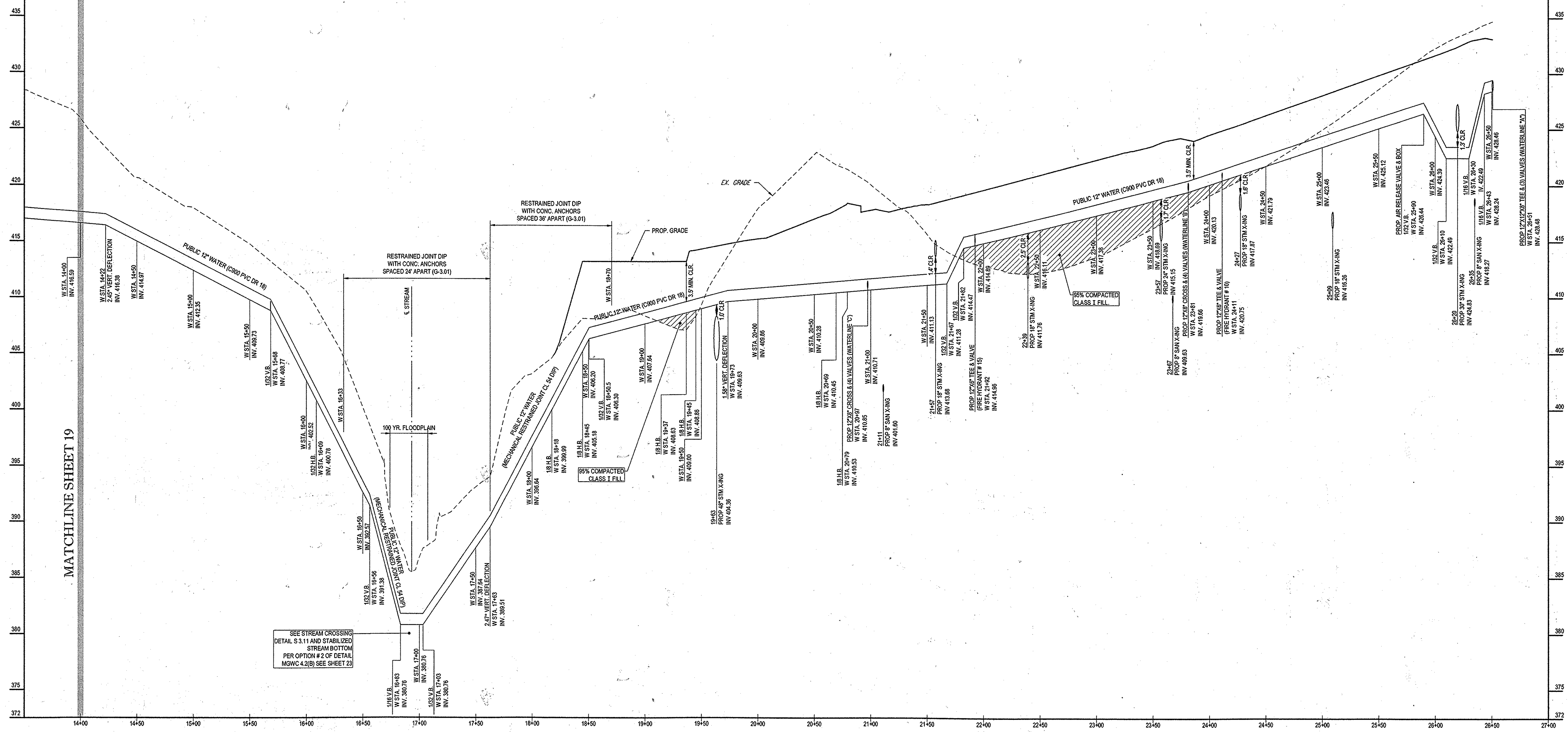
PUBLIC WATER PROFILES

PARCEL NO. N/A
600' SCALE MAP NO. 17 BLOCK NO. --

ESTATES AT PATAPSCO PARK
ROGERS AVENUE
BUILDABLE LOTS 203 - 397 AND OPEN SPACE LOTS 196 - 202
6TH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND
CONTRACT NO.: 14-4803-D

SCALE AS SHOWN

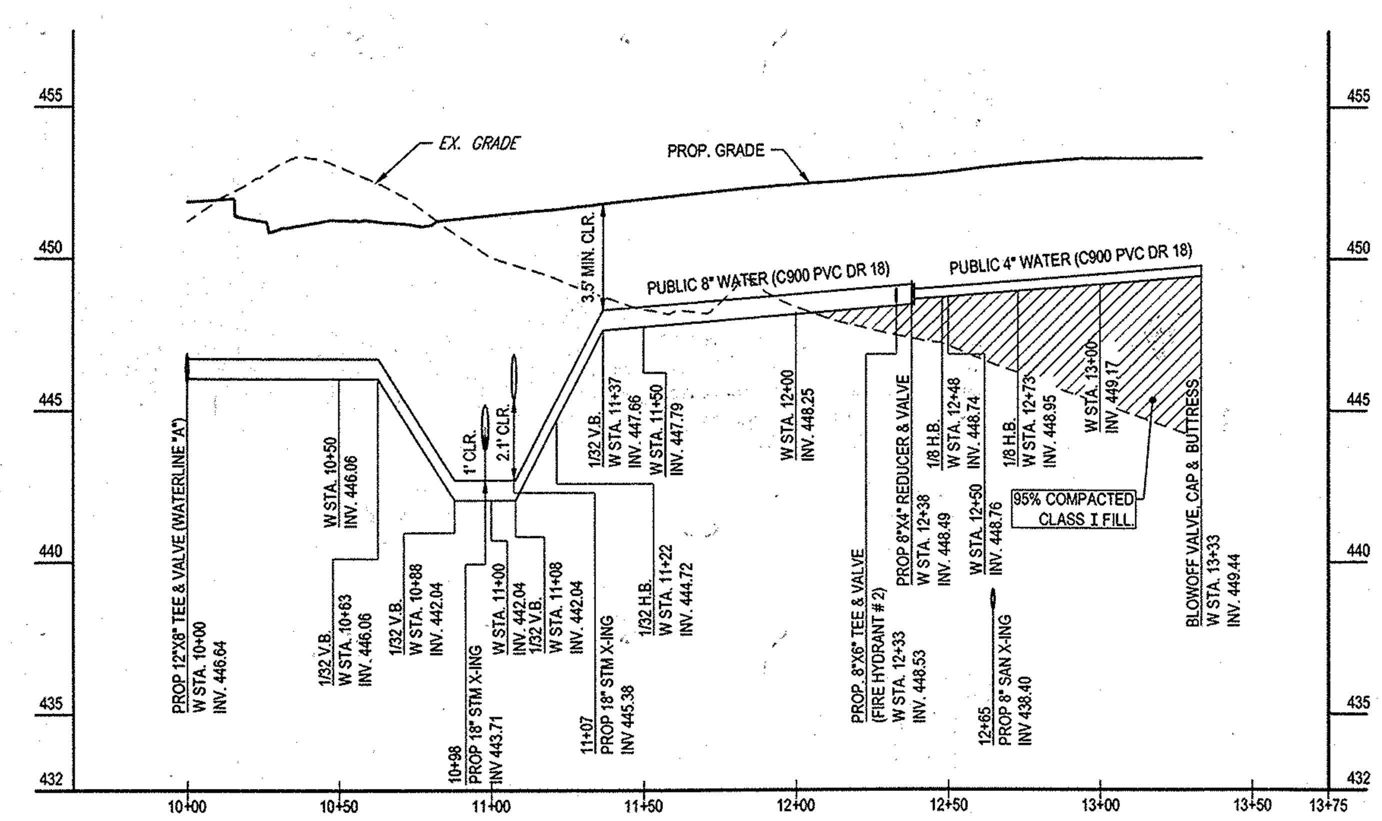
SHEET 19 OF 25



NOTE: DR-14, C900 PVC PIPE, WITH RESTRAINED JOINTS, SHALL BE USED BETWEEN STATION 13+06 AND STATION 14+20. THE MAXIMUM COVER WITHIN THESE LIMITS SHALL NOT EXCEED TEN (10) FEET.

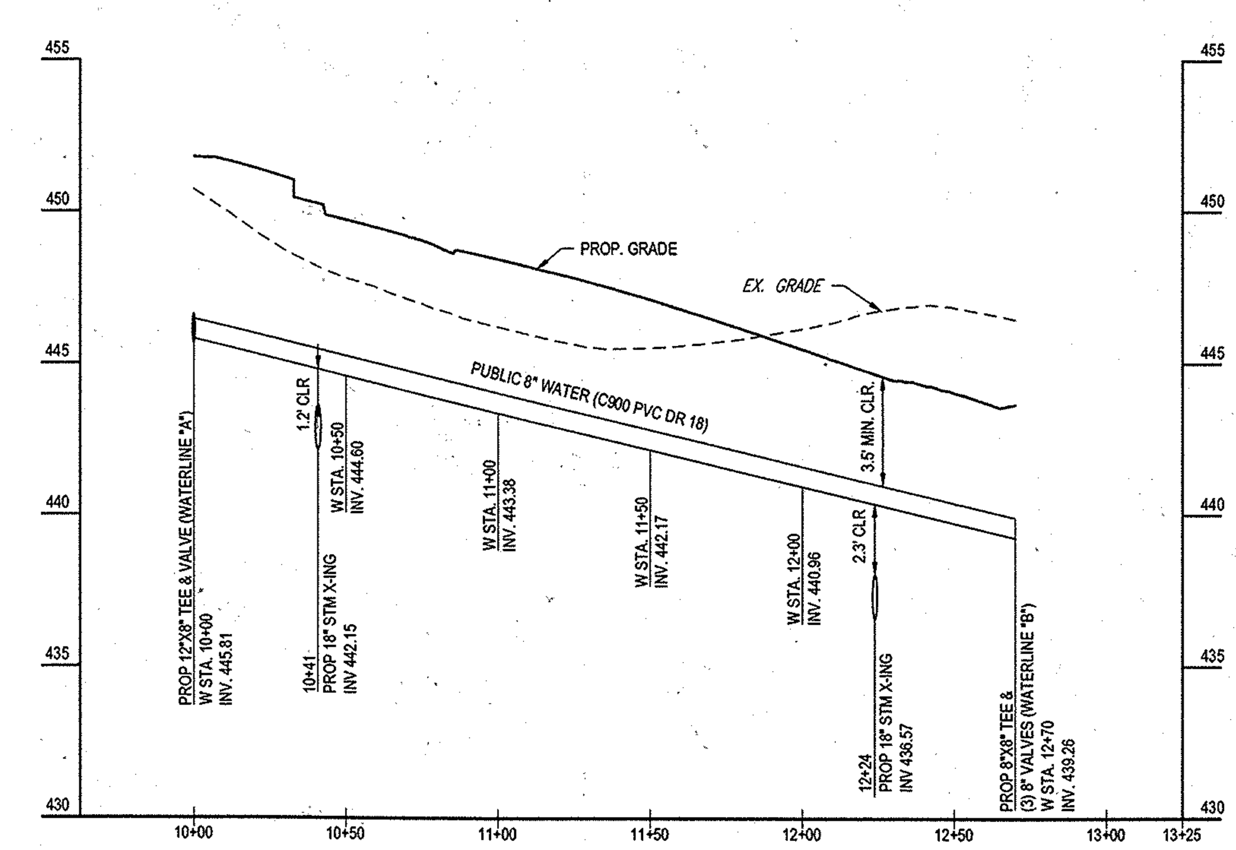
PROPOSED WATERLINE 'E' PROFILE (14+00 - 26+50.62)

