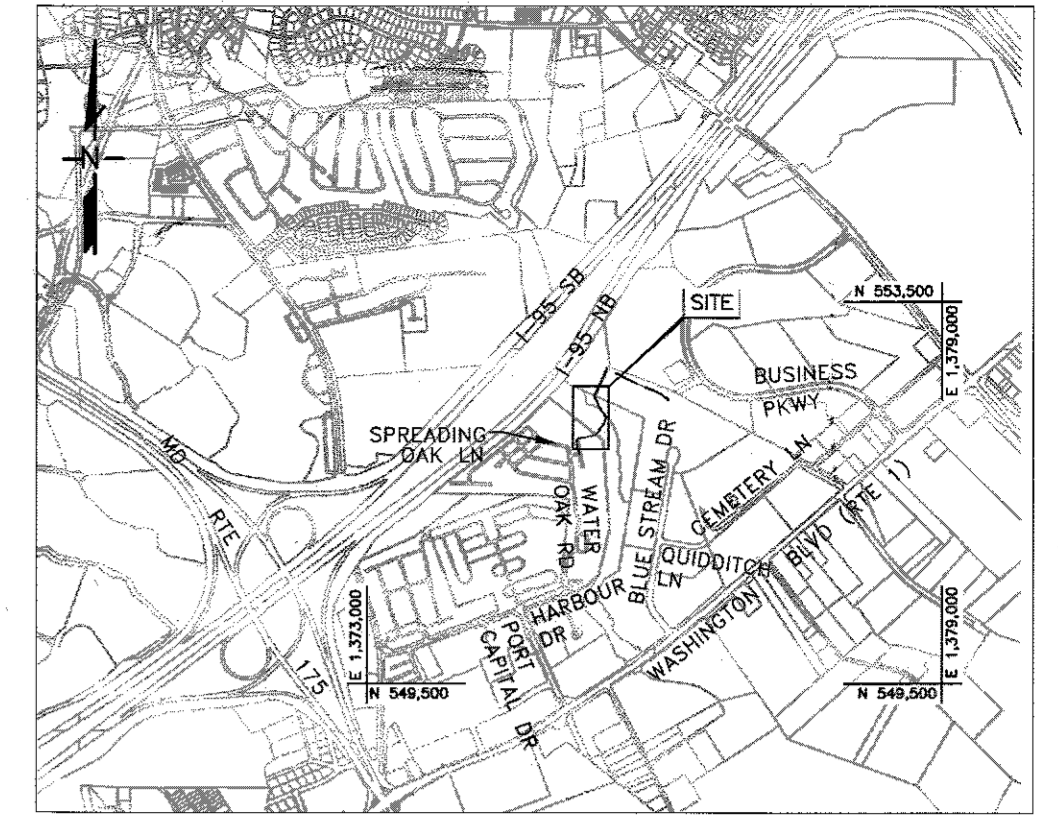


WATER'S EDGE WATER MAIN LOOP

HOWARD COUNTY, MD CAPITAL PROJECT NO. W-8324 CONTRACT NO. 44-4981



LOCATION MAP

SCALE: 1"=2000'

PROPERTY OWNERS

Water's Edge HOA
10015 Old Columbia Road
Columbia, MD 21046

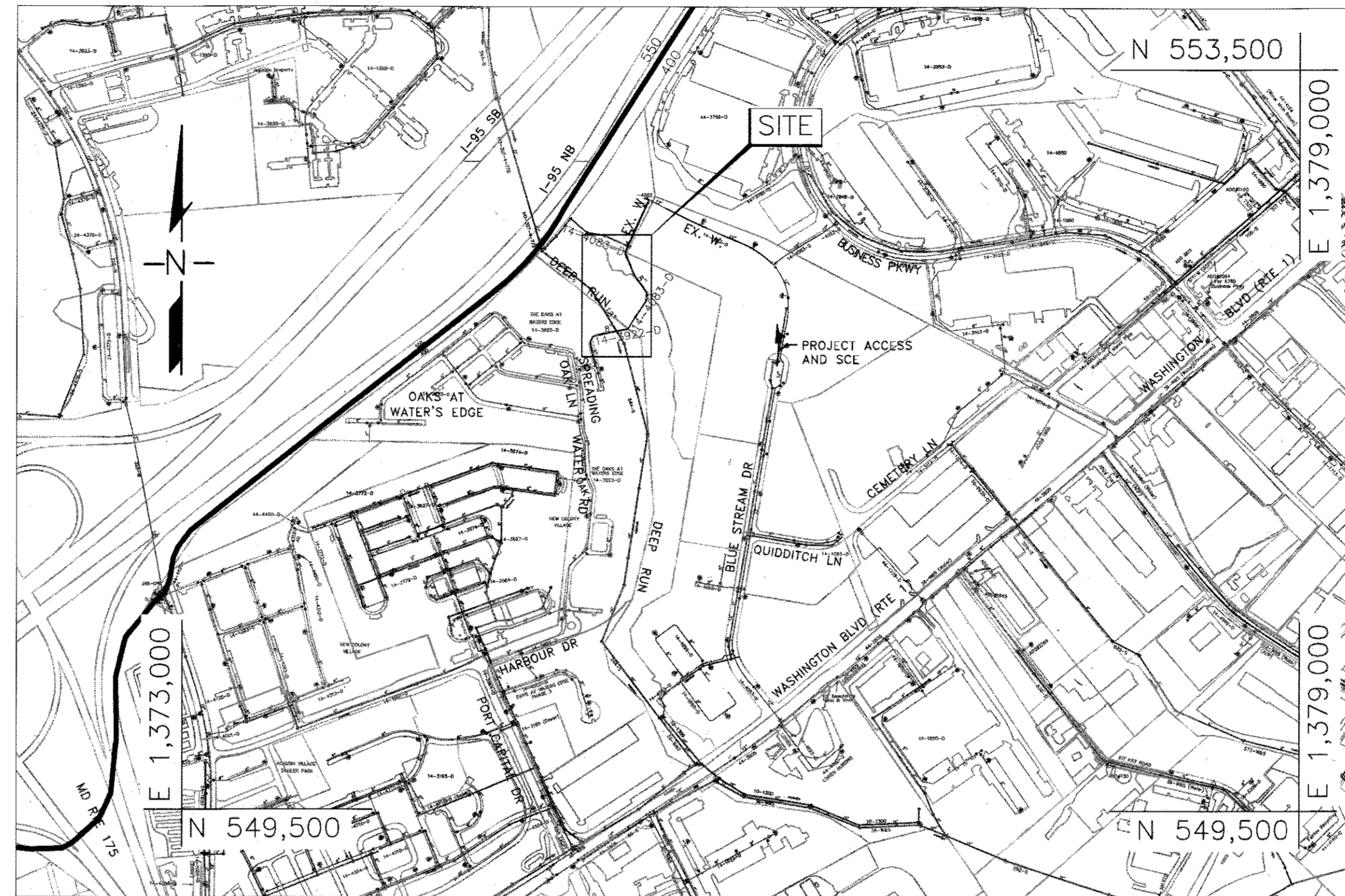
Raul Delerme
Bureau of Capital Projects,
Parks & Planning Commission
Howard County Parks & Recreation
7120 Oakland Mills Road
Columbia, MD 21046

GENERAL NOTES:

- PART I**
- APPROXIMATE LOCATIONS OF EXISTING MAINS ARE SHOWN. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PROTECT EXISTING MAINS AND SERVICES AND MAINTAIN UNINTERRUPTED SERVICE. ANY DAMAGE INCURRED SHALL BE REPAIRED IMMEDIATELY TO THE SATISFACTION OF THE ENGINEER AT THE CONTRACTOR'S EXPENSE.
 - TOPOGRAPHIC FIELD SURVEYS WERE PERFORMED IN SEPTEMBER 2014 BY MERCADO CONSULTANTS, INC.
 - HORIZONTAL AND VERTICAL SURVEY CONTROLS:**
THE COORDINATES SHOWN ON THE DRAWINGS ARE BASED ON MARYLAND STATE REFERENCE SYSTEM: HORIZONTAL DATUM NAD '83 (ADJ. 2011), AND VERTICAL DATUM NAVD '88 GEOID 12A, ESTABLISHED BY KCI, ADJUSTED AND PUBLISHED BY HOWARD COUNTY, MARYLAND DPW. KCI CONTROL STATIONS: NO. KCI-64 AND KCI-65.
ALL VERTICAL CONTROLS ARE BASED ON NAVD '88. VERTICAL CONTROLS PROVIDED ON THE DRAWINGS ARE ALUMINUM STAMPED DISCS.
 - ALL PIPE ELEVATIONS SHOWN ARE INVERT ELEVATIONS UNLESS OTHERWISE NOTED ON THE PLANS.
 - CLEAR ALL UTILITIES BY A MINIMUM OF 12 INCHES. CLEAR ALL POLES BY 5'-0" MINIMUM OR TUNNEL AS REQUIRED UNLESS OTHERWISE NOTED. THE OWNER HAS CONTACTED THE UTILITY COMPANIES AND HAS MADE ARRANGEMENTS FOR BRACING OF POLES AS SHOWN ON THE DRAWINGS. IN THE EVENT THE CONTRACTOR'S WORK REQUIRES THE BRACING OF ADDITIONAL POLES, ANY COST INCURRED BY THE OWNER FOR THE BRACING OF ADDITIONAL POLES OR DAMAGES SHALL BE DEDUCTED FROM MONIES OWED TO THE CONTRACTOR. THE CONTRACTOR SHALL COORDINATE WITH THE UTILITY COMPANIES TO SCHEDULE THE BRACING OF THE POLES.
 - FOR DETAILS NOT SHOWN ON THE DRAWING, AND FOR MATERIALS AND CONSTRUCTION METHODS, USE HOWARD COUNTY DESIGN MANUAL, VOLUME IV, STANDARD SPECIFICATIONS AND DETAILS FOR CONSTRUCTION (LATEST EDITION). THE CONTRACTOR SHALL HAVE A COPY OF VOLUME IV ON THE JOB.
 - NO TEST PITS HAVE BEEN PERFORMED FOR THIS PROJECT. EXISTING UTILITIES IN THE VICINITY OF THE PROPOSED WORK FOR WHICH TEST PITS HAVE NOT BEEN DUG SHALL BE LOCATED BY THE CONTRACTOR TWO WEEKS IN ADVANCE OF CONSTRUCTION OPERATIONS AT HIS OWN EXPENSE.
 - THE CONTRACTOR SHALL NOTIFY THE FOLLOWING UTILITY COMPANIES OR AGENCIES AT LEAST FIVE WORKING DAYS BEFORE STARTING WORK SHOWN ON THESE PLANS:

AT&T	1.800.252.1133
BCE (CONSTRUCTION SERVICES)	410.637.8713
BCE (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
MCI WORLDCOM	1.800.624.9875

- TREES AND SHRUBS ARE TO BE PROTECTED FROM DAMAGE TO THE MAXIMUM EXTENT. TREES AND SHRUBS LOCATED WITHIN THE CONSTRUCTION STRIP ARE NOT TO BE REMOVED OR DAMAGED BY THE CONTRACTOR.
 - THE CONTRACTOR SHALL REMOVE TREES, STUMPS, AND ROOTS ALONG THE LINE OF EXCAVATION. PAYMENT FOR SUCH REMOVAL SHALL BE INCLUDED IN THE UNIT PRICE BID FOR CONSTRUCTION OF THE MAIN.
 - THE CONTRACTOR SHALL NOTIFY THE BUREAU OF HIGHWAYS, HOWARD COUNTY, AT (410)-313-7450 AT LEAST FIVE WORKING DAYS BEFORE OPEN CUTTING OR BORING/JACKING OF ANY COUNTY ROAD FOR LAYING WATER/SEWER MAINS OR HOUSE CONNECTIONS. THE APPROVAL OF THESE DRAWINGS WILL CONSTITUTE COMPLIANCE WITH DPW REQUIREMENTS PER SECTION 18.114(a) OF THE HOWARD COUNTY CODE.
- PART II - WATER**
- ALL WATER MAINS SHALL BE C900 PVC (DR-18) UNLESS OTHERWISE NOTED.
 - TOPS OF ALL WATER MAINS SHALL HAVE A MINIMUM OF 3'-6" OF COVER UNLESS OTHERWISE NOTED.
 - VALVES ADJACENT TO TEES SHALL BE STRAPPED TO TEES.
 - ALL FITTINGS SHALL BE BUTTRESSED OR ANCHORED WITH CONCRETE IN ACCORDANCE WITH STANDARD DETAILS UNLESS OTHERWISE PROVIDED FOR ON THE DRAWINGS.
 - FIRE HYDRANTS SHALL BE SET TO THE BURY LINE ELEVATIONS SHOWN ON THE DRAWINGS. ALL FIRE HYDRANTS SHALL BE INSTALLED IN ACCORDANCE WITH STANDARD DETAILS. THE SOIL AROUND THE FIRE HYDRANT SHALL BE COMPACTED IN ACCORDANCE WITH SECTION 1000 AND SECTION 1005 OF THE STANDARD SPECIFICATIONS.
 - THE CONTRACTOR SHALL NOT OPERATE ANY WATER MAIN VALVES ON THE EXISTING WATER SYSTEM.
 - TRACER WIRES AND CONTINUITY TEST STATIONS SHALL BE INSTALLED ON ALL DIP AND PVC WATER MAINS IN ACCORDANCE WITH HOWARD COUNTY DESIGN MANUAL.
 - FOR PVC WATER MAINS, ALL RECORDS FOR THE QUALITY CONTROL AND QUALIFICATION TEST REQUIREMENTS NOTED IN SECTION 5.1 OF THE AWWA STANDARD C900 FOR PVC PRESSURE PIPE SHALL BE SUBMITTED WITH THE PIPE MATERIAL CERTIFICATIONS OR SHOP DRAWINGS PRIOR TO APPROVAL OF THE MATERIAL FOR USE. THE TEST RECORDS SHALL BE FOR THE PIPE 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.
 - UNLESS OTHERWISE NOTED ON THE PLANS OR IN THE SPECIFICATIONS SACRIFICIAL ANODES SHALL BE INSTALLED 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.
 - 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.
 - 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 DEFLECTION COUPLINGS OR 5-DEGREE SWEEPS ARE PERMITTED, THE CONTRACTOR SHALL PROVIDE ONE FULL PIPE LENGTH (60-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 DEFLECTION 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 DEFLECTION OF 3-DEGREES (1/4-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 CERTAINTED 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.
 - WHEN PVC HIGH DEFLECTION 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 DEFLECTION 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.



PRESSURE ZONE: 400 FT. (NAVD 88)
TEST GRADIENT: 550 FT.

VICINITY MAP

SCALE: 1"=600'

LEGEND:

W	W	W	EXIST. WATER MAIN / VALVE VAULT	---	---	STREAM / WATERWAY EDGE
---	---	---	EXIST. WATER HOUSE CONNECTION	---	---	WATER PRESSURE ZONE BOUNDARY
---	---	---	PROP. WATER MAIN	630E	550	SHRUB
---	---	---	TEMP. WATER MAIN	---	---	PROP. VALVE
---	---	---	EXIST. WATER MAIN TO BE ABANDONED	---	---	PROP. FIRE HYDRANT
---	---	---	EXIST. SEWER MAIN / MANHOLE	---	---	BGE POLE
---	---	---	EXIST. SEWER HOUSE CONNECTION	---	---	BORING LOCATION
---	---	---	EXIST. STORM DRAIN	---	---	TEST PIT LOCATION
---	---	---	EXIST. GAS	---	---	CONTINUITY TEST STATION
---	---	---	EXIST. GAS SERVICE CONNECTION	---	---	PROPERTY LINE
---	---	---	EXIST. ELECTRIC - UNDERGROUND	---	---	SILT FENCE
---	---	---	EXIST. ELECTRIC - OVERHEAD	---	---	LIMITS OF DISTURBANCE
---	---	---	EXIST. FIBER OPTIC	---	---	EXIST. E.O.P.
---	---	---	EXIST. TELEPHONE - UNDERGROUND	---	---	TRVERSE
---	---	---	EXIST. TELEPHONE - OVERHEAD	---	---	WETLAND LIMITS
---	---	---	RIGHT OF WAY	---	---	FLOODPLAIN LIMITS
---	---	---	GUARDRAIL	---	---	
---	---	---	FENCE	---	---	
---	---	---	PROPERTY LINE	---	---	
---	---	---	LIMITS OF DISTURBANCE	---	---	
---	---	---	EXIST. E.O.P.	---	---	
---	---	---	TRVERSE	---	---	
---	---	---	WETLAND LIMITS	---	---	
---	---	---	FLOODPLAIN LIMITS	---	---	

INDEX OF SHEETS	
SHEET SET NO.	DESCRIPTION
1	TITLE SHEET
2	PROP. 8" WATER MAIN - PLAN
3	PROP. 8" WATER MAIN - PROFILE
4	EROSION & SEDIMENT CONTROL PLAN
5	EROSION & SEDIMENT CONTROL NOTES & DETAILS 1
6	EROSION & SEDIMENT CONTROL NOTES & DETAILS 2
7	EROSION & SEDIMENT CONTROL NOTES & DETAILS 3

QUANTITIES				
NAME OF UTILITY CONTRACTOR: UTILITIES UNLIMITED INCORPORATED				
SURVEY AND DRAFTING DIVISION AS-BUILT DATE:				
ITEM	UNITS	QUANTITY ESTIMATED	QUANTITY	AS-BUILT MANUFACTURER / SUPPLIER
8" C-900 PVC (DR-18) BULLDOG OR EAGLE LOCK RESTRAINING SYSTEM	FT	155	157	DIAMOND PLASTICS
4" C-900 PVC (DR-18)	FT	6	5	NATIONAL PIPE
8" W VALVE	EA	1	1	AMERICAN FLOW CONTROL
8" W TEE	EA	1	1	TYLER UNION
3" BLOW OFF HYDRANT IN METERBOX	EA	1	1	KUPFERLE FOUNDRY
8" C-900 PVC (DR-18)	FT	4	100	NATIONAL PIPE
8" W VALVE	EA	1	1	TYLER UNION

NOTE:
1. QUANTITIES IN THIS TABLE ARE SOLELY FOR RECORD PURPOSES. CONTRACTOR SHALL NOT RELY ON THE QUANTITIES IN THE TABLE AND SHALL USE HIS/HER OWN TAKEOFF TO ESTABLISH MATERIALS AND QUANTITIES NEED FOR THIS PROJECT.
2. REPLACED 100 LF OF EXISTING WATER MAIN UNDER CONTRACT 14-4083-D.

OWNER'S/DEVELOPER'S CERTIFICATION:

I/WE HEREBY CERTIFY THAT ANY CLEARING, GRADING, CONSTRUCTION, OR DEVELOPMENT WILL BE DONE PURSUANT TO THIS APPROVED EROSION AND SEDIMENT CONTROL PLAN, INCLUDING INSPECTING AND MAINTAINING CONTROLS, AND THAT THE RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF TRAINING AT A MARYLAND DEPARTMENT OF THE ENVIRONMENT (MDE) APPROVED TRAINING PROGRAM FOR THE CONTROL ON EROSION AND SEDIMENT PRIOR TO BEGINNING THE PROJECT. I CERTIFY RIGHT-OF-ENTRY FOR PERIODIC ON-SITE EVALUATION BY HOWARD COUNTY, THE HOWARD SOIL CONSERVATION DISTRICT AND/OR MDE.