SCALE: 1"= 50 ' HORIZONTAL
1"= 5 ' VERTICAL



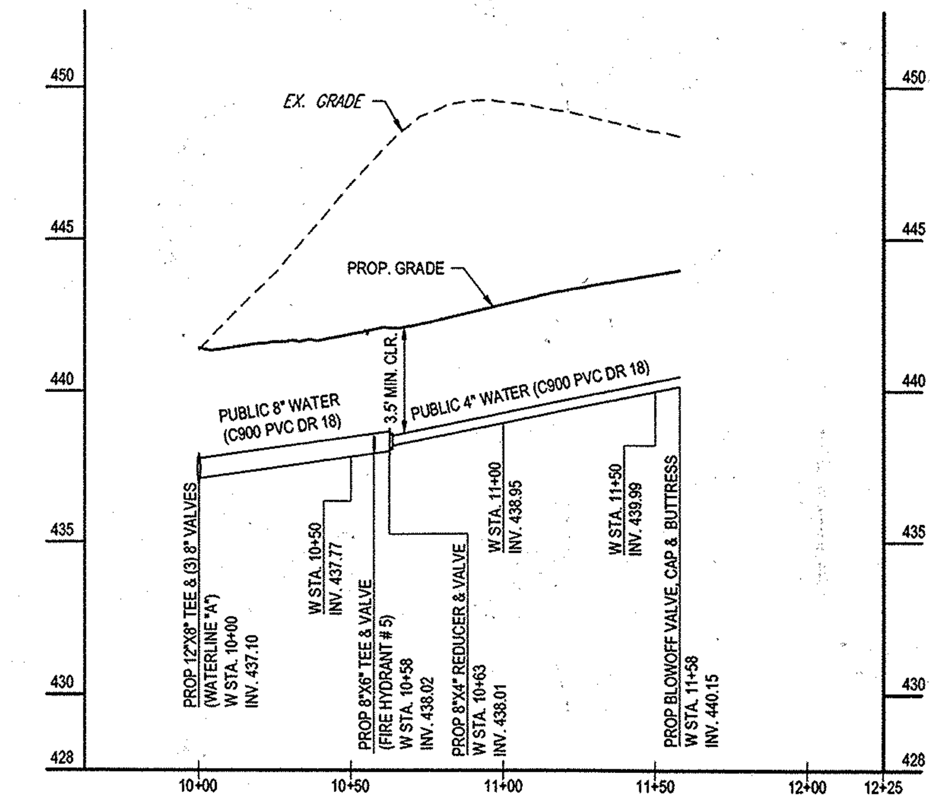
PROPOSED WATERLINE 'D-A' PROFILE

SCALE: 1"= 50 ' HORIZONTAL
1"= 5 ' VERTICAL



PROPOSED WATERLINE 'D-B' PROFILE

SCALE: 1"= 50 ' HORIZONTAL
1"= 5 ' VERTICAL



PROPOSED WATERLINE 'F' PROFILE

SCALE: 1"= 50 ' HORIZONTAL
1"= 5 ' VERTICAL

50 25 12.5 0 50
1"= 50'

5 2.5 1.25 0 5
1"= 5'

DIG WITH C.A.R.E. CALL BEFORE YOU DIG

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DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND

[signature] 11/2/15
CHIEF, BUREAU OF UTILITIES — DATE

DEPARTMENT OF PLANNING & ZONING HOWARD COUNTY, MARYLAND

[signature] 11/20/15
CHIEF, DEVELOPMENT ENGINEERING DIVISION MG. — DATE

BOHLER ENGINEERING
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www.BohlerEngineering.com

B.R. ROWE
STATE OF MARYLAND — BRANDON R. ROWE — PROFESSIONAL ENGINEER — LICENSE No. 40808
10/23/15

DES: J.A.
DRN: R.L.B.
CHK: B.R.R.
DATE: 12/12/14

REV.	DATE	DESCRIPTION	BY
1	10/21/15	PER LOT LINE, SHC & WHC ADJUSTMENTS	RLB

PUBLIC WATER PROFILES

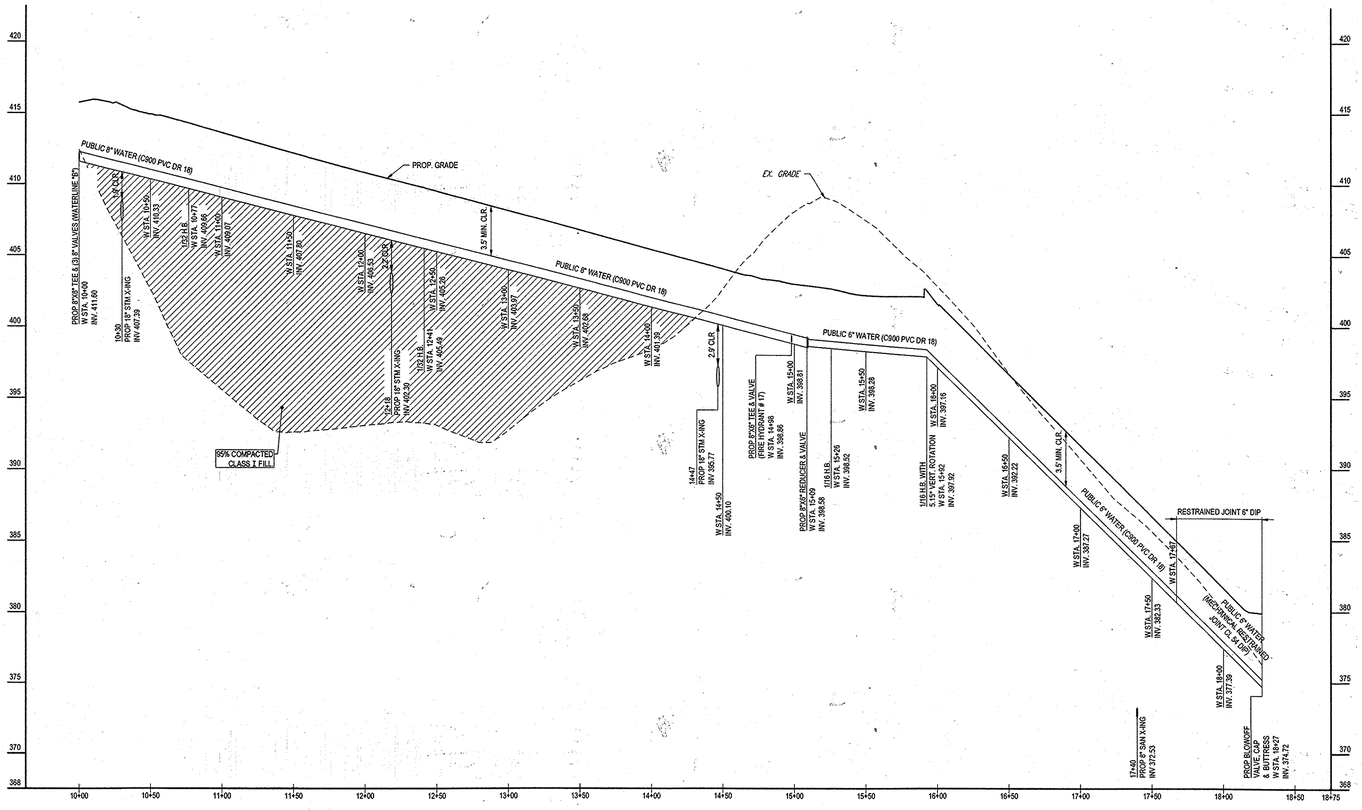
PARCEL NO. N/A
600' SCALE MAP NO. 17 BLOCK NO. –

ESTATES AT PATAPSCO PARK

ROGERS AVENUE
BUILDABLE LOTS 203 - 397 AND OPEN SPACE LOTS 196 - 202
6TH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND
CONTRACT NO.: 14-4803-D

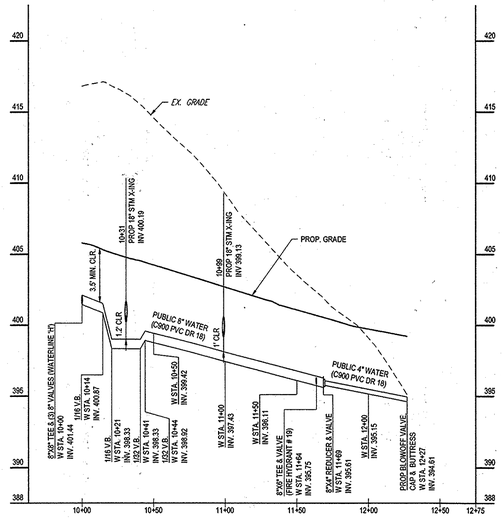
SCALE: AS SHOWN

SHEET



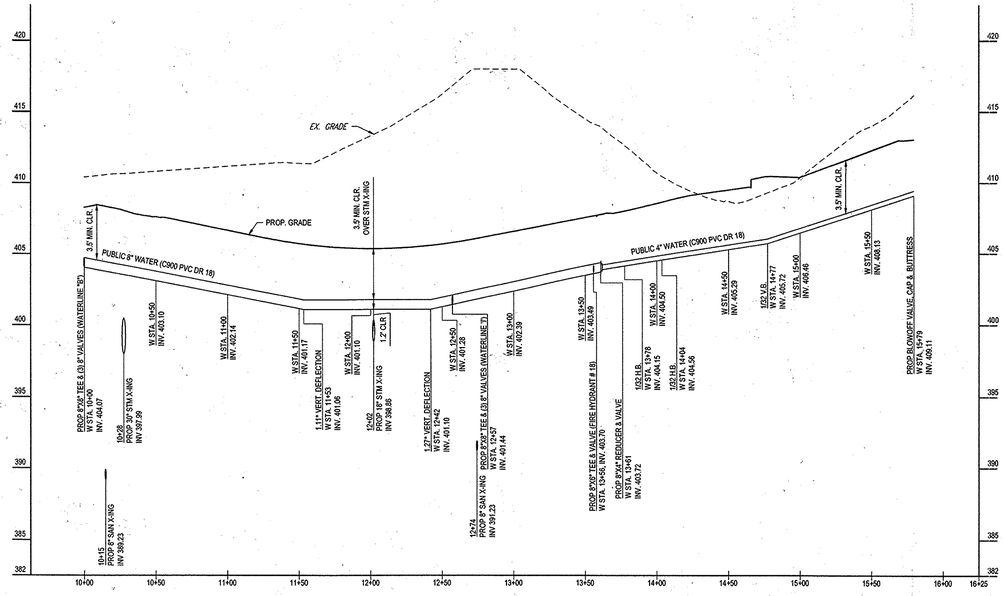
PROPOSED WATERLINE 'G' PROFILE

SCALE: 1"= 50' HORIZONTAL
1"= 5' VERTICAL



PROPOSED WATERLINE 'I' PROFILE

SCALE: 1"= 50' HORIZONTAL
1"= 5' VERTICAL



PROPOSED WATERLINE 'H' PROFILE

SCALE: 1"= 50' HORIZONTAL
1"= 5' VERTICAL

50 25 12.5 0 50
1"= 50'

5 2.5 1.25 0 5
1"= 5'

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DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND CHIEF, BUREAU OF UTILITIES 11/21/15 DATE	DEPARTMENT OF PLANNING & ZONING HOWARD COUNTY, MARYLAND CHIEF, DEVELOPMENT ENGINEERING DIVISION 11/20/15 DATE	BOHLER ENGINEERING 901 DULANEY VALLEY ROAD, SUITE 801 TOWSON, MARYLAND 21204 Phone: (410) 821-7900 Fax: (410) 821-7987 www.BohlerEngineering.com	BRANDON R. ROWE PROFESSIONAL ENGINEER PROFESSIONAL ENGINEER 10/23/15	DES: J.A. DRN: R.L.B. CHK: B.R.R. DATE: 12/12/14	1	10/21/15	PER LOT LINE, SHC & WHC ADJUSTMENTS	RLB
					REV.	DATE	DESCRIPTION	BY

PUBLIC WATER PROFILES

PARCEL NO. N/A
600' SCALE MAP NO. 17 BLOCK NO. --

ESTATES AT PATAPSCO PARK

ROGERS AVENUE
BUILDABLE LOTS 203 - 397 AND OPEN SPACE LOTS 196 - 202
6TH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND
CONTRACT NO.: 14-4803-D

SCALE AS SHOWN
SHEET 21 OF 25

WATER FITTING CHART

WATER MAIN CL STATION	FITTING	NORTHING EASTING
10+00.00 WATERLINE - 'A'	12" TAPPING SLEEVE & VALVE	N 595620.61 E 1362866.36
11+39.43 WATERLINE - 'A'	1/32 H.B. WITH 0.68" VERT. ROTATION	N 595731.38 E 1362951.04
11+45.61 WATERLINE - 'A'	1/16 V.B. WITH 4.21" HOR. ROTATION	N 595737.02 E 1362953.57
11+54.20 WATERLINE - 'A'	1/16 V.B. WITH 4.11" HOR. ROTATION	N 595744.86 E 1362957.09
11+74.20 WATERLINE - 'A'	1/16 V.B.	N 595763.10 E 1362965.27
11+86.20 WATERLINE - 'A'	1/16 V.B.	N 595774.05 E 1362970.19
13+31.92 WATERLINE - 'A'	AIR RELEASE VALVE & ROADWAY BOX	N 595907.00 E 1363029.84
13+41.92 WATERLINE - 'A'	1/32 H.B. W/ 6.56" VERT. ROTATION	N 595916.13 E 1363033.93
15+01.79 WATERLINE - 'A'	1/32 H.B. WITH 0.43" VERT. ROTATION	N 596072.96 E 1363084.89
15+64.96 WATERLINE - 'A'	1/32 H.B. WITH 3.42" VERT. ROTATION	N 596236.06 E 1363059.67
15+95.93 WATERLINE - 'A'	12"X6" TEE & VALVE (FIRE HYDRANT #1)	N 596265.99 E 1363051.74
17+52.66 WATERLINE - 'A'	12"X8" TEE & VALVE (WATERLINE 'D-A')	N 596320.83 E 1363037.21
17+60.22 WATERLINE - 'A'	12"X8" TEE & VALVE (WATERLINE 'D-B')	N 596328.14 E 1363035.28
18+18.46 WATERLINE - 'A'	0.40° VERT. DEFLECTION	N 596384.44 E 1363020.37
20+37.64 WATERLINE - 'A'	1/32 H.B. WITH 0.94" VERT. ROTATION	N 596596.31 E 1362964.25
20+93.35 WATERLINE - 'A'	12"X8" TEE & (3) VALVES (WATERLINE 'F')	N 596651.77 E 1362958.92
21+57.37 WATERLINE - 'A'	PROP 12"X6" TEE & VALVE (FIRE HYDRANT #4)	N 596715.50 E 1362952.79
21+93.25 WATERLINE - 'A'	1/32 H.B. WITH 2.11" VERT. ROTATION	N 596751.21 E 1362949.35
23+50.77 WATERLINE - 'A'	1/32 H.B. WITH 3.12" VERT. ROTATION	N 596908.46 E 1362938.55
25+19.31 WATERLINE - 'A'	12"X6" TEE & VALVE (FIRE HYDRANT #3)	N 597072.45 E 1362997.46
25+30.02 WATERLINE - 'A'	1/32 H.B. WITH 3.91" VERT. ROTATION	N 597082.86 E 1362999.94
26+87.32 WATERLINE - 'A'	12"X12"X8" TEE & (3) VALVES (WATERLINE 'E')	N 597227.61 E 1363061.52
29+11.69 WATERLINE - 'A'	12"X6" TEE & VALVE (FIRE HYDRANT #6)	N 597434.07 E 1363149.36
29+48.38 WATERLINE - 'A'	1/32 H.B.	N 597467.83 E 1363163.73
31+10.45 WATERLINE - 'A'	1/32 H.B. WITH 2.12" VERT. ROTATION	N 597627.88 E 1363189.21
32+13.17 WATERLINE - 'A'	1/32 V.B.	N 597730.37 E 1363182.32
32+18.11 WATERLINE - 'A'	1/32 V.B.	N 597735.30 E 1363181.99
32+38.22 WATERLINE - 'A'	1/32 V.B.	N 597755.36 E 1363180.64
32+42.09 WATERLINE - 'A'	1/32 V.B.	N 597759.23 E 1363180.38
32+86.81 WATERLINE - 'A'	8"X6" TEE & VALVE (FIRE HYDRANT #7)	N 597803.84 E 1363177.37
33+59.06 WATERLINE - 'A'	1/16 H.B.	N 597875.93 E 1363172.52
33+69.33 WATERLINE - 'A'	1/8 H.B.	N 597885.55 E 1363176.13
34+23.57 WATERLINE - 'A'	1/32 V.B.	N 597910.58 E 1363224.25
35+26.55 WATERLINE - 'A'	1/32 V.B.	N 597958.09 E 1363315.61
36+33.37 WATERLINE - 'A'	PROP 8"X8" TEE & VALVE (WATERLINE 'B')	N 598007.38 E 1363410.38

WATER FITTING CHART

WATER MAIN CL STATION	FITTING	NORTHING EASTING
10+00.00 WATERLINE - 'B'	BLOWOFF VALVE, CAP & BUTTRESS	N 596084.51 E 1363186.80
12+17.01 WATERLINE - 'B'	1/32 H.B.	N 596257.87 E 1363317.32
12+32.77 WATERLINE - 'B'	1/32 H.B.	N 596272.41 E 1363323.41
12+47.49 WATERLINE - 'B'	1/16 H.B.	N 596266.97 E 1363325.58
13+31.71 WATERLINE - 'B'	8"X6" TEE & VALVE (FIRE HYDRANT #8)	N 596368.37 E 1363304.00
13+61.63 WATERLINE - 'B'	8"X8" TEE & (3) VALVES (WATERLINE 'D-B')	N 596397.30 E 1363296.33
13+73.56 WATERLINE - 'B'	0.70° VERT. DEFLECTION	N 596408.83 E 1363293.27
13+93.56 WATERLINE - 'B'	1/32 V.B.	N 596428.16 E 1363288.14
16+19.13 WATERLINE - 'B'	1/32 H.B. WITH 0.46° VERT. ROTATION	N 596646.19 E 1363230.33
17+58.30 WATERLINE - 'B'	PROP 8"X6" TEE & VALVE (FIRE HYDRANT #9)	N 596783.09 E 1363221.72
17+81.26 WATERLINE - 'B'	1/16 H.B.	N 596806.01 E 1363220.15
18+91.34 WATERLINE - 'B'	1.30° VERT. DEFLECTION	N 596916.28 E 1363240.02
19+68.45 WATERLINE - 'B'	0.82° VERT. DEFLECTION	N 596992.12 E 1363253.94
19+78.12 WATERLINE - 'B'	1/16 H.B.	N 597001.63 E 1363255.68
21+05.27 WATERLINE - 'B'	12"X8" TEE & (4) VALVES (WATERLINE 'E')	N 597117.73 E 1363307.53
24+26.24 WATERLINE - 'B'	1/32 H.B. WITH 0.72° VERT. ROTATION	N 597410.80 E 1363438.43
24+31.22 WATERLINE - 'B'	AIR RELEASE VALVE & BOX	N 597415.52 E 1363440.02
24+36.20 WATERLINE - 'B'	1/32 H.B. WITH 1.66° VERT. ROTATION	N 597420.24 E 1363441.60
25+67.96 WATERLINE - 'B'	8"X6" TEE & VALVE (FIRE HYDRANT #11)	N 597548.72 E 1363470.80
26+10.62 WATERLINE - 'B'	1/32 H.B.	N 597590.32 E 1363480.26
27+62.00 WATERLINE - 'B'	1/32 V.B.	N 597741.69 E 1363480.96
27+72.49 WATERLINE - 'B'	1/32 H.B.	N 597752.19 E 1363481.01
27+80.90 WATERLINE - 'B'	1/32 V.B.	N 597760.45 E 1363479.41
28+00.90 WATERLINE - 'B'	1/32 V.B.	N 597780.08 E 1363475.60
28+11.92 WATERLINE - 'B'	1/32 V.B.	N 597790.90 E 1363473.50
28+45.29 WATERLINE - 'B'	PROP 8"X8" TEE & (3) VALVES (WATERLINE 'G')	N 597823.65 E 1363467.14
28+64.27 WATERLINE - 'B'	8"X6" TEE & VALVE (FIRE HYDRANT #12)	N 597842.29 E 1363463.52
29+14.20 WATERLINE - 'B'	1/32 H.B.	N 597891.30 E 1363454.01
30+17.68 WATERLINE - 'B'	1/32 H.B.	N 597989.00 E 1363419.93
30+38.39 WATERLINE - 'B'	8"X8" TEE & VALVE (WATERLINE 'A')	N 598007.38 E 1363410.38
30+64.15 WATERLINE - 'B'	8"X8" TEE & (3) VALVES (WATERLINE 'H')	N 598047.97 E 1363389.26
31+11.54 WATERLINE - 'B'	8"X6" TEE & VALVE (FIRE HYDRANT #13)	N 598072.28 E 1363376.62
31+16.54 WATERLINE - 'B'	PROP 8"X6" REDUCER & VALVE	N 598076.72 E 1363374.31
31+36.18 WATERLINE - 'B'	1/32 H.B.	N 598094.14 E 1363365.25
31+98.96 WATERLINE - 'B'	1/32 V.B.	N 598143.58 E 1363326.95
32+14.08 WATERLINE - 'B'	1/32 V.B.	N 598155.85 E 1363317.72
32+17.71 WATERLINE - 'B'	1/32 H.B.	N 598158.74 E 1363315.51
32+31.88 WATERLINE - 'B'	1/32 H.B.	N 598168.38 E 1363305.03
32+34.08 WATERLINE - 'B'	1/32 V.B.	N 598169.45 E 1363303.17
32+42.05 WATERLINE - 'B'	1/32 V.B.	N 598173.70 E 1363296.42
32+51.27 WATERLINE - 'B'	1/32 H.B.	N 598178.61 E 1363288.63
32+70.14 WATERLINE - 'B'	1/16 H.B.	N 598185.71 E 1363271.14
33+41.13 WATERLINE - 'B'	BLOWOFF VALVE, CAP & BUTTRESS	N 598185.22 E 1363200.16

WATER FITTING CHART

WATER MAIN CL STATION	FITTING	NORTHING EASTING
10+00.00 WATERLINE - 'C'	BLOWOFF VALVE, CAP & BUTTRESS	N 596458.77 E 1363545.61
12+91.49 WATERLINE - 'C'	1/32 H.B.	N 596747.53 E 1363505.75
13+55.29 WATERLINE - 'C'	1/32 H.B.	N 596811.29 E 1363508.05
13+68.74 WATERLINE - 'C'	PROP 8"X6" REDUCER & VALVE	N 596843.87 E 1363515.61
13+93.74 WATERLINE - 'C'	8"X6" TEE & VALVE (FIRE HYDRANT #14)	N 596848.74 E 1363516.74
14+81.35 WATERLINE - 'C'	1/32 H.B. W/ 1.28" VERT. ROTATION	N 596934.08 E 1363536.55
15+55.64 WATERLINE - 'C'	12"X8" CROSS & (4) VALVES (WATERLINE 'E')	N 597001.91 E 1363566.85
15+62.51 WATERLINE - 'C'	1/8 V.B.	N 597008.18 E 1363569.65
15+69.91 WATERLINE - 'C'	1/8 V.B.	N 597014.94 E 1363572.67
15+89.92 WATERLINE - 'C'	1/8 V.B.	N 597033.21 E 1363580.83
15+94.70 WATERLINE - 'C'	1/8 V.B.	N 597037.58 E 1363582.78
18+90.78 WATERLINE - 'C'	1/32 H.B.	N 597307.92 E 1363703.52
19+48.05 WATERLINE - 'C'	8"X6" TEE & VALVE (FIRE HYDRANT #16)	N 597363.15 E 1363718.65
19+53.05 WATERLINE - 'C'	PROP 8"X4" REDUCER & VALVE	N 597367.97 E 1363719.97
19+59.07 WATERLINE - 'C'	1/32 V.B.	N 597373.78 E 1363721.56
19+65.44 WATERLINE - 'C'	1/32 V.B.	N 597380.89 E 1363723.51
19+67.77 WATERLINE - 'C'	1/32 V.B.	N 597401.46 E 1363729.14
19+91.01 WATERLINE - 'C'	1/32 H.B. WITH 11.75° VERT. ROTATION	N 597404.59 E 1363730.00
20+89.96 WATERLINE - 'C'	BLOWOFF VALVE, CAP & BUTTRESS	N 597493.09 E 1363774.25