Silver Chai
OWNER'S/DEVELOPER'S SIGNATURE
DATE: 2017/10/12
PROJECT MANAGER

ENGINEER'S DESIGN CERTIFICATION:

I HEREBY CERTIFY THAT THIS PLAN HAS BEEN DESIGNED IN ACCORDANCE WITH CURRENT MARYLAND EROSION AND SEDIMENT CONTROL LAWS, REGULATIONS, AND STANDARDS, THAT IT REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE, AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

Evan R. Andrews
DESIGNER'S SIGNATURE
DATE: 10/2/17
EVAN R. ANDREWS
NO REGISTRATION NO. 29609
P.E. R.L.S., OR R.L.A. (CIRCLE ONE)

HOWARD SCD SIGNATURE BLOCK:

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

Evan R. Andrews
HOWARD SOIL CONSERVATION DISTRICT
DATE: 10/15/17

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

James E. Sullivan
DIRECTOR OF PUBLIC WORKS
DATE: 10/15/17

Thomas E. Sullivan
CHIEF, BUREAU OF ENGINEERING
DATE: 10/15/17

Michael Baker
CHIEF, BUREAU OF UTILITIES
DATE: 10/15/17

S.C.
CHIEF, UTILITY DESIGN DIVISION
DATE: 10/15/17

Michael Baker INTERNATIONAL
MICHAEL BAKER INTERNATIONAL, INC.
1304 Concourse Drive, Suite 200
Lanham, MD 21090-1014
Phone: (410) 689-3400

PROFESSIONAL CERTIFICATION
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND.
LICENSE NO.: 29609
EXPIRATION DATE: 12/31/18

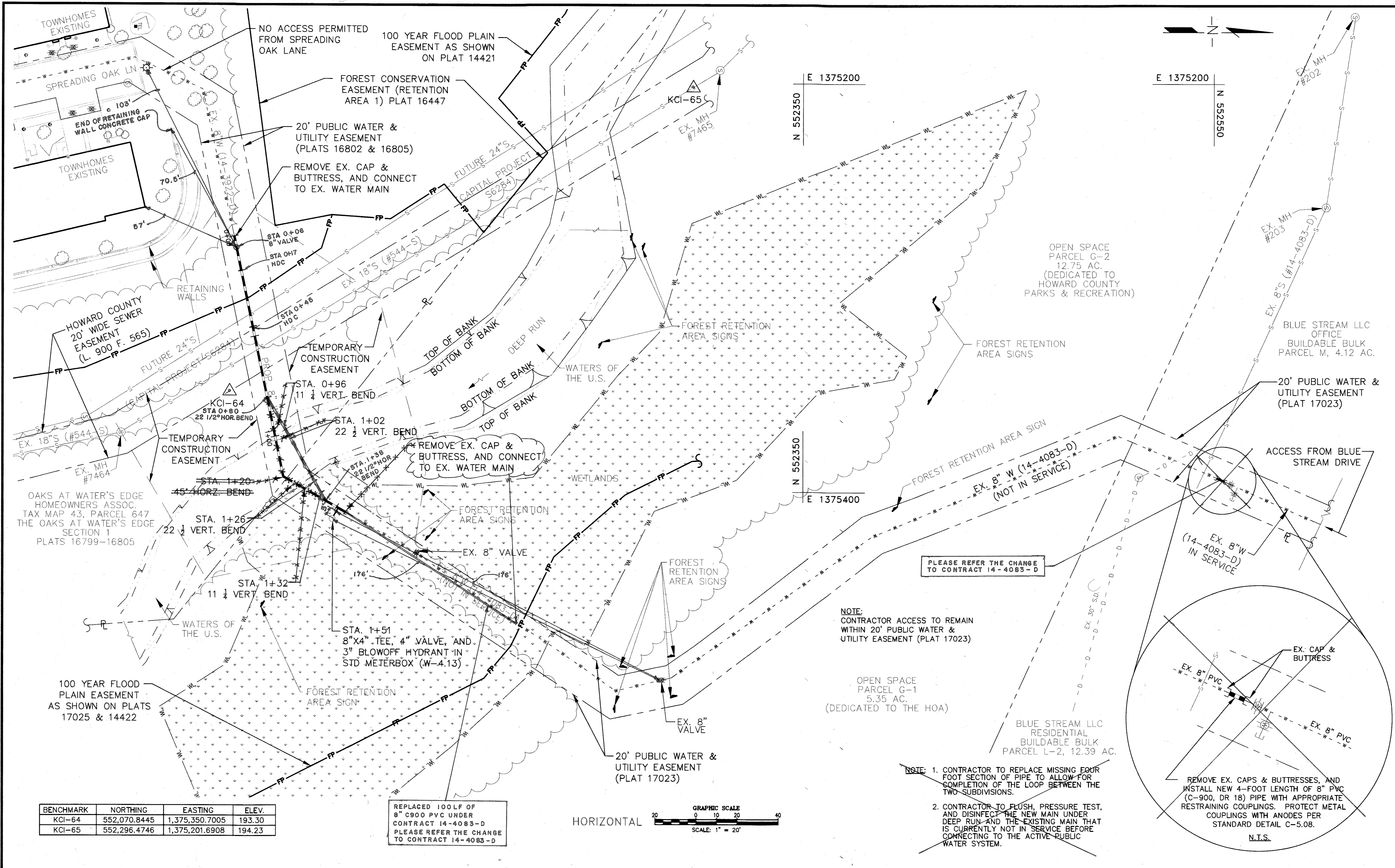
Evan R. Andrews, P.E.
DATE: 7/29/2016

DESIGN: RND	DATE:	BY:
DRAWN: RND	NO.:	REVISION:
CHECKED: ERA	NO.:	REVISION:
DATE: 7/29/2016	NO.:	REVISION:

TITLE SHEET

**WATER'S EDGE
WATER MAIN LOOP**
BLUE STREAM DR TO SPREADING OAK LN
CAPITAL PROJECT NO.: W-8324
CONTRACT NO.: 44-4981
2ND ELECTION DISTRICT, HOWARD COUNTY, MD

SCALE: AS SHOWN
SHEET: 1 OF 7
600 SCALE MAP NO. 43
BLOCK NO. 4



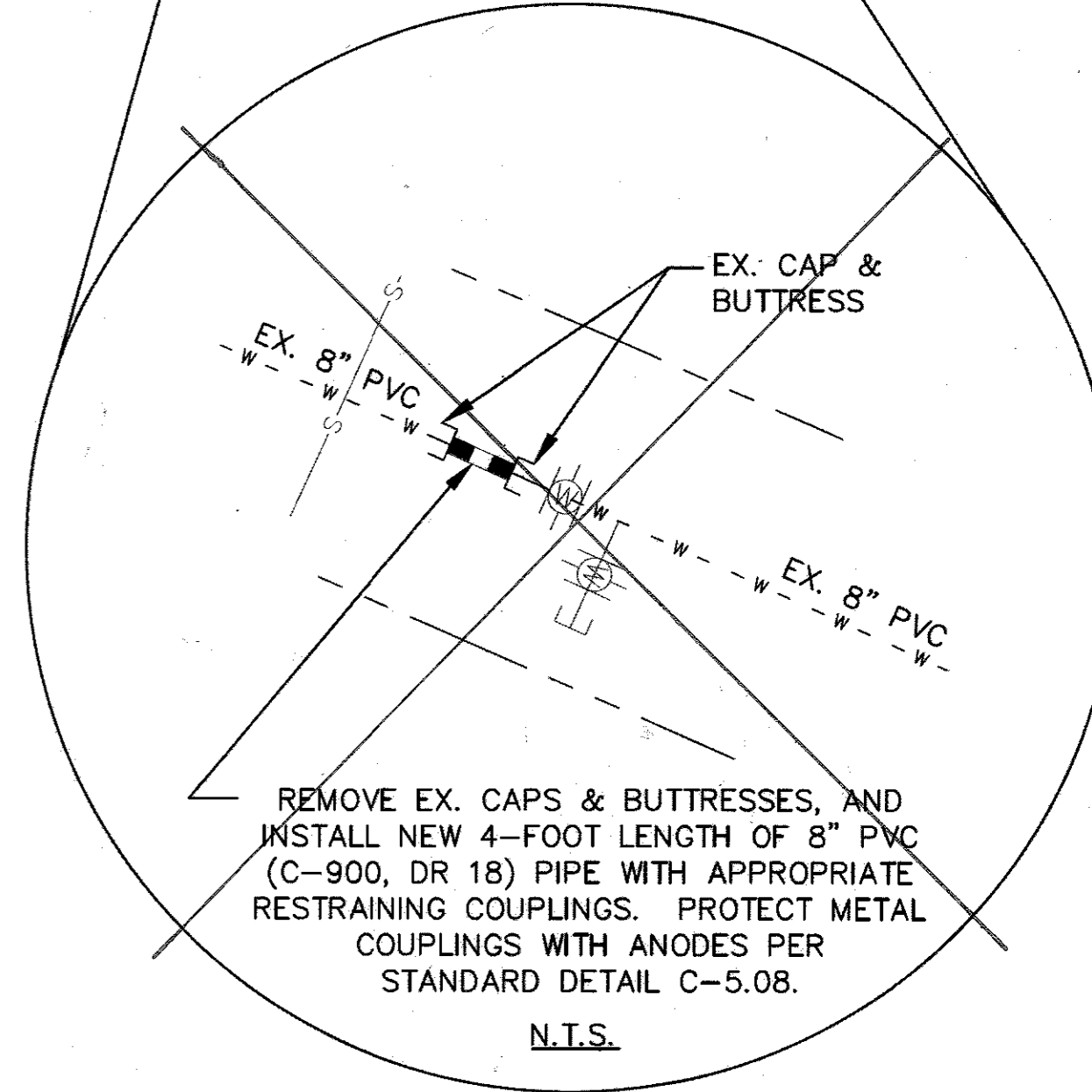
BENCHMARK	NORTHING	EASTING	ELEV.
KCI-64	552,070.8445	1,375,350.7005	193.30
KCI-65	552,296.4746	1,375,201.6908	194.23

REPLACED 100LF OF 8" C900 PVC UNDER CONTRACT 14-4083-D PLEASE REFER THE CHANGE TO CONTRACT 14-4083-D



NOTE: CONTRACTOR ACCESS TO REMAIN WITHIN 20' PUBLIC WATER & UTILITY EASEMENT (PLAT 17023)

NOTE: 1. CONTRACTOR TO REPLACE MISSING FOUR FOOT SECTION OF PIPE TO ALLOW FOR COMPLETION OF THE LOOP BETWEEN THE TWO SUBDIVISIONS.
2. CONTRACTOR TO FLUSH, PRESSURE TEST, AND DISINFECT THE NEW MAIN UNDER DEEP RUN AND THE EXISTING MAIN THAT IS CURRENTLY NOT IN SERVICE BEFORE CONNECTING TO THE ACTIVE PUBLIC WATER SYSTEM.



DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

[Signatures]
DIRECTOR, PUBLIC WORKS
DATE: 10/17/17
CHIEF, BUREAU OF UTILITIES
DATE: 10/17/17

[Signatures]
CHIEF, BUREAU OF ENGINEERING
DATE: 10/17/17
CHIEF, UTILITY DESIGN DIVISION
DATE: 10/17/17

Michael Baker INTERNATIONAL
MICHAEL BAKER INTERNATIONAL, INC.
1304 Concourse Drive, Suite 200
Linthicum, MD 21090-1914
Phone: (410) 689-3400

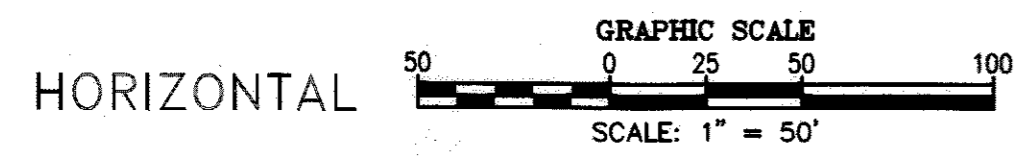
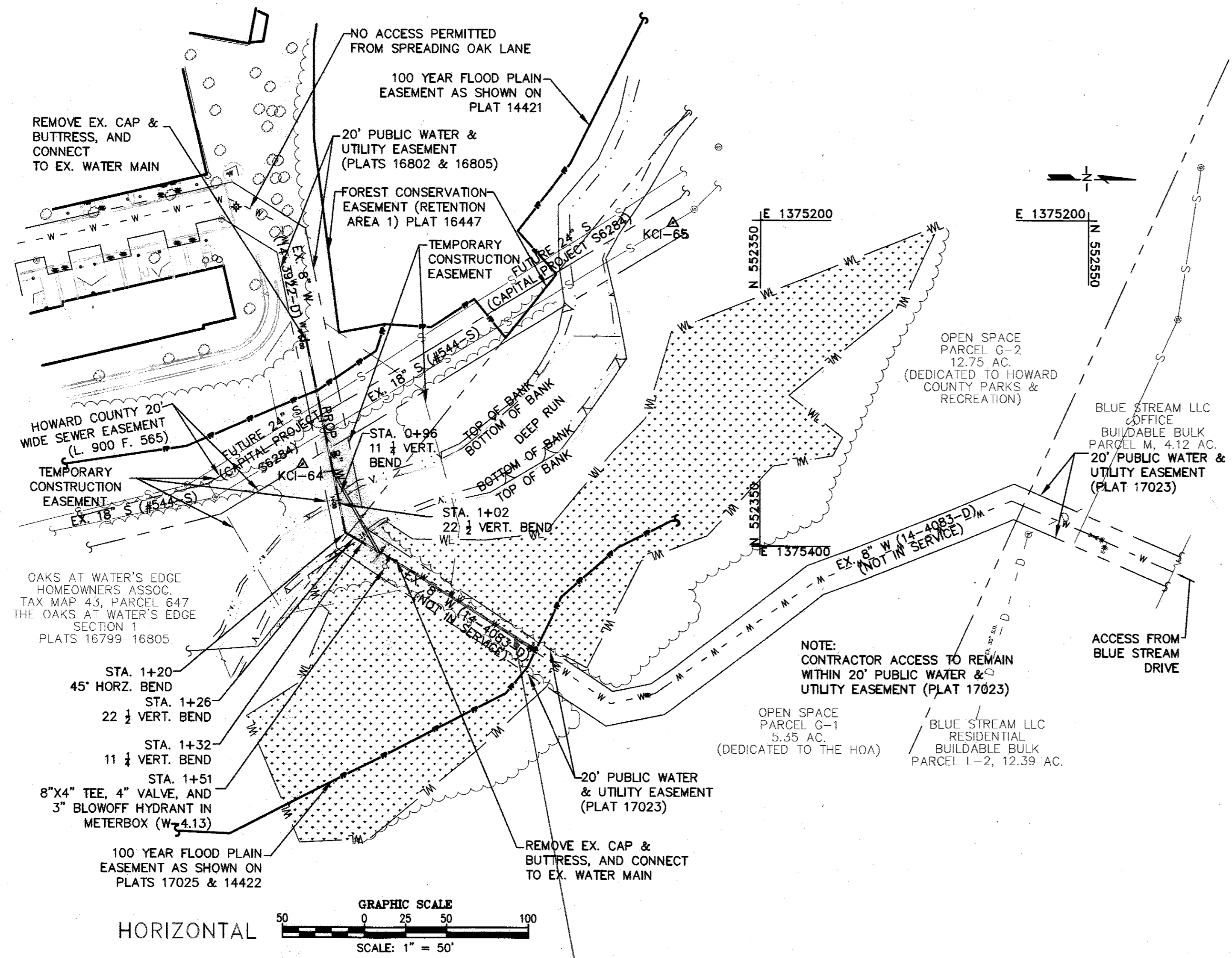
PROFESSIONAL CERTIFICATION
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND.
LICENSE NO.: 22660
EXPIRATION DATE: 11/19/17
Evan R. Andrews, P.E.

DESIGN: RND					
DRAWN: RND					
CHECKED: ERA					
DATE: 7/29/2016	NO.	REVISION	DATE	BY	

PROPOSED 8" WATER MAIN PLAN
600 SCALE MAP NO. 43
BLOCK NO. 4

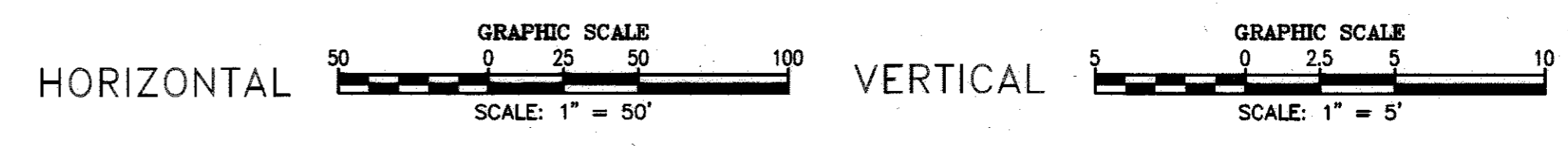
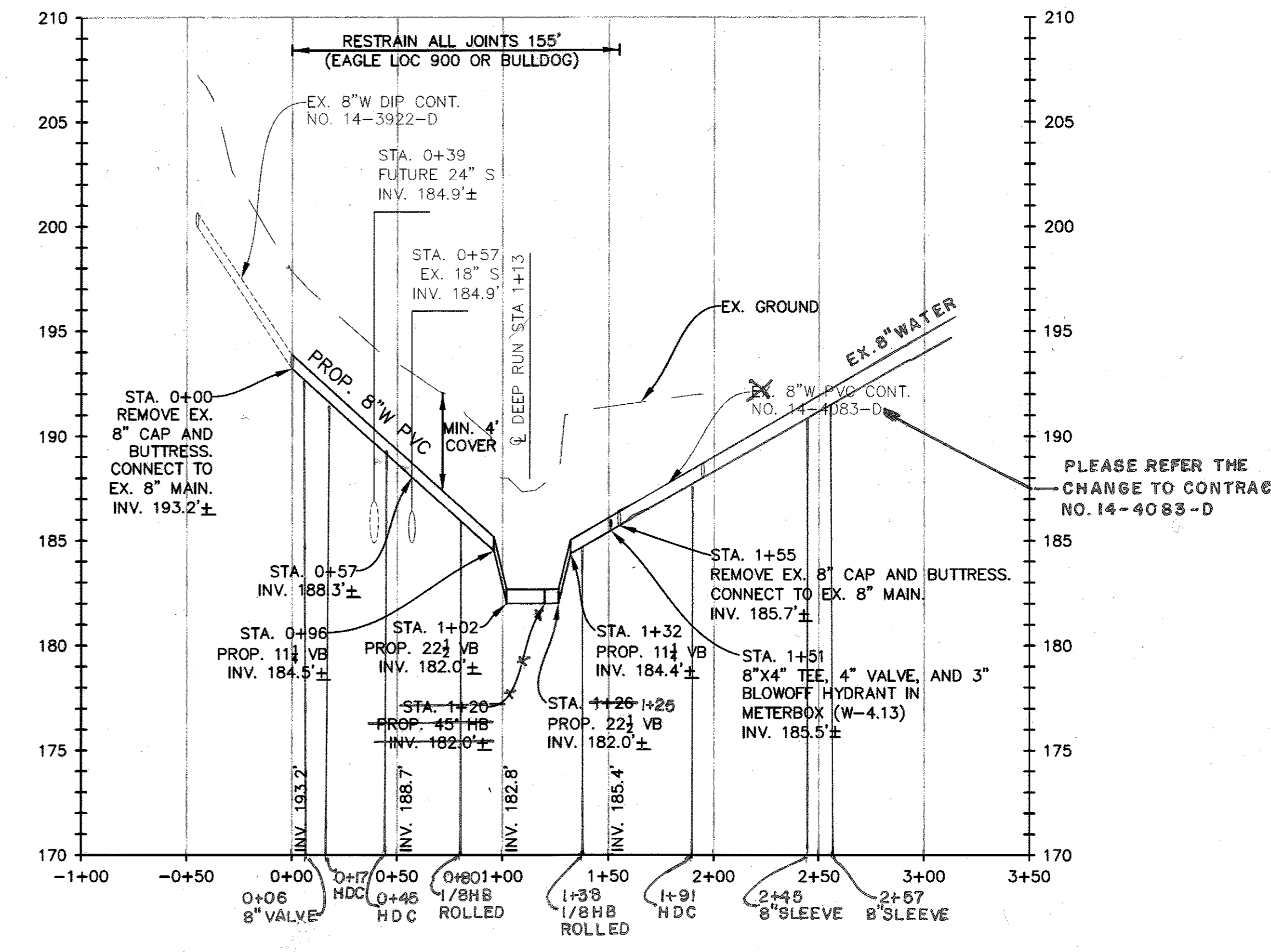
WATER'S EDGE WATER MAIN LOOP
BLUE STREAM DR TO SPREADING OAK LN
CAPITAL PROJECT NO.: W-8324
CONTRACT NO.: 44-4981
2ND ELECTION DISTRICT, HOWARD COUNTY, MD

SCALE AS SHOWN
SHEET 2 OF 7



BENCHMARK	NORTHING	EASTING	ELEV.
KCI-64	552,070.8445	1,375,350.7005	193.30
KCI-65	552,296.4746	1,375,201.6908	194.23

REPLACED 100LF OF 8" C900 PVC UNDER CONTRACT 14-4083-D PLEASE REFER THE CHANGE TO CONTRACT 14-4083-D



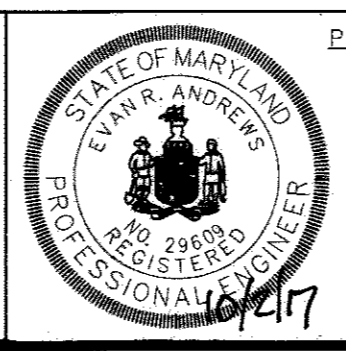
DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

John P. ... 10/10/19
DIRECTOR OF PUBLIC WORKS DATE

Thomas J. ... 10/5/19
CHIEF, BUREAU OF UTILITY DATE

... 10/5/19
CHIEF, UTILITY DESIGN DIVISION DATE

Michael Baker INTERNATIONAL
MICHAEL BAKER INTERNATIONAL, INC.
1304 Concourse Drive, Suite 200
Linthicum, MD 21090-1014
Phone: (410) 689-3400



PROFESSIONAL CERTIFICATION
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND.
LICENSE NO.: 22660
EXPIRATION DATE: 11/1/17
DAN R. ANDREWS, P.E.