WATER FITTING CHART

WATER MAIN CL STATION	FITTING	NORTHING EASTING
10+00.00 WATERLINE - 'D-A'	12"X8" TEE & VALVE (WATERLINE "A")	N 596320.83 E 1363037.21
10+62.82 WATERLINE - 'D-A'	1/32 V.B.	N 596304.75 E 1362976.49
10+88.01 WATERLINE - 'D-A'	1/32 V.B.	N 596298.30 E 1362952.14
11+08.01 WATERLINE - 'D-A'	1/32 V.B.	N 596293.18 E 1362932.80
11+21.51 WATERLINE - 'D-A'	1/32 H.B.	N 596289.73 E 1362919.76
12+32.88 WATERLINE - 'D-A'	8"X6" TEE & VALVE (FIRE HYDRANT #2)	N 596282.76 E 1362808.60
12+37.98 WATERLINE - 'D-A'	8"X4" REDUCER & VALVE	N 596282.44 E 1362803.52
12+47.87 WATERLINE - 'D-A'	1/8 H.B.	N 596281.82 E 1362793.64
12+72.67 WATERLINE - 'D-A'	1/8 H.B.	N 596298.36 E 1362774.89
13+33.25 WATERLINE - 'D-A'	BLOWOFF VALVE, PLUG & BUTTRESS	N 596358.66 E 1362771.78

WATER FITTING CHART

WATER MAIN CL STATION	FITTING	NORTHING EASTING
10+00.00 WATERLINE - 'D-B'	12"X8" TEE & VALVE (WATERLINE "A")	N 596328.14 E 1363035.28
13+61.63 WATERLINE - 'D-B'	8"X8" TEE & (3) VALVES (WATERLINE 'D-B')	N 596397.30 E 1363296.33

WATER FITTING CHART

WATER MAIN CL STATION	FITTING	NORTHING EASTING
10+00.00 WATERLINE - 'E'	12" TAPPING SLEEVE & VALVE	N 596709.73 E 1364460.80
11+27.15 WATERLINE - 'E'	1/8 H.B.	N 596712.48 E 1364333.73
11+47.99 WATERLINE - 'E'	1/16 H.B.	N 596727.53 E 1364319.32
12+75.79 WATERLINE - 'E'	1/32 H.B.	N 596846.63 E 1364272.99
13+05.72 WATERLINE - 'E'	1/8 H.B.	N 596872.44 E 1364257.82
14+22.10 WATERLINE - 'E'	2.45° VERT. DEFLECTION	N 596905.59 E 1364146.26
15+68.38 WATERLINE - 'E'	1/32 V.B.	N 596947.25 E 1364006.03
16+08.76 WATERLINE - 'E'	1/32 H.B.	N 596958.76 E 1363967.33
16+55.94 WATERLINE - 'E'	1/32 V.B.	N 596978.00 E 1363924.25
16+83.16 WATERLINE - 'E'	1/16 V.B.	N 596989.10 E 1363899.40
17+03.16 WATERLINE - 'E'	1/32 V.B.	N 596997.26 E 1363881.14
17+62.74 WATERLINE - 'E'	2.47° VERT. DEFLECTION	N 597021.56 E 1363826.74
18+17.55 WATERLINE - 'E'	1/8 H.B.	N 597043.92 E 1363776.70
18+44.64 WATERLINE - 'E'	1/8 H.B.	N 597034.24 E 1363751.40
18+50.49 WATERLINE - 'E'	1/32 V.B.	N 597028.89 E 1363749.01
19+36.50 WATERLINE - 'E'	1/8 H.B.	N 596950.36 E 1363713.93
19+44.87 WATERLINE - 'E'	1/8 H.B.	N 596947.37 E 1363706.12
19+73.34 WATERLINE - 'E'	1.58° VERT. DEFLECTION	N 596958.98 E 1363680.12
20+69.28 WATERLINE - 'E'	1/8 H.B.	N 596998.11 E 1363592.53
20+79.18 WATERLINE - 'E'	1/8 H.B.	N 596994.57 E 1363583.28
20+97.16 WATERLINE - 'E'	12"X8" CROSS & (4) VALVES (WATERLINE 'C')	N 597001.91 E 1363566.85
21+67.35 WATERLINE - 'E'	1/32 V.B.	N 597030.53 E 1363502.78
21+82.36 WATERLINE - 'E'	1/32 V.B.	N 597036.65 E 1363489.06
21+92.36 WATERLINE - 'E'	12"X6" TEE & VALVE (FIRE HYDRANT #15)	N 597040.73 E 1363479.93
23+81.18 WATERLINE - 'E'	12"X8" CROSS & (4) VALVES (WATERLINE 'B')	N 597117.73 E 1363307.53
24+11.18 WATERLINE - 'E'	12"X6" TEE & VALVE (FIRE HYDRANT #10)	N 597129.96 E 1363280.14
25+89.61 WATERLINE - 'E'	PROP. AIR RELEASE VALVE & 1/32 V.B.	N 597202.73 E 1363117.22
26+09.62 WATERLINE - 'E'	1/32 V.B.	N 597210.89 E 1363098.95
26+29.62 WATERLINE - 'E'	1/16 V.B.	N 597219.05 E 1363080.69
26+43.46 WATERLINE - 'E'	1/16 V.B.	N 597224.70 E 1363068.03
26+50.62 WATERLINE - 'E'	12"X12"X8" TEE & (3) VALVES (WATERLINE "A")	N 597227.61 E 1363061.52

WATER FITTING CHART

WATER MAIN CL STATION	FITTING	NORTHING EASTING
10+00.00 WATERLINE - 'F'	12"X8" TEE & (3) VALVES (WATERLINE "A")	N 596651.77 E 1362958.92
10+57.57 WATERLINE - 'F'	PROP 8"X6" TEE & VALVE (FIRE HYDRANT #5)	N 596646.26 E 1362901.61
10+62.57 WATERLINE - 'F'	PROP 8"X4" REDUCER & VALVE	N 596645.78 E 1362899.63
11+57.95 WATERLINE - 'F'	BLOWOFF VALVE, CAP & BUTTRESS	N 596636.65 E 1362801.70

WATER FITTING CHART

WATER MAIN CL STATION	FITTING	NORTHING EASTING
??? WATERLINE - 'G'	BLOWOFF VALVE, PLUG & BUTTRESS	N 598138.05 E 1364224.54
??? WATERLINE - 'G'	NULL STRUCTURE	N 598011.22 E 1363925.42
??? WATERLINE - 'G'	8"X6" REDUCER & VALVE	N 598016.17 E 1363934.94
??? WATERLINE - 'G'	1/16 H.B. WITH 0.81" VERT. ROTATION	N 598024.00 E 1363949.99
??? WATERLINE - 'G'	1/32 H.B.	N 597892.72 E 1363697.58
??? WATERLINE - 'G'	1/32 H.B.	N 597837.89 E 1363542.56
??? WATERLINE - 'G'	8"X8" TEE & 8" VALVE (WATERLINE "B")	N 597823.65 E 1363467.14
15+92.33 WATERLINE - 'G'	1/16 H.B. WITH 5.15" VERT. ROTATION	N 598029.78 E 1364016.38

WATER FITTING CHART

WATER MAIN CL STATION	FITTING	NORTHING EASTING
10+00.00 WATERLINE - 'H'	8"X8" TEE & (3) VALVES (WATERLINE "B")	N 598047.97 E 1363389.26
12+41.97 WATERLINE - 'H'	1/32 V.B.	N 598159.63 E 1363603.94
12+57.23 WATERLINE - 'H'	8"X8" TEE & (3) VALVES (WATERLINE "I")	N 598166.67 E 1363617.48
13+55.89 WATERLINE - 'H'	8"X6" TEE & VALVE (FIRE HYDRANT #18)	N 598212.19 E 1363705.00
13+60.91 WATERLINE - 'H'	PROP 8"X4" REDUCER	N 598214.50 E 1363709.45
13+77.53 WATERLINE - 'H'	1/32 H.B.	N 598222.17 E 1363724.20
14+03.54 WATERLINE - 'H'	1/32 H.B.	N 598238.32 E 1363744.60
14+77.19 WATERLINE - 'H'	1/32' V.B.	N 598272.31 E 1363809.93
15+79.43 WATERLINE - 'H'	BLOWOFF VALVE, CAP & BUTTRESS	N 598319.51 E 1363900.62

WATER FITTING CHART

WATER MAIN CL STATION	FITTING	NORTHING EASTING
10+00.00 WATERLINE - 'I'	8"X8" TEE & (3) VALVES (WATERLINE 'H')	N 598166.67 E 1363617.48
10+14.43 WATERLINE - 'I'	1/16 V.B.	N 598179.47 E 1363610.82
10+20.75 WATERLINE - 'I'	1/16 V.B.	N 598185.07 E 1363607.91
10+40.75 WATERLINE - 'I'	1/32 H.B.	N 598202.82 E 1363598.68
10+44.09 WATERLINE - 'I'	1/32 H.B.	N 598205.78 E 1363597.14
11+63.60 WATERLINE - 'I'	8"X6" TEE & VALVE (FIRE HYDRANT #19)	N 598311.83 E 1363542.02
11+68.63 WATERLINE - 'I'	8"X4" REDUCER & VALVE	N 598316.29 E 1363539.70
12+26.91 WATERLINE - 'I'	BLOWOFF VALVE, CAP & BUTTRESS	N 598367.99 E 1363512.81

THE FOLLOWING STATES REQUIRE NOTIFICATION BY EXCAVATORS, DESIGNERS, OR ANY PERSON PREPARING TO DISTURB THE EARTH'S SURFACE ANYWHERE IN THE STATE, IN VIRGINIA, MARYLAND, THE DISTRICT OF COLUMBIA, AND DELAWARE CALL - 811
(WV 1-800-245-4848) (PA 1-800-242-1776) (DC 1-800-257-7777) (VA 1-800-552-7001) (MD 1-800-257-7777) (DE 1-800-282-8555)

PROFESSIONAL CERTIFICATION
I, BRANDON R. ROWE, 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. 40808, EXPIRATION DATE: 7/3/2017

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND

11/20/15
CHIEF, BUREAU OF UTILITIES DATE

DEPARTMENT OF PLANNING & ZONING HOWARD COUNTY, MARYLAND

11/20/15
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

BOHLER ENGINEERING
901 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21204
Phone: (410) 821-7900
Fax: (410) 821-7967
www.BohlerEngineering.com

STATE OF MARYLAND BRANDON R. ROWE No. 40808 PROFESSIONAL ENGINEER
11/20/15

DES: J.A.
DRN: R.L.B.
CHK: B.R.R.
DATE: 12/12/14

REV.	DATE	DESCRIPTION	BY
1	10/21/15	PER LOT LINE, SHC & WHC ADJUSTMENTS	RLB

WATER FITTING CHARTS

PARCEL NO. N/A
600' SCALE MAP NO. 17 BLOCK NO. --

ESTATES AT PATAPSCO PARK
ROGERS AVENUE
BUILDABLE LOTS 203 - 397 AND OPEN SPACE LOTS 196 - 202
6TH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND
CONTRACT NO.: 14-4803-D

SCALE

SHEET 22 OF 25

20.0 STANDARDS AND SPECIFICATIONS FOR VEGETATIVE STABILIZATION

DEFINITION

Using vegetation as cover for barren soil to protect it from forces that cause erosion.

PURPOSE

Vegetative stabilization specifications are used to promote the establishment of vegetation on exposed soil. When soil is stabilized with vegetation, the soil is less likely to erode and more likely to allow infiltration of rainfall, thereby reducing sediment loads and run-off to downstream areas, and improving wildlife habitat and visual resources.

CONDITIONS WHERE PRACTICE APPLIES

This practice shall be used on denuded areas as specified on the plans and may be used on highly erodible or critically eroding areas. This specification is divided into Temporary Seeding to quickly establish vegetative cover for short duration (up to one year). and Permanent Seeding, for long term vegetative cover. Examples of applicable areas for Temporary Seeding are temporary Soil Stockpiles, cleared areas being left idle between construction phases, earth dikes, etc. and for Permanent Seeding are lawns, dams, cut and fill slopes and other areas of final grade, former stockpile and staging areas, etc.