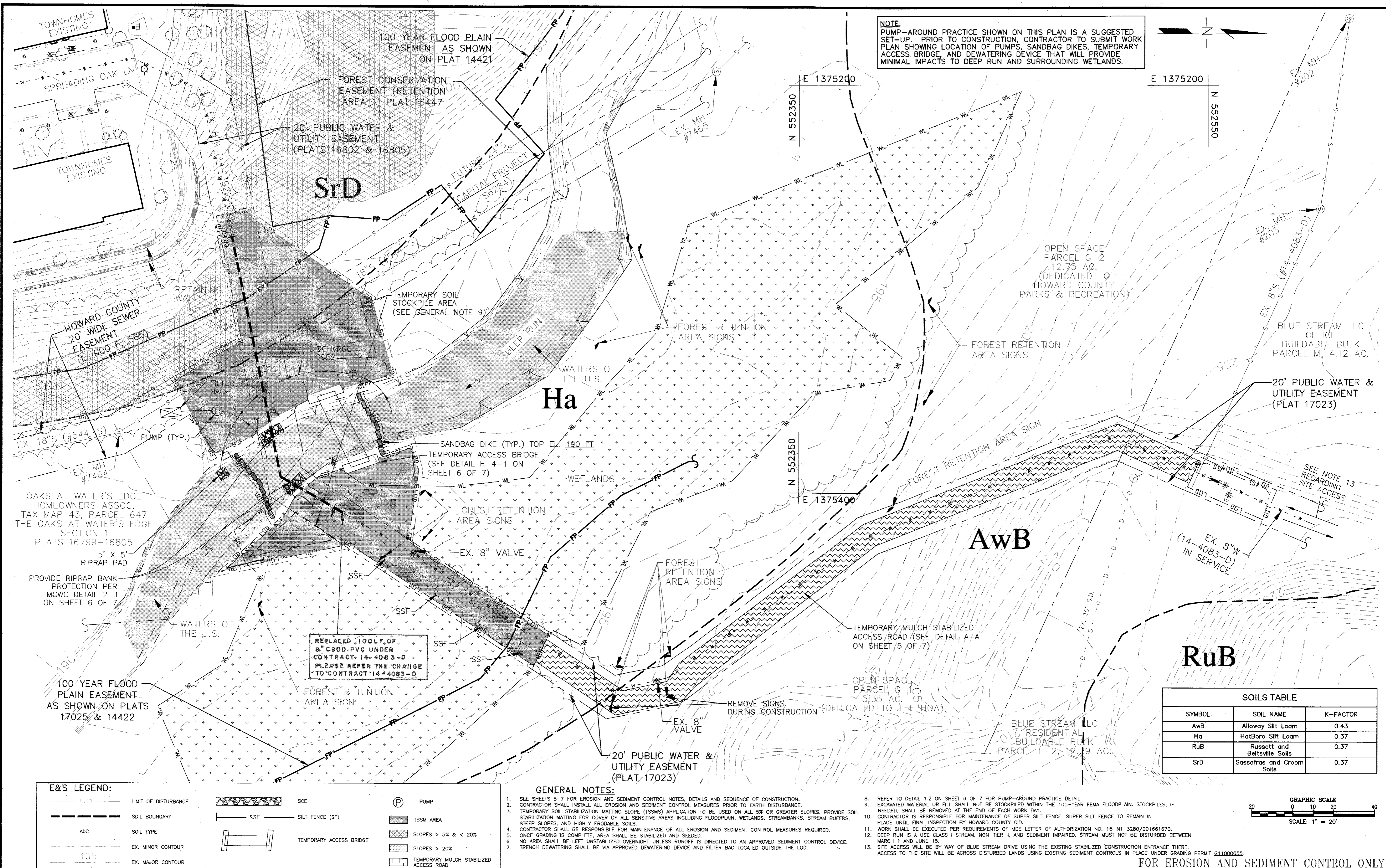
DESIGN: RND					
DRAWN: RND					
CHECKED: ERA					
DATE: 7/29/2016	NO.	REVISION	DATE	BY	

PROPOSED 8" WATER MAIN PROFILE

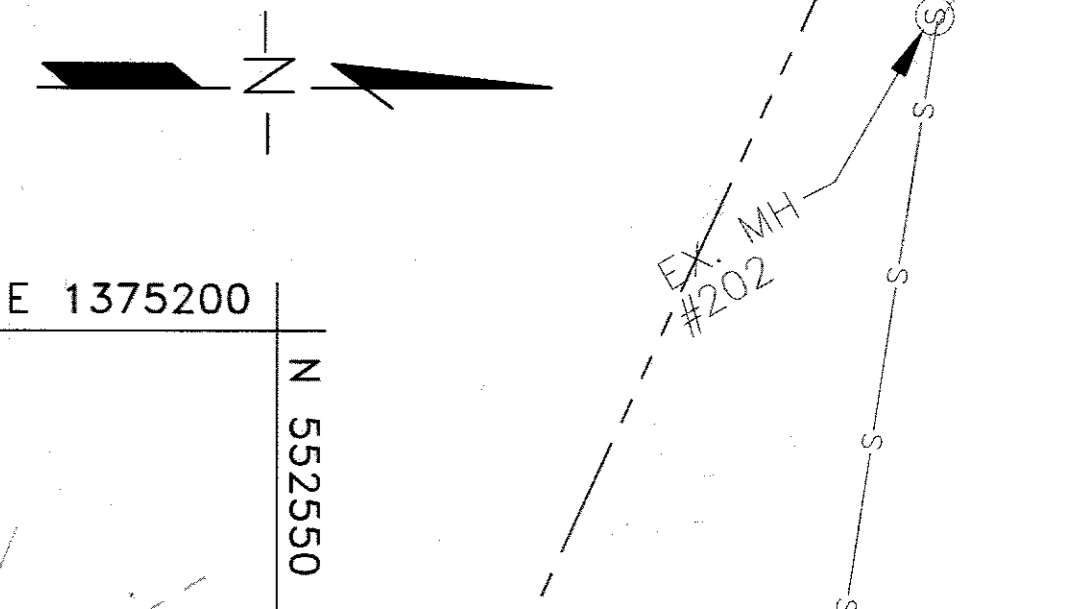
600 SCALE MAP NO. 43 BLOCK NO. 4

WATER'S EDGE
WATER MAIN LOOP
BLUE STREAM DR TO SPREADING OAK LN
CAPITAL PROJECT NO.: W-8324
CONTRACT NO.: 44-4981
2ND ELECTION DISTRICT, HOWARD COUNTY, MD

SCALE AS SHOWN
SHEET 3 OF 7



NOTE:
 PUMP-AROUND PRACTICE SHOWN ON THIS PLAN IS A SUGGESTED SET-UP. PRIOR TO CONSTRUCTION, CONTRACTOR TO SUBMIT WORK PLAN SHOWING LOCATION OF PUMPS, SANDBAG DIKES, TEMPORARY ACCESS BRIDGE, AND DEWATERING DEVICE THAT WILL PROVIDE MINIMAL IMPACTS TO DEEP RUN AND SURROUNDING WETLANDS.



SOILS TABLE		
SYMBOL	SOIL NAME	K-FACTOR
AwB	Alloway Silt Loam	0.43
Ha	HotBoro Silt Loam	0.37
RuB	Russett and Beltsville Soils	0.37
SrD	Sassafras and Croom Soils	0.37