EFFECTS OF WATER QUALITY AND QUANTITY

Planting vegetation in disturbed areas will have an effect on the water budget, especially on volumes and rates of run-off, infiltration, evaporation, transpiration, percolation, and groundwater recharge. Vegetation over time, will increase organic matter content and improve the water holding capacity of the soil and subsequent plant growth. Vegetation will help reduce the movement of sediment, nutrients and other chemicals carried by run-off to receiving waters. Plants will also help protect groundwater supplies by assimilating those substances present within the root zone. Sediment control devices must retain in place during grading, seeded preparation, seeding, mulching and vegetative establishment to prevent large quantities of sediment and associated chemicals and nutrients from washing into surface waters.

SECTION 1 - VEGETATIVE STABILIZATION METHODS AND MATERIALS

A. Site Preparation

i. Install erosion and sediment control structures (either temporary or permanent) such as diversion, grade stabilization structures, berms, waterways, or sediment control basins.

ii. Perform all grading operations at right angles to the slope. Final grading and shaping is not usually necessary for temporary seeding.

iii. Schedule required soil tests to determine soil amendment composition and application rates for sites having disturbed area over 5 acres.

B. Soil Amendments (Fertilizer and Lime Specifications)

i. Soil tests must be performed to determine the exact ratios and application rates for both lime and fertilizer on sites having disturbed areas over 5 acres. Soil analysis maybe performed by the University of Maryland or a recognized commercial laboratory. Soil samples taken for engineering purposed may also be used for chemical analyses.

ii. Fertilizers shall be uniform in composition, free flowing and suitable for accurate application by approved equipment. Manure may be substituted for fertilizer with prior approval from the appropriate approval authority. Fertilizers shall all be delivered to the site fully labeled according to the applicable state fertilizer laws and shall bear the name, trade name or trademark and warrantee of the producer.

iii. Lime materials shall be ground limestone (hydrated or burnt lime may be substituted) which contains at least 50% total oxides (calcium oxide plus magnesium oxide). Limestone shall be ground to such fineness that at least 50% will pass through a #100 mesh sieve and 98-100% will pass through a #20 mesh sieve. iv. Incorporate lime and fertilizer into the top 3-5" of soil by disking or other suitable means.

C. Seedbed Preparation

i. Temporary Seeding a. Seedbed preparation shall consist of loosening soil to a depth of 3" to 5" by means of suitable agricultural or construction equipment, such as disc harrows or chisel plows or rippers mounted on construction equipment. After the soil is loosened it should not be rolled or dragged smooth, but left in the roughened condition. Sloped areas (greater than 3:1) should be tracked leaving the surface in an irregular condition with ridges running parallel to the contour of the slope. b. Apply fertilizer and lime as prescribed on the plane. c. In corporate lime and fertilizer into the top 3-5" of soil by disking or other suitable means.

ii. Permanent Seeding

a. Minimum soil conditions required for permanent vegetative establishment:

1. Soil pH shall be between 6.0 and 7.0.
2. Soluble salts shall be less than 500 parts per million (ppm).
3. The soil shall contain less than 40% clay, but enough fine grained material (>30% silt plus clay) to provide the capacity to hold a moderate amount of moisture. An exception is if lovegrass or serecia lespedezas is to be planted, then a sandy soil (<30% silt plus clay) would be acceptable.
4. Soil shall contain 1.5% minimum organic matter by weight.
5. Soil must contain sufficient pore space to permit adequate root penetration.
6. If these conditions cannot be met by soils on site, adding topsoil is required in accordance with Section 21 Standard and Specification for Topsoil.

b. Areas previously graded in conformance with the drawings shall be maintained in a true and even grade, then scarified or otherwise loosened to a depth of 3-5" to permit bonding of the topsoil to the surface area and to create horizontal erosion check slots to prevent topsoil to the surface area and to create horizontal erosion check slots to prevent topsoil from sliding down a slope.

c. Apply soil amendments as per soil test or as included on the plans.

d. Mix soil amendments into the top 3-5" ot topsoil by disking or other suitable means. Lawn areas should be raked to smooth the surface, remove large objects like stones and branches, abd ready the area for seed and application. Where site conditions will not permit normal seedbed preparation, loosen surface soil by dragging with a heavy chain or other equipment to roughen the surface. Steep slopes (steeper than 3:1) should be tracked by a dozer leaving the soil in an irregular condition with ridges running parallel to the contour of the slopoe. The top 1-3" of soil should be loose and friable. Seedbed loosening may not be necessary on newly disturbed areas.

D. Seed Specifications

i. All seed must meet the requirements of the Maryland State Seed Law. All seed shall be subject to re-testing by a recognized seed laboratory. All seed used shall have been tested within the 6 months immediately preceding the date of sowing such material on this job. Note: Seed tags shall be made available to the inspector to verify type and rate of seed used.

ii. Inoculant - The inoculant for treating legume seed in the seed mixtures shall be a pure culture of nitrogen-fixing bacteria prepared specially for the species. Inoculants shall not be used later than the date indicated in the container. Add fresh inoculant as directed on package. Use four times the recommended rate when hydroseeding. Note: It is very important to keep inoculant as cool as possible until used. Temperature above 75°-80°F. can weaken bacteria amd make the inoculant less effective.

E. Methods of Seeding

i. Hydroseeding: Apply seed uniformly with hydroseeder (slurry includes seed and fertilizer), broadcast or dropo seeded, or a cultipacker seeder.

a. If fertilizer is being applied at the time of seeding, the application rates amounts will not exceed the following: nitrogen; maximum of 100 lbs. per acre total of soluble nitrogen: P205 (phosphorus); 200 lbs/ac; K20 (potassium); 200 lbs/ac.

b. Lime - use only ground agricultural limestone, (Up to 3 tons per acre may be applied by hydroseeding). Normally, not more than 2 tons are applied by hydroseeding at any one time. Do not use burnt or hydrated lime when hydroseeding.

c. Seed and fertilizer shall be mixed on site and seeding shall be done immediately and without interruption.

ii. Dry Seeding: This includes use of conventional drop or broadcast spreaders. a. Seed spread dry shall be incorporated into the subsoil at the rates prescribed on the Temporary or Permanent Seeding Summaries or Tables 265 or 26. The seeded area shall then be rolled with a weighted roller to provide good seed to soil contact. b. Where practical, seed should be applied in two directions perpendicular to each other. Apply half the seeding rate in each direction.

iii. Drill or Cultipacker Seeding: Mechanized seeders that apply and cover seed with soil.

a. Cultipacking seeders are required to bury the seed in such a fashion as to provide at least 1/4 inch of soil covering. Seedbed must be firm after planting.

b. Where practical, seed should be applied in two directions perpendicular to each other. Apply half the seed rate in each direction.

F. Mulch Specifications (In order of preference)

i. Straw shall consist of thoroughly threshed wheat, rye or oat straw, reasonable bright in color, and shall not be musty, moldy, caked, decayed, or excessively dusty and shall be free of noxious weed seeds as specified in the Maryland Seed Law.

ii. Wood Cellulose Fiber Mulch (WCFM)

a. WCFM shall consist of specially prepared wood cellulose processed into a uniform fibrous physical state.

b. WCFM shall be dyed green or contain a green dye in the package that will provide an appropriate color to facilitate visual inspection of the uniformly spread slurry.

c. WCFM, including dye, shall contain no germination or growth inhibiting factors. d. WCFM materials shall be manufactured and processed in such a manner that the wood cellulose fiber mulch will remain in uniform suspension in water under agitation and will blend with seed, fertilizer and other additives to form a homogeneous slurry. The mulch material shall form a blotter-like ground cover, on application, having moisture absorption and percolation properties and shall cover and hold grass seed in contact with the soil without inhibiting the growth of the grass seedings.

E. WCFM material shall contain no elements or compounds at concentration levels that will be phytol-toxic.

F. WCFM must conform to the following physical requirements: fiber length to approximately 10 mm., diameter approximately 1 mm., pH range of 4.0 to 8.5, ash content of 1.6% maximum and water holding capacity of 90% minimum. Note: Only sterile straw mulch should be used in areas where one species of grass is desired,

G. Mulching Seeded Areas - Mulch shall be applied to all seeded areas immediately after seeding.

i. If grading is completed outside of the seeding season, mulch along shall be applied as prescribed in this section and maintained until the seeding season returns and seeding can be performed in accordance with these specifications.

ii. When straw mulch is used, it shall be spread over all seeded areas at the rate of 2 tons/acre. Mulch shall be applied to a uniform loose depth of between 1" and 2". Mulch applied shall achieve a uniform distribution and depth so that the soil surface is not exposed. If a mulch anchoring tool is to be used, the rate should be increased to 2.5 tons/acre. iii. Wood cellulose fiber used as a mulch shall be applied at a net dry weight of 1,500 lbs. per acre. The wood cellulose fiber shall be mixed with water, and the mixture shall contain a maximum of 50 lbs. of wood cellulose fiber per 100 gallons of water.

H. Securing Straw Mulch (Mulch Anchoring): Mulch anchoring shall be performed immediately following mulch application to minimize loss by wind or water. This may be done by one of the following methods (listed by preference), depending upon size of area and erosion hazard:

i. A mulch anchoring tool is a tractor drawn implement designed to punch and anchor mulch into the soil surface a minimum of two (2) inches. This practice is most effective on large areas, but is limited to flatter slopes where equipment can operate safely. If used on sloping land, this practice should be used on the contour if possible.

ii. Wood cellulose fiber may be used for anchoring straw. The fiber binder shall be applied at a net dry weight of 750 lbs./acre. The wood cellulose fiber shall be mixed with water and the mixture shall contain a maximum of 50 pounds of wood cellulose fiber per 100 gallons of water.

iii. Application of liquid binders should be heavier at the edges where wind catches mulch, such as in valleys and crest of banks. The remainder of area should appear uniform after binder application. Synthetic binders- such as Acrylic DLR (Agro-Tack), DCA-70 Petroset, Terra Tax II, Terra Tack AR or other approved equal may be used at rates recommended by the manufacturer to anchor mulch.

iv. Lightweight plastic netting may be stapled over the mulch according to manufacturer's recommendations. Netting is usually available in rolls 4' to 15' wide and 300 to 3,000 feet long.

I. Incremental Stabilization - Cut Slopes

i. All cuts slopes shall be dressed, prepared, seeded and mulched as the work progresses. Slopes shall be excavated and stabilized in equal increments not to exceed 15'.

ii. Construction sequence (Refer to Figure 3 below):

a. Excavate and stabilize all temporary swales, side ditches, or berms that will be used to convey runoff from the excavation.

b. Perform Phase 1 excavation, dress, and stabilize.

c. Perform Phase 2 excavation, dress, and stabilize. Overseed Phase 1 as necessary.

d. Perform final phase excavation, dress, and stabilize. Overseed previously seeded areas as necessary. Note: Once excavation has begun the operation should be continuous from grubbing through the completion of grading and placement of topsoil (if required) and permanent seed and mulch. Any interruptions in the operation of completing out of the seeding season will necessitate the application of temporary stabilization.