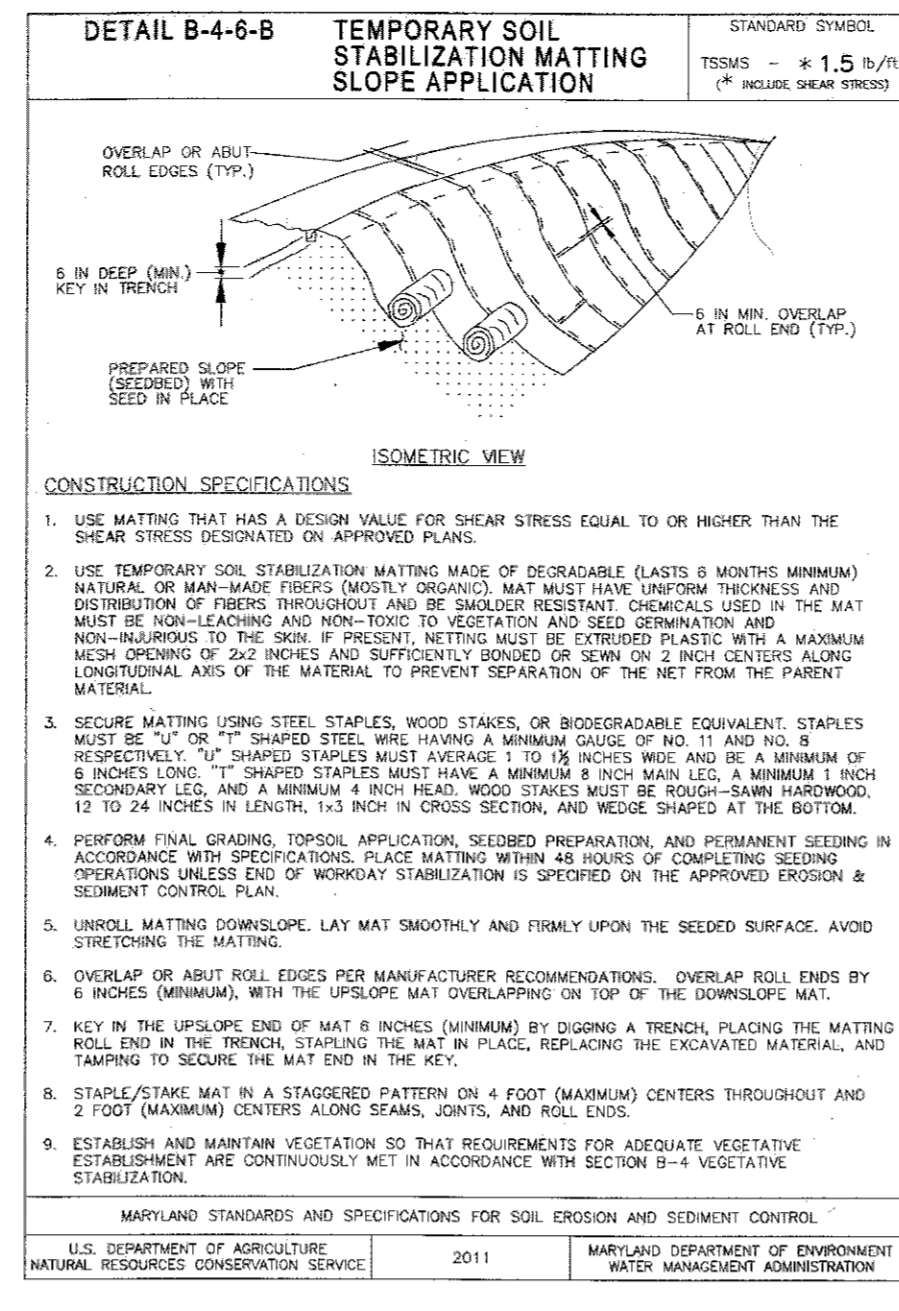
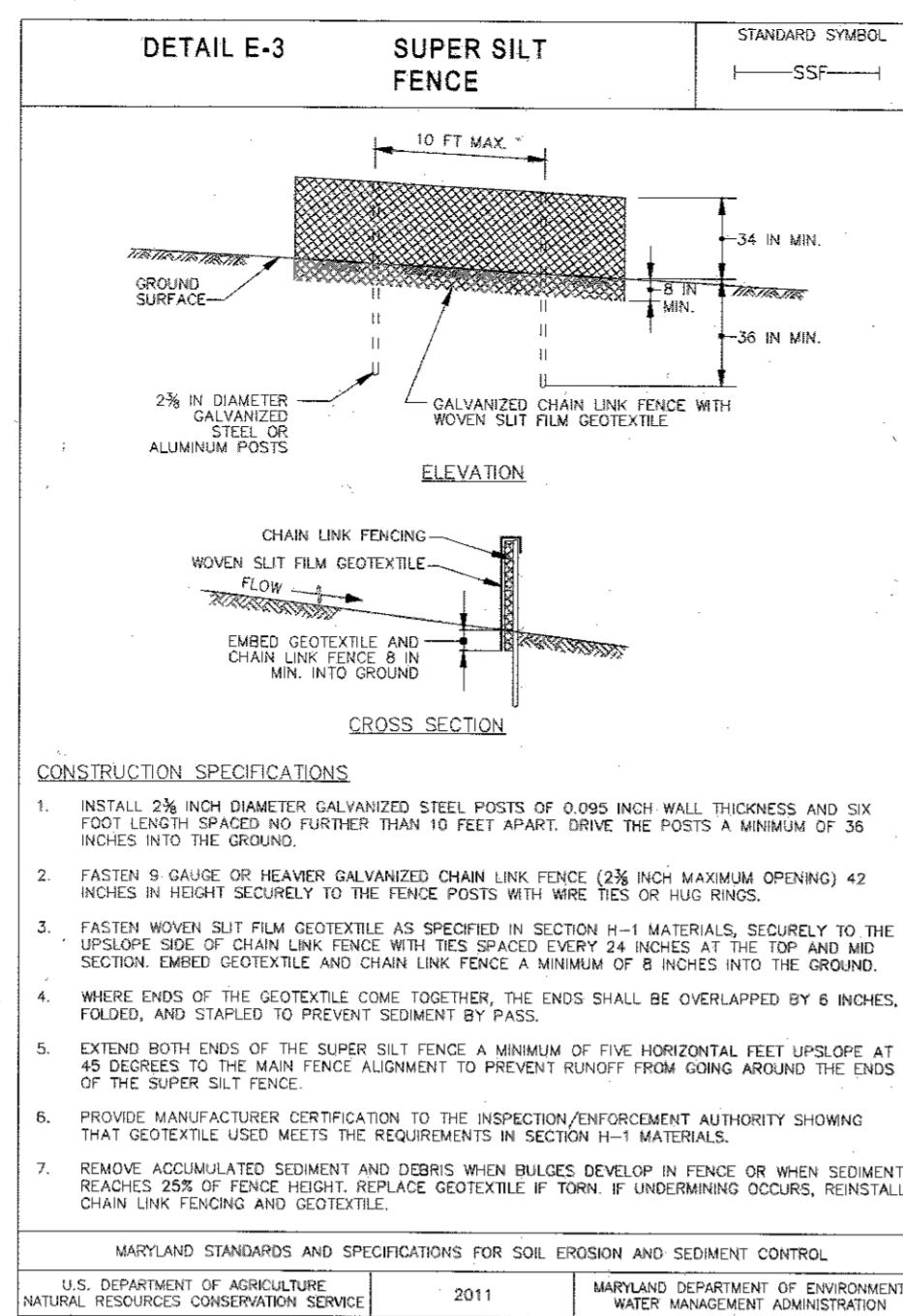
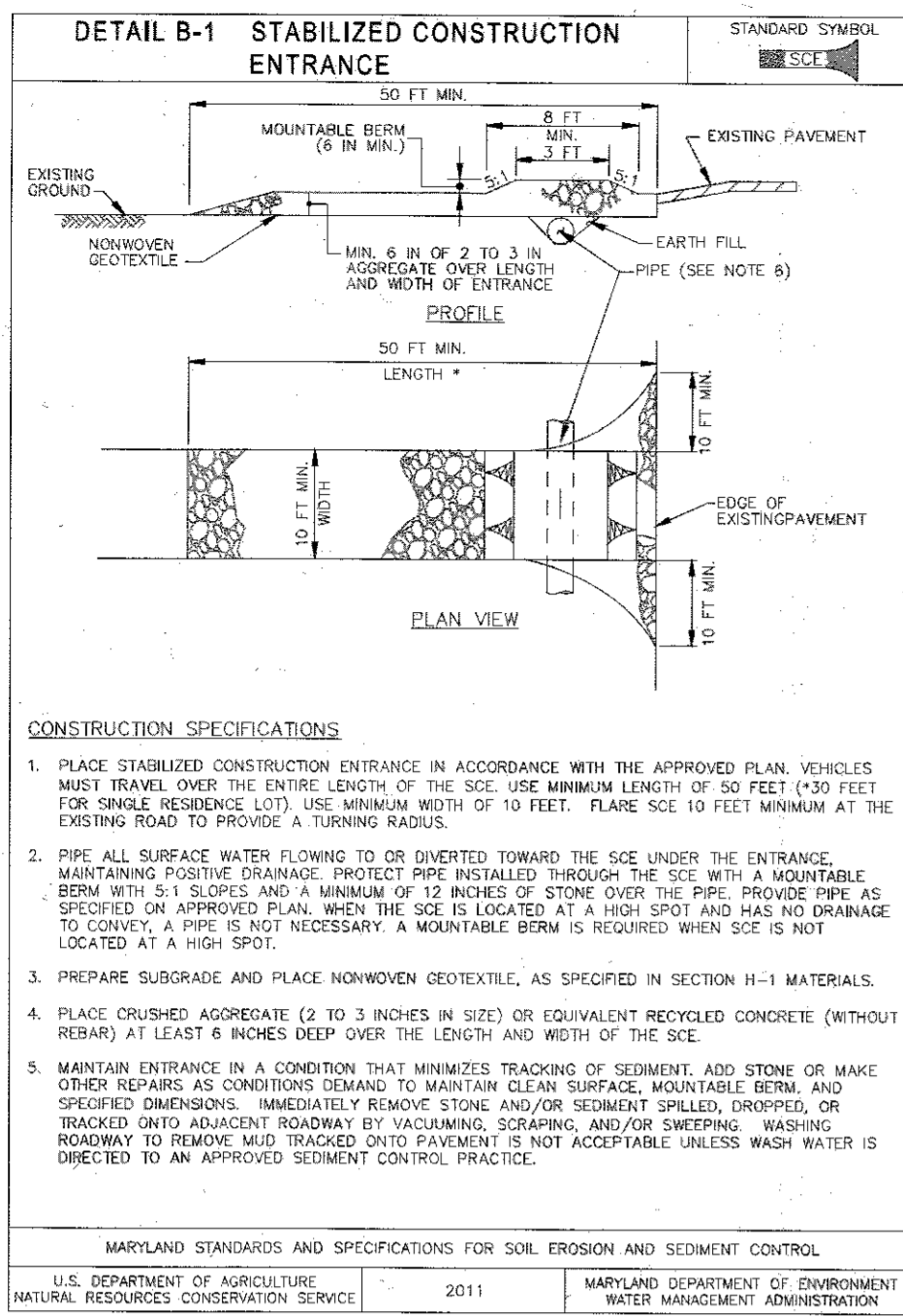
GENERAL NOTES:

- SEE SHEETS 5-7 FOR EROSION AND SEDIMENT CONTROL NOTES, DETAILS AND SEQUENCE OF CONSTRUCTION.
- CONTRACTOR SHALL INSTALL ALL EROSION AND SEDIMENT CONTROL MEASURES PRIOR TO EARTH DISTURBANCE.
- TEMPORARY SOIL STABILIZATION MATTING (TSSM) APPLICATION TO BE USED ON ALL 5% OR GREATER SLOPES. PROVIDE SOIL STABILIZATION MATTING FOR COVER OF ALL SENSITIVE AREAS INCLUDING FLOODPLAIN, WETLANDS, STREAMBANKS, STREAM BUFFERS, STEEP SLOPES, AND HIGHLY ERODABLE SOILS.
- CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTENANCE OF ALL EROSION AND SEDIMENT CONTROL MEASURES REQUIRED.
- ONCE GRADING IS COMPLETE, AREA SHALL BE STABILIZED AND SEEDED.
- NO AREA SHALL BE LEFT UNSTABILIZED OVERNIGHT UNLESS RUNOFF IS DIRECTED TO AN APPROVED SEDIMENT CONTROL DEVICE.
- TRENCH DEWATERING SHALL BE VIA APPROVED DEWATERING DEVICE AND FILTER BAG LOCATED OUTSIDE THE LOD.
- REFER TO DETAIL 1.2 ON SHEET 6 OF 7 FOR PUMP-AROUND PRACTICE DETAIL.
- EXCAVATED MATERIAL OR FILL SHALL NOT BE STOCKPILED WITHIN THE 100-YEAR FEMA FLOODPLAIN. STOCKPILES, IF NEEDED, SHALL BE REMOVED AT THE END OF EACH WORK DAY.
- CONTRACTOR IS RESPONSIBLE FOR MAINTENANCE OF SUPER SILT FENCE. SUPER SILT FENCE TO REMAIN IN PLACE UNTIL FINAL INSPECTION BY HOWARD COUNTY CID.
- WORK SHALL BE EXECUTED PER REQUIREMENTS OF MDE LETTER OF AUTHORIZATION NO. 16-NF-3280/201661670.
- DEEP RUN IS A USE CLASS 1 STREAM, NON-TIER II, AND SEDIMENT IMPAIRED. STREAM MUST NOT BE DISTURBED BETWEEN MARCH 1 AND JUNE 15.
- SITE ACCESS WILL BE BY WAY OF BLUE STREAM DRIVE USING THE EXISTING STABILIZED CONSTRUCTION ENTRANCE THERE. ACCESS TO THE SITE WILL BE ACROSS DISTURBED LANDS USING EXISTING SEDIMENT CONTROLS IN PLACE UNDER GRADING PERMIT G11000055.

E&S LEGEND:

LOD	LIMIT OF DISTURBANCE	SCE	PUMP
--- ---	SOIL BOUNDARY	SSF	TSSM AREA
abc	SOIL TYPE	---	SLOPES > 5% & < 20%
---	EX. MINOR CONTOUR	---	SLOPES > 20%
---	EX. MAJOR CONTOUR	---	TEMPORARY MULCH STABILIZED ACCESS ROAD

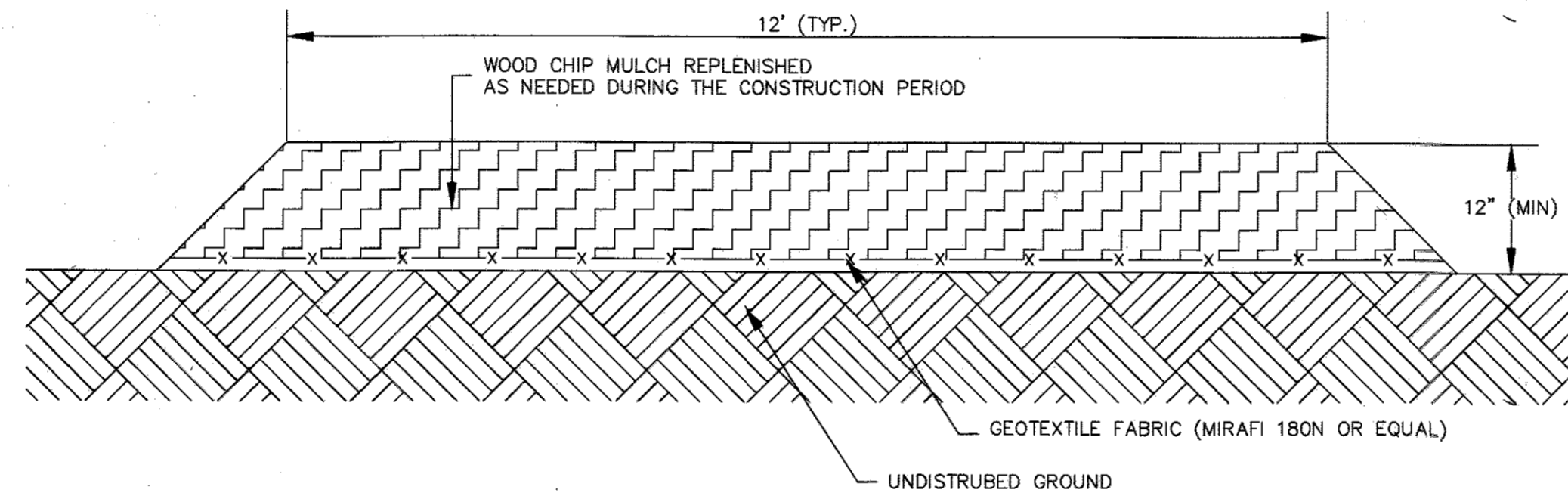
DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND Director of Public Works: [Signature] 10/26/16 Chief, Bureau of Utilities: [Signature] 10/26/16		Michael Baker International Michael Baker International, Inc. 1224 Concourse Drive, Suite 200 Linthicum, MD 21090-1014 Phone: (410) 889-3400		PROFESSIONAL CERTIFICATION I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND. LICENSE NO.: 28269 EXPIRATION DATE: 12/31/17 EVAN R. ANDREWS, P.E.	DESIGN: RND DRAWN: RND CHECKED: ERA DATE: 7/29/2016	EROSION AND SEDIMENT CONTROL PLAN	SCALE AS SHOWN SHEET 4 OF 7
WATER'S EDGE WATER MAIN LOOP BLUE STREAM DR TO SPREADING OAK LN CAPITAL PROJECT NO.: W-8324 CONTRACT NO.: 44-4981 2ND ELECTION DISTRICT, HOWARD COUNTY, MD				600 SCALE MAP NO. 43 BLOCK NO. 4			



SEQUENCE OF CONSTRUCTION:

NOTES:

- A. CONTRACTOR SHALL OBTAIN GRADING PERMIT. WORK SHALL BE CONDUCTED PER SAID PERMIT.
 - B. WORK SHALL BE CONDUCTED PER MDE JOINT PERMIT 16-NT-3280/201661670.
 - C. DIRECT ALL WATER REMOVED FROM TRENCHING OPERATIONS TO A FILTER BAG.
 - D. SITE ACCESS WILL BE BY WAY OF BLUESTREAM DRIVE USING THE EXISTING STABILIZED CONSTRUCTION ENTRANCE THERE.
 - E. ACCESS TO SITE WILL BE ACROSS DISTURBED LANDS USING EXISTING SEDIMENT CONTROLS IN PLACE PER PERMIT G11000055.
 - F. STREAM SHALL NOT BE DISTURBED BETWEEN MARCH 1 AND JUNE 15.
1. A PRE-CONSTRUCTION MEETING MUST OCCUR WITH THE HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS, CONSTRUCTION INSPECTION DIVISION (CID), 410-313-1855 AFTER THE FUTURE LEO AND PROTECTED AREAS ARE MARKED CLEARLY IN THE FIELD. A MINIMUM OF 48 HOUR NOTICE TO CID MUST BE GIVEN AT THE FOLLOWING STAGES:
 - a. PRIOR TO THE START OF EARTH DISTURBANCE.
 - b. PRIOR TO THE START OF PERIMETER EROSION AND SEDIMENT CONTROLS, BUT BEFORE PROCEEDING WITH ANY OTHER EARTH DISTURBANCE OR GRADING.
 - c. PRIOR TO THE START OF ANOTHER PHASE OF CONSTRUCTION OR OPENING OF ANOTHER GRADING UNIT.
 - d. PRIOR TO THE REMOVAL OR MODIFICATION OF SEDIMENT CONTROL PRACTICES.
 2. INSTALL TEMPORARY MULCH ACCESS ROAD TO THE SITE. ONE DAY
 3. CLEAR AND GRUB AS NECESSARY FOR THE INSTALLATION OF PERIMETER CONTROLS. ONE DAY
 4. INSTALL PERIMETER CONTROLS. ONE DAY
 5. INSTALL TEMPORARY CROSSING OF DEEP RUN. ONE DAY
 6. CONTACT CID PER 1.B ABOVE.
 7. CLEAR AND GRUB AS NECESSARY FOR THE INSTALLATION OF THE WATER LINE. CONSTRUCT WATER LINE AND APPURTENANCES ON SOUTH SIDE OF DEEP RUN. ONE DAY
 8. USE PUMP AROUND ON DEEP RUN TO CONSTRUCT WATER LINE CROSSING OF STREAM. ONE DAY
 9. COMPLETE WATER LINE CONSTRUCTION ON NORTH SIDE OF STREAM. ONE DAY
 10. INSTALL RIPRAP BANK STABILIZATION. REMOVE TEMPORARY CROSSING. SEED AND MULCH DISTURBED AREAS. PLACE TSSM WHERE INDICATED ON THE PLANS. THREE DAYS
 11. REMOVE TEMPORARY MULCH ACCESS ROAD AND DISPOSE OF WOOD CHIPS AND GEOTEXTILE OFFSITE. TWO DAYS
 12. INSTALL SILT FENCE AT NORTH END OF TEMPORARY MULCH ACCESS ROAD TO INSTALL 4' SECTION OF WATER LINE. INSTALL 4' SECTION OF WATER LINE. TEST NEW WATER LINE. STABILIZE DISTURBED AREA. ONE DAY
 13. ONCE THE PROJECT SITE IS STABILIZED AND CONTROLS CAN BE REMOVED, CONTACT CID PER 1.D ABOVE
 14. REMOVE AND REMAINING SEDIMENT CONTROLS AND STABILIZE AREAS THAT ARE DISTURBED BY REMOVAL OF SEDIMENT CONTROLS. ONE DAY



TEMPORARY MULCH ACCESS ROAD
DETAIL A-A
(NTS)

1. CONTRACTOR SHALL SEQUENCE CONSTRUCTION SUCH THAT NO EQUIPMENT WILL IMPACT AREAS TO BE PROTECTED PRIOR TO MULCH PLACEMENT.
2. GEOTEXTILE FABRIC SHALL BE SINGLE PIECE ACROSS WIDTH. OVERLAP FABRIC BY 18" MIN. ALONG LENGTH OF ROUTE.
3. CONTRACTOR SHALL MAINTAIN THICKNESS OF MULCH THROUGHOUT CONSTRUCTION.
4. MULCH AND GEOTEXTILE TO BE REMOVED AT THE COMPLETION OF CONSTRUCTION AND DISPOSED OF OFF-SITE.

FOR EROSION AND SEDIMENT CONTROL ONLY.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

John J. ... 10/10/17
DIRECTOR OF PUBLIC WORKS DATE

Thomas S. ... 10/31/17
CHIEF, BUREAU OF ENGINEERING DATE

... 10/21/17
CHIEF, UTILITY DESIGN DIVISION DATE

Michael Baker International
MICHAEL BAKER INTERNATIONAL, INC.
1204 CONROUSE DRIVE, SUITE 200
LITTLE ROCK, MD 21090-1014
PHONE: (410) 689-3400

PROFESSIONAL CERTIFICATION
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND.
LICENSE NO.: 28802
EXPIRATION DATE: 12/31/17
Evan R. Andrews, P.E.