J. Incremental Stabilization of Embankments - Fill Slopes

i. Embankments shall be constructed in lifts as prescribed on the plans.

ii. Slopes shall be stabilized immediately when the vertical height of the multiple lifts reaches 15", or when the grading operation ceases as prescribed in the plans. a sediment trapping device.

iii. At the end of each day, temporary berms and pipe slope drains should be constructed along the top edge of the embankment to inrercept surface runoff and convey it down the slope in a non-erosive manner to

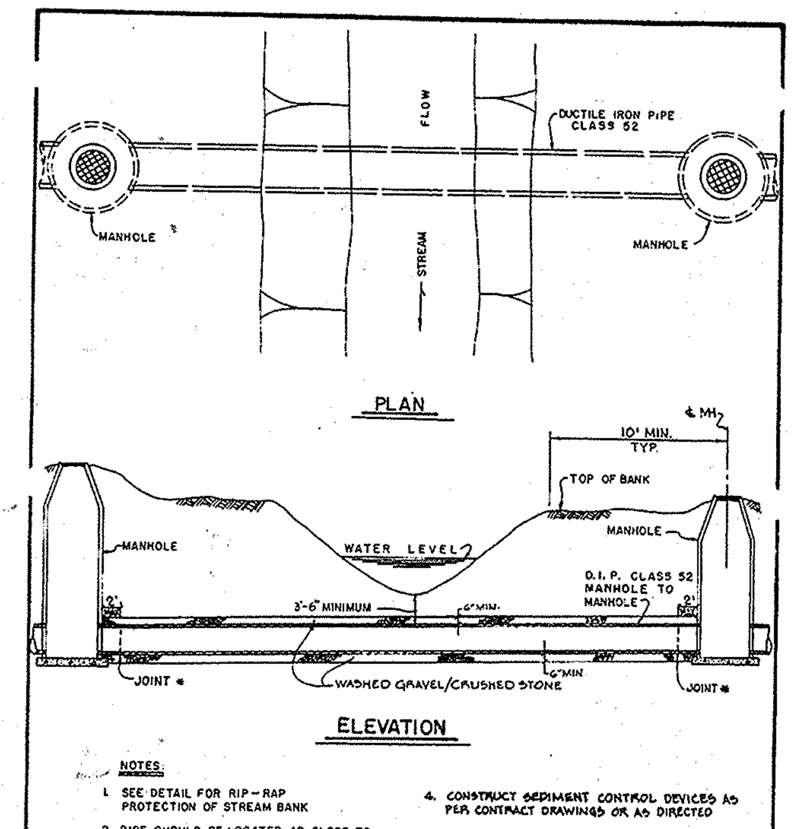
iv. Construction sequence: Refer to Figure 4 (below).

a. Excavate and stabilize all temporary swales, side ditches, or berms that will be used to divert runoff around the fill. Construct slopr silt fence on low side of fill as shown in Figure 5, unless other methods shown on the plans address this area.

b. Place Phase 1 embankment, dress, and stabilize.

c. Place Phase 2 embankment, dress, and stabilize.

d. Place final phase embankment, dress, and stabilize. Overseed previously seeded areas as necessary. Note: Once the placement of fill has begun the operation should be continuous from grubbing through the completion of grading and placement of topsoil (if required) and permanent seed and mulch. Any interruptions in the operation or completing the operation out ot the seeding season will necessitate the application of temporary stabilization.



NOTES:
1. SEE DETAIL FOR RIP-RAP PROTECTION OF STREAM BANK
2. PIPE SHOULD BE LOCATED AS CLOSE TO 90° TO STREAM FLOW AS FEASIBLE.
3. PROVIDE PIPE JOINT WITHIN 2'-0" MAXIMUM FROM OUTSIDE OF MANHOLE WALL. *(JOINT NOT NECESSARY WITH D.I.P.)
4. CONSTRUCT SEDIMENT CONTROL DEVICES AS PER CONTRACT DRAWINGS OR AS DIRECTED
5. MEASUREMENT AND PAYMENT WILL BE MADE FOR CLASS 5 EXCAVATION AND SELECT BACKFILL AS PER CONTINGENT ITEMS AND COST.

REV. MARCH 1986 / REV. JAN. 1985 / REV. JAN. 1984 / REV. OCT. 1982 / REV. JAN. 1982 / REV. JAN. 89

HOWARD COUNTY, MARYLAND DEPARTMENT OF PUBLIC WORKS Approved [signature] 2-10-89 Chief—Bureau of Engineering	STREAM CROSSING DETAILS	DRAWN BY: J.R.K. / CHECKED BY: F.A.W. / SCALE: NONE / S 3.11

MGWC 4.2: Utility Crossing

Temporary in-stream construction

Description

The work should consist of installing erosion control devices in and adjacent to the construction of utility crossings.

Installation Guidelines

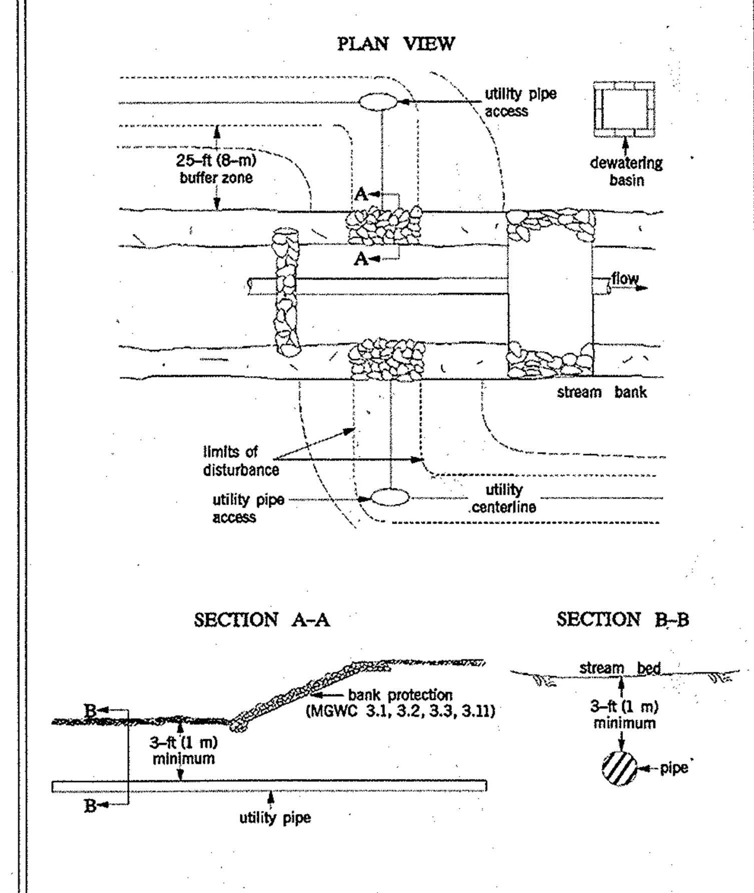
All erosion and sediment control devices, including dewatering basins, should be implemented as the first order of business according to a plan approved by the WMA or local authority. (See *the 1994 Maryland Standards and Specifications for Soil Erosion and Sediment Control*.) The proposed construction sequence is as follows (refer to Detail 4.2):

1. The contractor should insure that a continuous perimeter control barrier is in place to minimize the amount of pollutants entering the flow. A diversion pipe as shown in MGWC 1.4: Diversion Pipe or other measure should be installed and sandbag or stone barriers as shown in MGWC 1.5: Sandbag/Stone Diversion should be constructed according to specifications to divert the streamflow.
2. Excavated topsoil and subsoil should be kept separate, placed on the upland side of the excavation, and replaced in their natural order.
3. All construction should take place during stream low flows. The length of construction time should be limited to a maximum of 5 consecutive days for each crossing.
4. All utility crossings should be placed a minimum of 3 feet (1 meter) beneath the stream bed unless an alternative section is specifically approved by the WMA. For instances where a 3-foot cover is not viable, two alternate stabilization options are given in the Detail 4.2. A low flow channel shall be constructed through all riprap placements across the stream bed.
5. The stream should be diverted by an approved temporary stream diversion, the construction area should be dewatered, and any disturbed banks should be stabilized. The contractor may elect to construct the utility crossing in two stages. In this case, a WMA approved flow barrier may be constructed to keep the construction area dry.
6. Once the crossing is completed, the diversion should be removed from upstream to downstream. Sediment control devices, including perimeter erosion controls, are to remain in place until all disturbed areas are stabilized in accordance with an approved sediment and erosion control plan and the inspection authority approves their removal.

Stream Crossings — *Maryland Department of the Environment Waterway Construction Guidelines Revised November 2000*

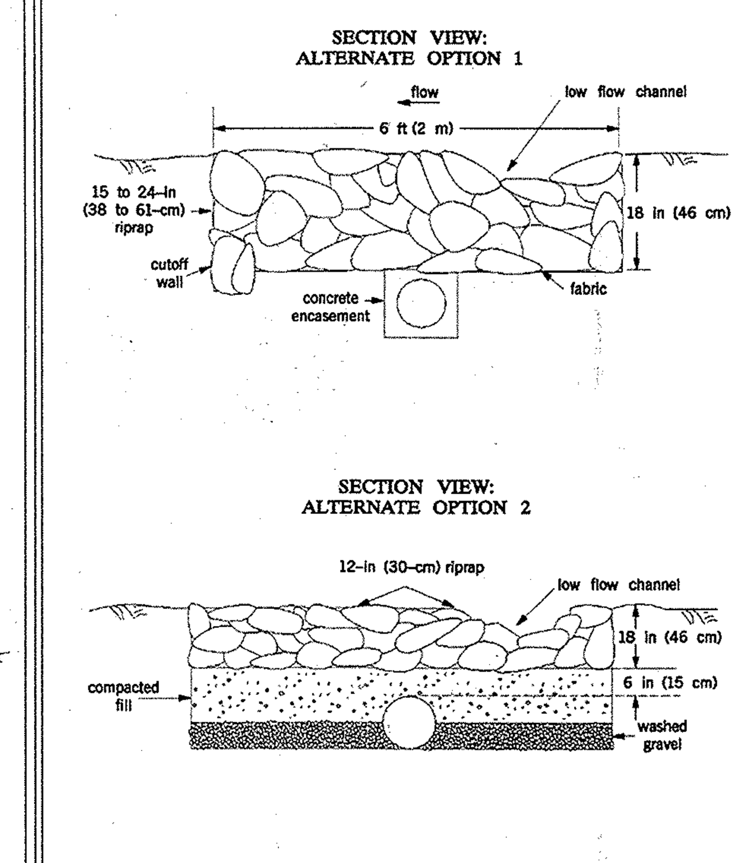
Page 4.2 - 1

Maryland's Guidelines To Waterway Construction
DETAIL 4.2(a): UTILITY CROSSING



STREAM CROSSINGS | PAGE 4.2 - 2 | MARYLAND DEPARTMENT OF THE ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

Maryland's Guidelines To Waterway Construction
DETAIL 4.2(b): UTILITY CROSSING



STREAM CROSSINGS | REVISED NOVEMBER 2000 PAGE 4.2 - 3 | MARYLAND DEPARTMENT OF THE ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

MGWC 1.2: Pump-Around Practice

Temporary measure for dewatering in-channel construction sites

Description

The work should consist of installing a temporary pump around and supporting measures to divert flow around in-stream construction sites.

Implementation Sequence

Sediment control measures, pump-around practices, and associated channel and bank construction should be completed in the following sequence (refer to Detail 1.2):

1. Construction activities including the installation of erosion and sediment control measures should not begin until all necessary easements and/or right-of-ways have been acquired. All existing utilities should be marked in the field prior to construction. The contractor is responsible for any damage to existing utilities that may result from construction and should repair the damage at his/her own expense to the county's or utility company's satisfaction.
2. The contractor should notify the Maryland Department of the Environment or WMA sediment control inspector at least 5 days before beginning construction. Additionally, the contractor should inform the local environmental protection and resource management inspection and enforcement division and the provider of local utilities a minimum of 48 hours before starting construction.
3. The contractor should conduct a pre-construction meeting on site with the WMA sediment control inspector, the county project manager, and the engineer to review limits of disturbance, erosion and sediment control requirements, and the sequence of construction. The contractor should stake out all limits of disturbance prior to the pre-construction meeting so they may be reviewed. The participants will also designate the contractor's staging areas and flag all trees within the limit of disturbance which will be removed for construction access. Trees should not be removed within the limit of disturbance without approval from the WMA or local authority.
4. Construction should not begin until all sediment and erosion control measures have been installed and approved by the engineer and the sediment control inspector. The contractor should stay within the limits of the disturbance as shown on the plans and minimize disturbance within the work area whenever possible.
5. Upon installation of all sediment control measures and approval by the sediment control inspector and the local environmental protection and resource management inspection and enforcement division, the contractor should begin work at the upstream section and proceed downstream beginning with the establishment of stabilized construction entrances. In some cases, work may begin downstream if appropriate. The sequence of construction must be followed unless the contractor gets written approval for deviations from the WMA or local authority. The contractor should only begin work in an area which can be completed by the end of the day including grading adjacent to the channel. At the end of each work day, the work area must be stabilized and the pump around removed from the channel. Work should not be conducted in the channel during rain events.
6. Sandbag dikes should be situated at the upstream and downstream ends of the work area as shown on the plans, and stream flow should be pumped around the work area. The pump should discharge onto a stable velocity dissipater made of riprap or sandbags.

Temporary Instream Construction Measures — *Maryland Department of the Environment Waterway Construction Guidelines Revised November 2000*

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MGWC 1.2: Pump-Around Practice

7. Water from the work area should be pumped to a sediment filtering measure such as a dewatering basin, sediment bag, or other approved source. The measure should be located such that the water drains back into the channel below the downstream sandbag dike.
8. Traversing a channel reach with equipment within the work area where no work is proposed should be avoided. If equipment has to traverse such a reach for access to another area, then timber mats or similar measures should be used to minimize disturbance to the channel. Temporary stream crossings should be used only when necessary and only where noted on the plans or specified. (*See Section 4, Stream Crossings, Maryland Guidelines to Waterway Construction*).
9. All stream restoration measures should be installed as indicated by the plans and all banks graded in accordance with the grading plans and typical cross- sections. All grading must be stabilized at the end of each day with seed and mulch or seed and matting as specified on the plans.
10. After an area is completed and stabilized, the clean water dike should be removed. After the first sediment flush, a new clean water dike should be established upstream from the old sediment dike. Finally, upon establishment of a new sediment dike below the old one, the old sediment dike should be removed.
11. A pump around must be installed on any tributary or storm drain outfall which contributes baseflow to the work area. This should be accomplished by locating a sandbag dike at the downstream end of the tributary or storm drain outfall and pumping the stream flow around the work area. This water should discharge onto the same velocity dissipater used for the main stem pump around.
12. If a tributary is to be restored, construction should take place on the tributary before work on the main stem reaches the tributary confluence. Construction in the tributary, including pump around practices, should follow the same sequence as for the main stem of the river or stream. When construction on the tributary is completed, work on the main stem should resume. Water from the tributary should continue to be pumped around the work area in the main stem.
13. The contractor is responsible for providing access to and maintaining all erosion and sediment control devices until the sediment control inspector approves their removal.
14. After construction, all disturbed areas should be regraded and revegetated as per the planting plan.

Temporary Instream Construction Measures — *Maryland Department of the Environment Waterway Construction Guidelines Revised November 2000*

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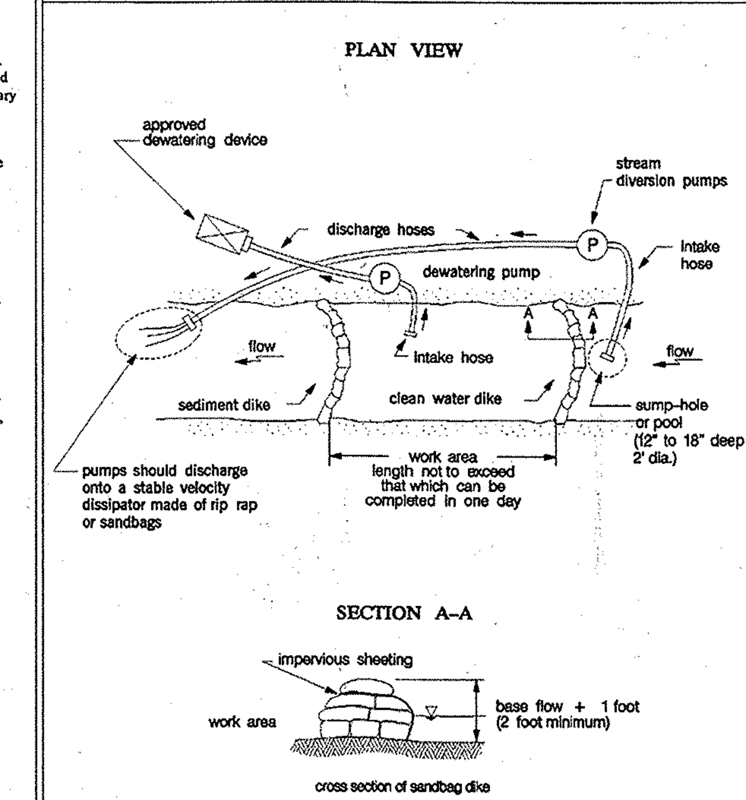
Maryland's Guidelines To Waterway Construction
DETAIL 1.2: PUMP-AROUND PRACTICE



TEMPORARY INSTREAM CONSTRUCTION MEASURES | REVISED NOVEMBER 2000 PAGE 1.2 - 3 | MARYLAND DEPARTMENT OF THE ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

MGWC 2.8: Brush Mattresses

Woody vegetative system for bank stabilization

Description

Brush mattresses are formed from live branches which are wired together to create an erosion resistant mat. This mat is then secured to the bank by live and/or dead stakes and partially covered with fill soil to initiate growth of the cuttings.

Effective Uses & Limitations

Brush mattresses provide bank protection soon after establishment. They are generally resistant to wave and current action and function to:

- capture sediment and rebuild streambanks;
- facilitate the colonization of native riparian vegetation; and
- provide long-term durability and erosion control, especially when used on Rosgen stream types B3, B4, B5, B6, C1, C2, C3, C4, C5, C6, DA, E3, E4, E5, and E6.

Brush mattresses should be limited to use on:

- sites having only low to moderate water level fluctuations and slope gradients not exceeding 2H:1V,
- streams with low to moderate suspended sediment loads since high loads may precipitate the burial of these bioengineering systems and complicate future planting efforts at the site, and
- native fill soils which contain enough fine material to allow the live branches to root and grow readily; key trenches backfilled with topsoil may be required on rocky slopes.

Additionally, this measure should be initiated in conjunction with a revegetation strategy since brush mattresses make it more difficult to propagate vegetative plantings once the mats become established.

Material Specifications

When choosing and preparing woody material for brush mattresses, the following guidelines should be followed:

- Live branches should be cut from fresh, green, healthy, dormant parent plants which are adapted to the site conditions whenever possible with the following guidelines:
  1. Woody branches up to 2.5 inches (6 centimeters) in diameter and 5 to 10 feet (1 to 3 meters) in length can be used for brush mattresses.
  2. Commonly used woody plants for this measure include willow, poplar, and alder since they are versatile and have high growth rates with shrubby habits, fibrous root systems, and high transpiration rates, especially when in leaf.
  3. A partial listing of woody plants recommended by the United States Department of Agriculture's Soil Conservation Service is presented in MGWC 2.4: Live Stakes.
- Live branch cuttings should be kept covered and moist at all times and should be placed in cold storage if more than a few hours elapse before installation.

Slope Protection and Stabilization Techniques — *Maryland Department of the Environment Waterway Construction Guidelines Revised November 2000*

Page 2.8 - 1

MGWC 2.8: Brush Mattresses

Approximate Cost ($1999):
$33.50 per square ft

Installation Guidelines

Brush mattresses should be installed as follows (refer to Detail 2.8):

1. Live branches should be oriented in crisscross layers perpendicularly to the flow of water in slight manmade depressions along the embankment. The butt ends should alternate to provide a uniform mat thickness of at least 12 inches (0.3 meters) and a minimum percentage of air voids.
   - Approximately 20 to 50 branches should be used per running meter provided their lengths are the same as the slope length.
   - If the branches are not long enough to cover the entire slope from the toe to the top of slope, multiple layers should be utilized with the branches in the lower layers overlapping those in the upper layers by at least 1 foot (30 centimeters).
2. Once in position, the mattresses should be bound with wire and secured with 3-foot (0.9-meter) wooden stakes spaced at 2 to 3-foot (0.60 to 0.90-meter) intervals The wire should be tied to notches in the stakes before they are driven into the ground; this allows for tension to develop in the wire when the stakes are driven, thereby pulling the mattress firmly to ground.
3. Upon being bound and secured to the embankment, the mattresses should be covered with alternating layers of soil and water until only a portion of the top layer of branches is exposed, but all butt ends must be covered. The use of alternating applications of soil and water helps to insure a proper soil-branch interface to initiate growth.
4. Finally, the toe of the embankment should be reinforced against undercutting with a rock toe and vegetative measure such as a live fascine. (Refer to MGWC 2.1: Riprap and Figure 2.1.)

Slope Protection and Stabilization Techniques — *Maryland Department of the Environment Waterway Construction Guidelines Revised November 2000*

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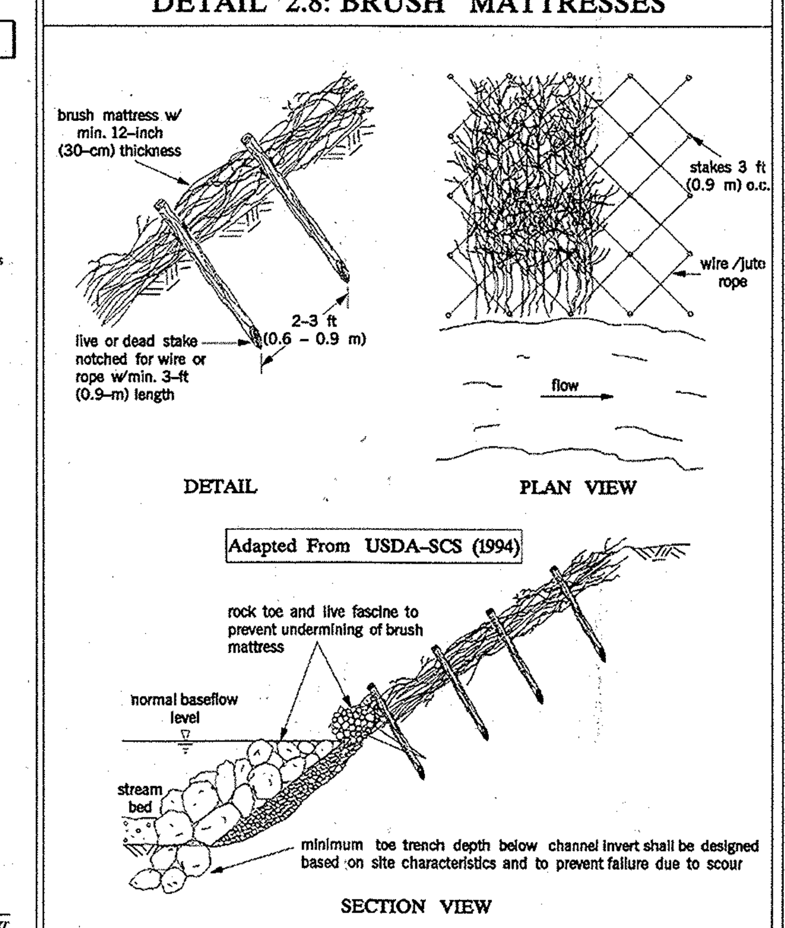
Maryland's Guidelines To Waterway Construction
DETAIL 2.8: BRUSH MATTRESSES



SLOPE PROTECTION AND STABILIZATION TECHNIQUES | REVISED NOVEMBER 2000 PAGE 2.8 - 3 | MARYLAND DEPARTMENT OF THE ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

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PROFESSIONAL CERTIFICATION
I, BRANDON R. ROWE, 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. 40808, EXPIRATION DATE: 7/3/2015

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND

[signature] 11/2/15
CHIEF, BUREAU OF UTILITIES — DATE

DEPARTMENT OF PLANNING & ZONING HOWARD COUNTY, MARYLAND

[signature] 11/20/15
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE

BOHLER ENGINEERING
901 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21204
Phone: (410) 821-7900
Fax: (410) 821-7987
www.BohlerEngineering.com

STATE OF MARYLAND — B. R. ROWE — PROFESSIONAL ENGINEER

DES: J.A.
DRN: R.L.B.
CHK: B.R.R.
DATE: 12/12/14

REV.	DATE	DESCRIPTION	BY

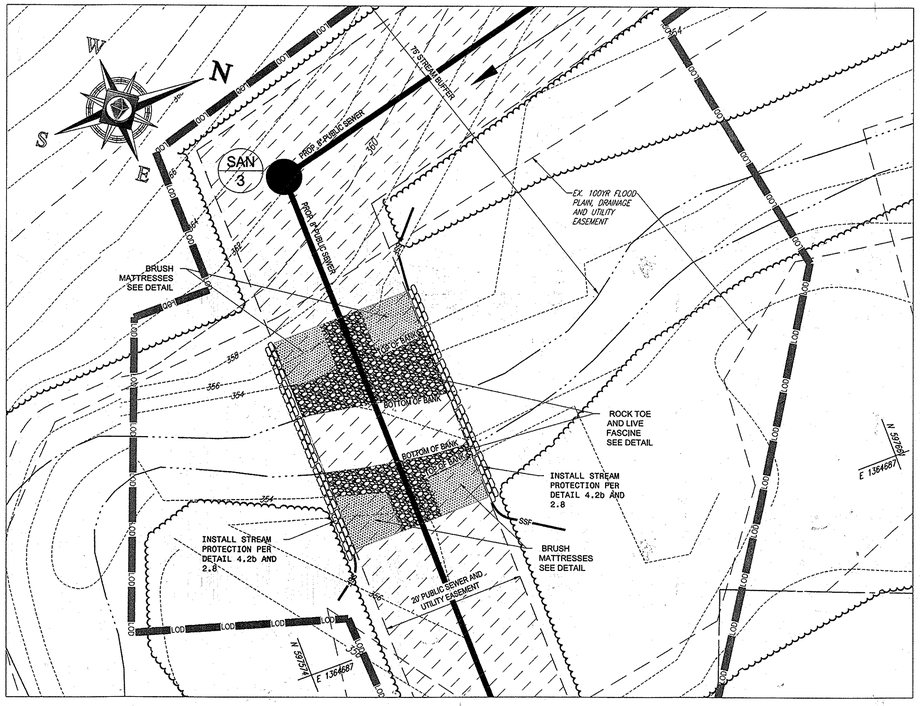
STREAM CROSSING DETAILS

PARCEL NO. N/A
600' SCALE MAP NO. 17 BLOCK NO. --

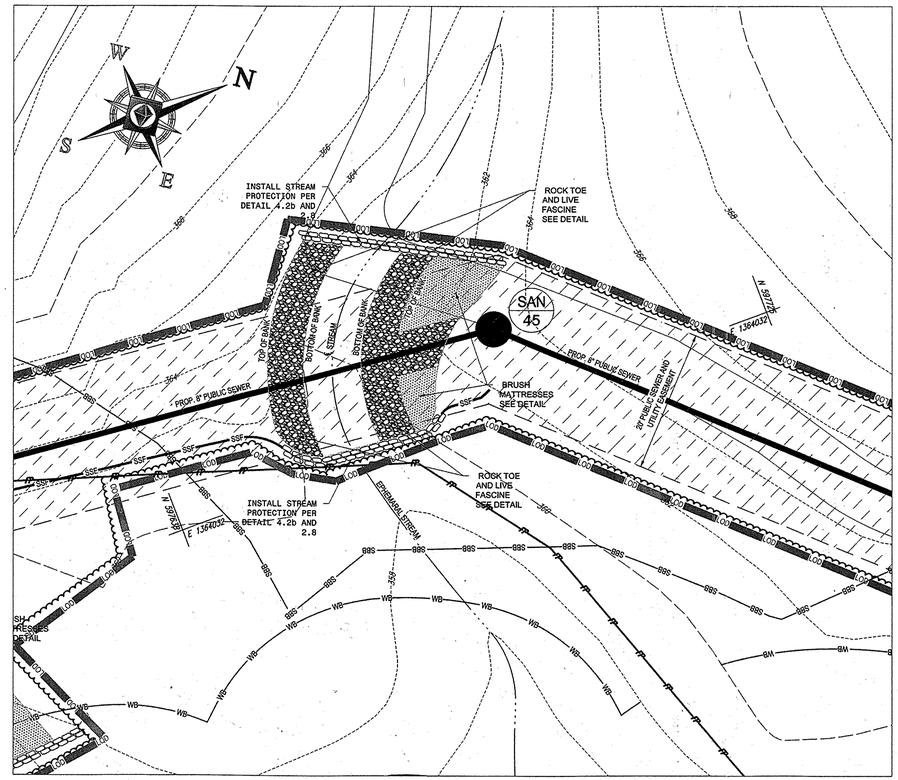
ESTATES AT PATAPSCO PARK
ROGERS AVENUE
BUILDABLE LOTS 1 - 195 AND OPEN SPACE LOTS 196 - 202
6TH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND
CONTRACT NO.: 14-4803-D

SCALE

SHEET 23 OF 25



EXPLODED VIEW
SCALE: 1"=10'



EXPLODED VIEW
SCALE: 1"=10'

SEQUENCE OF CONSTRUCTION

1. ACTIVITIES WITHIN STREAM CHANNELS ARE PROHIBITED AS DETERMINED BY THIS CLASSIFICATION OF STREAM (COMAR 26.08.02.08): PATAPSCO RIVER AREA - 02130900 IS A USE- I WATERWAY; IN-STREAM WORK MAY NOT BE CONDUCTED FROM MARCH 1 THROUGH JUNE 15 INCLUSIVE, OF ANY YEAR. REFER TO MDE'S LETTER OF AUTHORIZATION PERTAINING TO THIS CROSSING FOR ADDITIONAL DETAILS AND INFORMATION.
2. OBTAIN GRADING PERMIT.
3. ONCE ALL PERMITS ARE IN HAND SCHEDULE MEETING IN THE FIELD WITH THE SEDIMENT CONTROL INSPECTOR. - 1 DAY.
4. INSTALL STABILIZED CONSTRUCTION ENTRANCE - 1 DAY
5. INSTALL SILT FENCE AND OTHER EROSION AND SEDIMENT CONTROL MEASURES. - 1 WEEK
6. INSTALL SUPER SILT FENCE PARALLEL TO THE STREAM BANKS AS SHOWN. - 3 DAYS
7. INSTALL PUMP AROUND PRACTICE PER DETAIL MGWC 1.2. - 2 DAYS
8. INSTALL 8" SEWER MAIN PIPE. CONSTRUCT ENOUGH FOR ONE DAY'S WORK, INCLUDING BACKFILL AND STABILIZING AREA DISTURBED. STABILIZE STREAM BOTTOM PER OPTION # 2 OF DETAIL MGWC 4.2(b). - 1 WEEK
9. STABILIZE SLOPES UP GRADIENT OF THE STREAM BOTTOM PROTECTION WITH BRUSH MATTRESSES PER DETAIL MGWC 2.8. 2 DAYS
10. SEED AND STABILIZE AREAS OUTSIDE OF THE STREAM BANKS PER "STANDARDS SPECIFICATIONS FOR VEGETATIVE STABILIZATION". - 2 DAYS
11. REMOVE TEMPORARY PUMP AROUND PRACTICE. - 1 DAY
12. ONCE SEDIMENT CONTROL INSPECTOR'S SATISFIED THAT THE DISTURBED AREAS HAVE BEEN STABILIZED REMOVE SEDIMENT CONTROL. - 3 DAYS

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STATE OF MARYLAND — BRANDON R. ROWE — No. 40808 — PROFESSIONAL ENGINEER — 12/12/14

DES: J.A.			
DRN: R.L.B.			
CHK: B.R.R.			
DATE: 12/12/14	REV.	DATE	DESCRIPTION	BY

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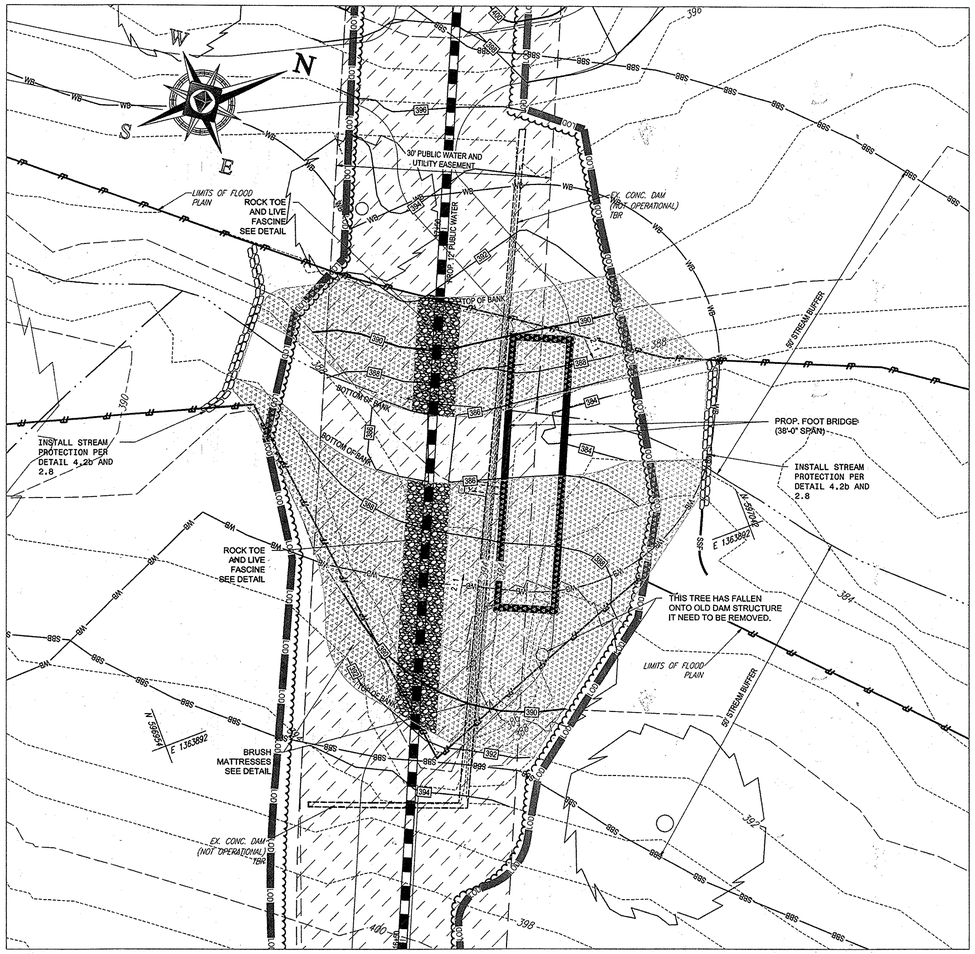

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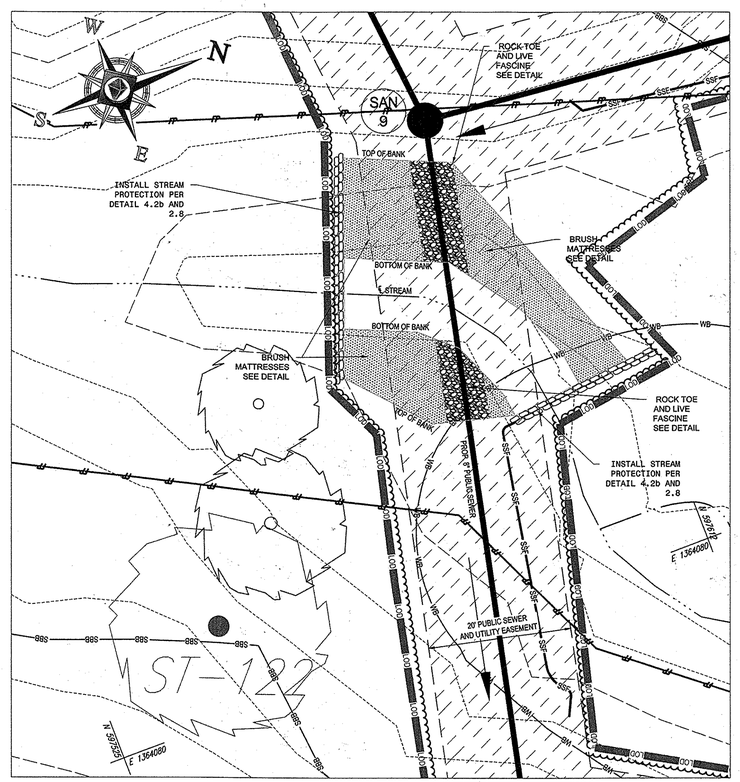

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9. INSTALL FOOT BRIDGE. 1 WEEK
10. STABILIZE SLOPES UP GRADIENT OF THE STREAM BOTTOM PROTECTION WITH BRUSH MATTRESSES PER DETAIL MGWC 2.8. 2 DAYS
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PARCEL NO. N/A
600' SCALE MAP NO. 17 BLOCK NO. --

ESTATES AT PATAPSCO PARK
ROGERS AVENUE
BUILDABLE LOTS 1 - 195 AND OPEN SPACE LOTS 196 - 202
6TH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND
CONTRACT NO.: 14-4803-D

SCALE

SHEET 25 OF 25