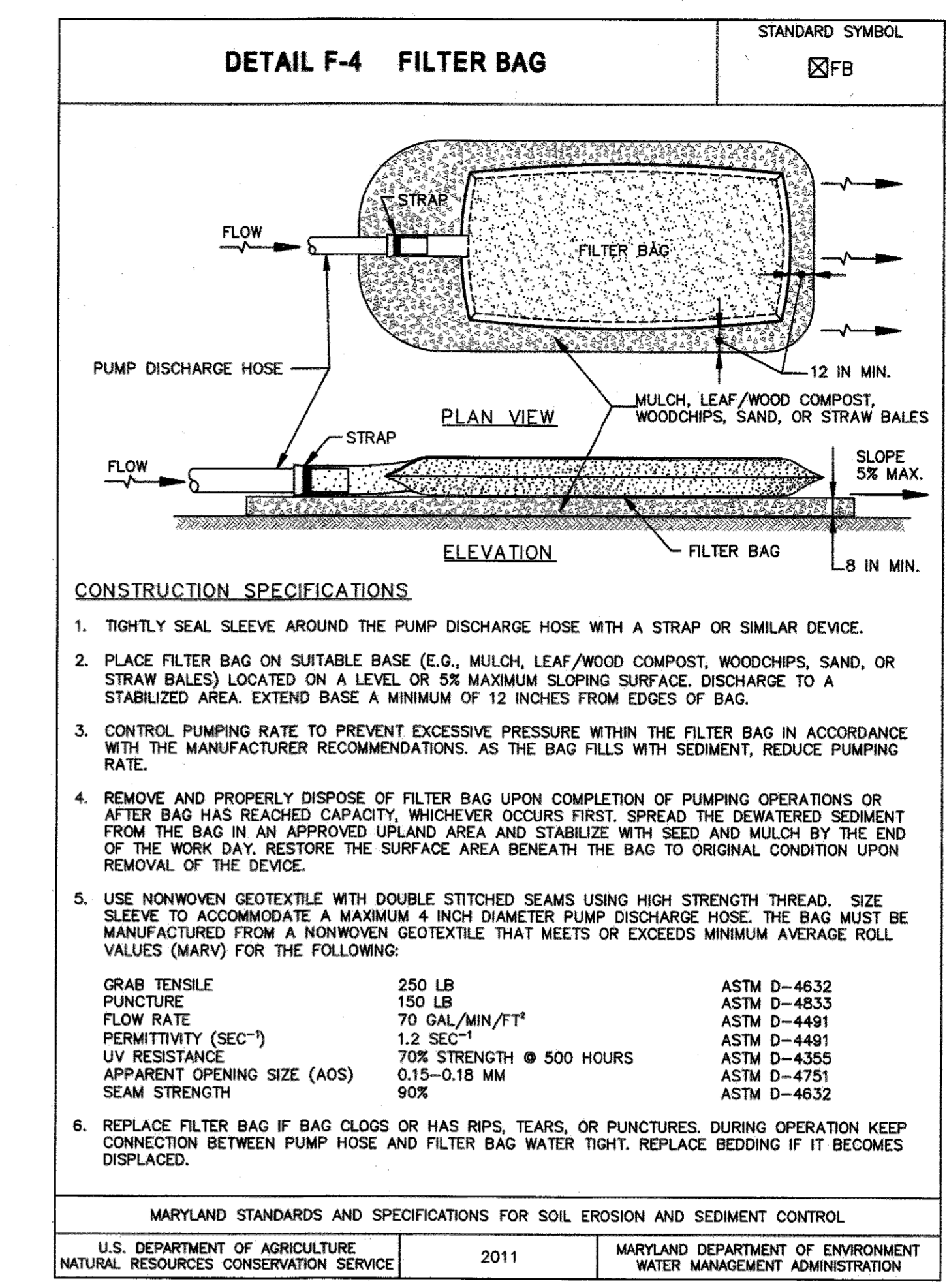
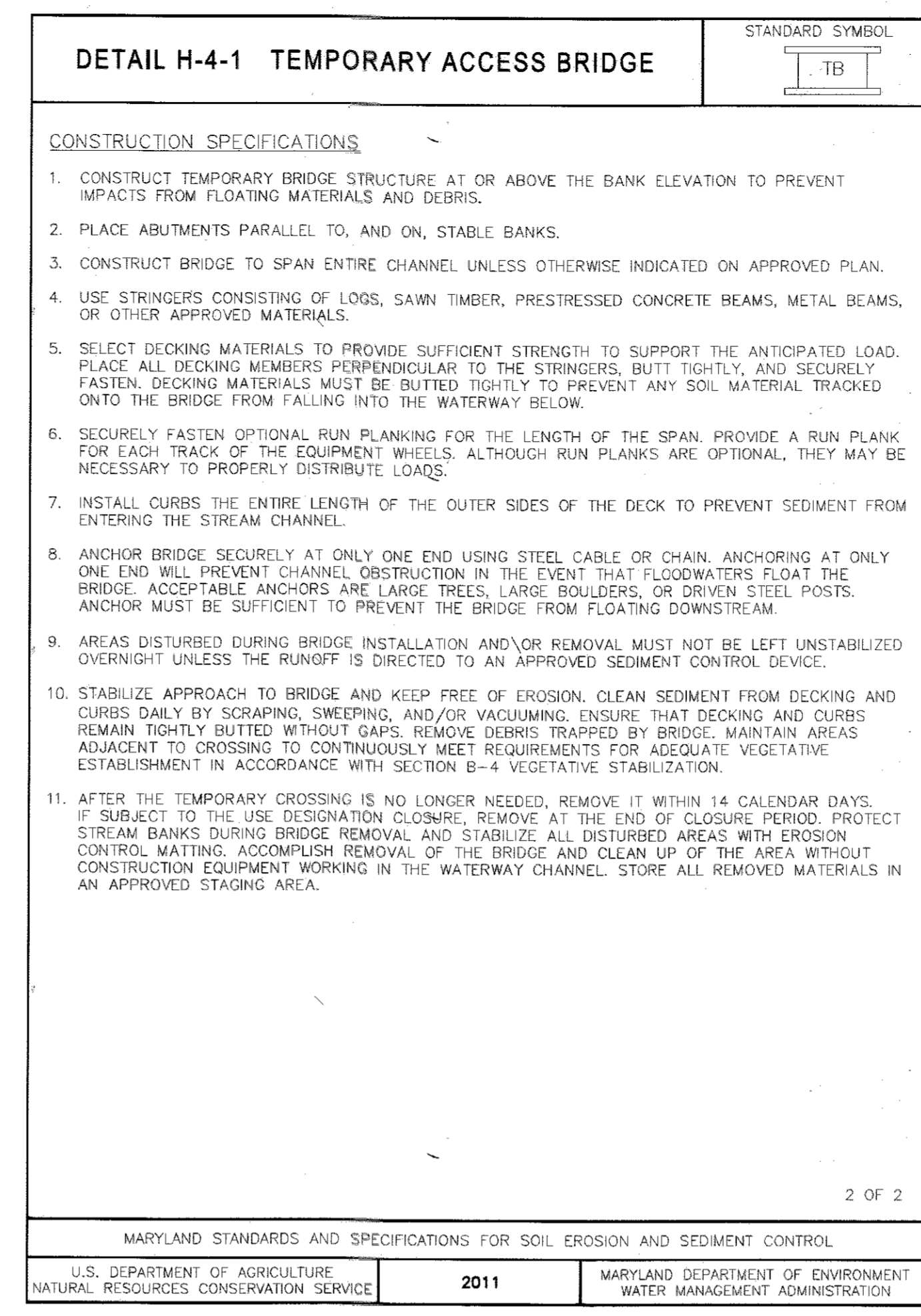
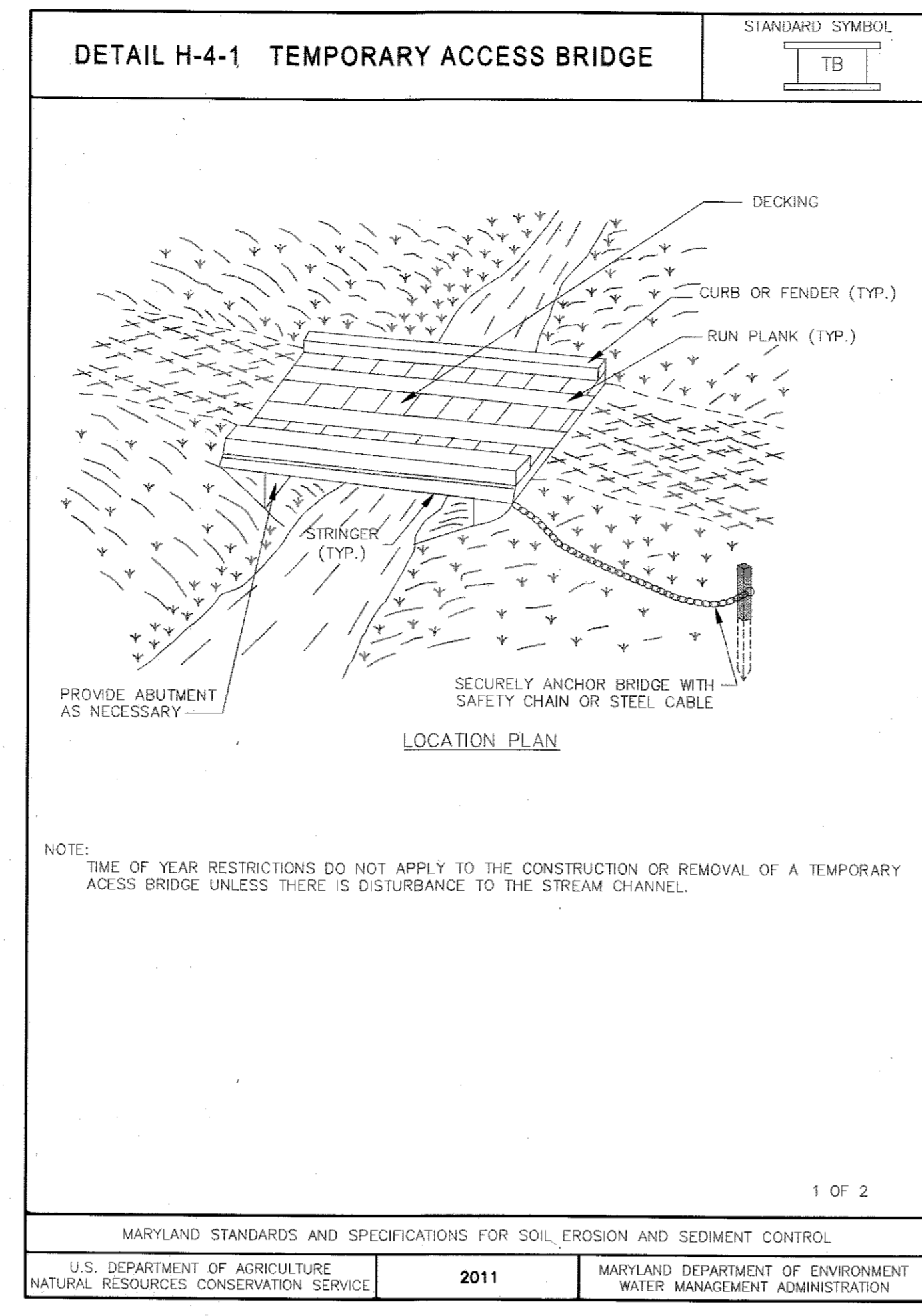
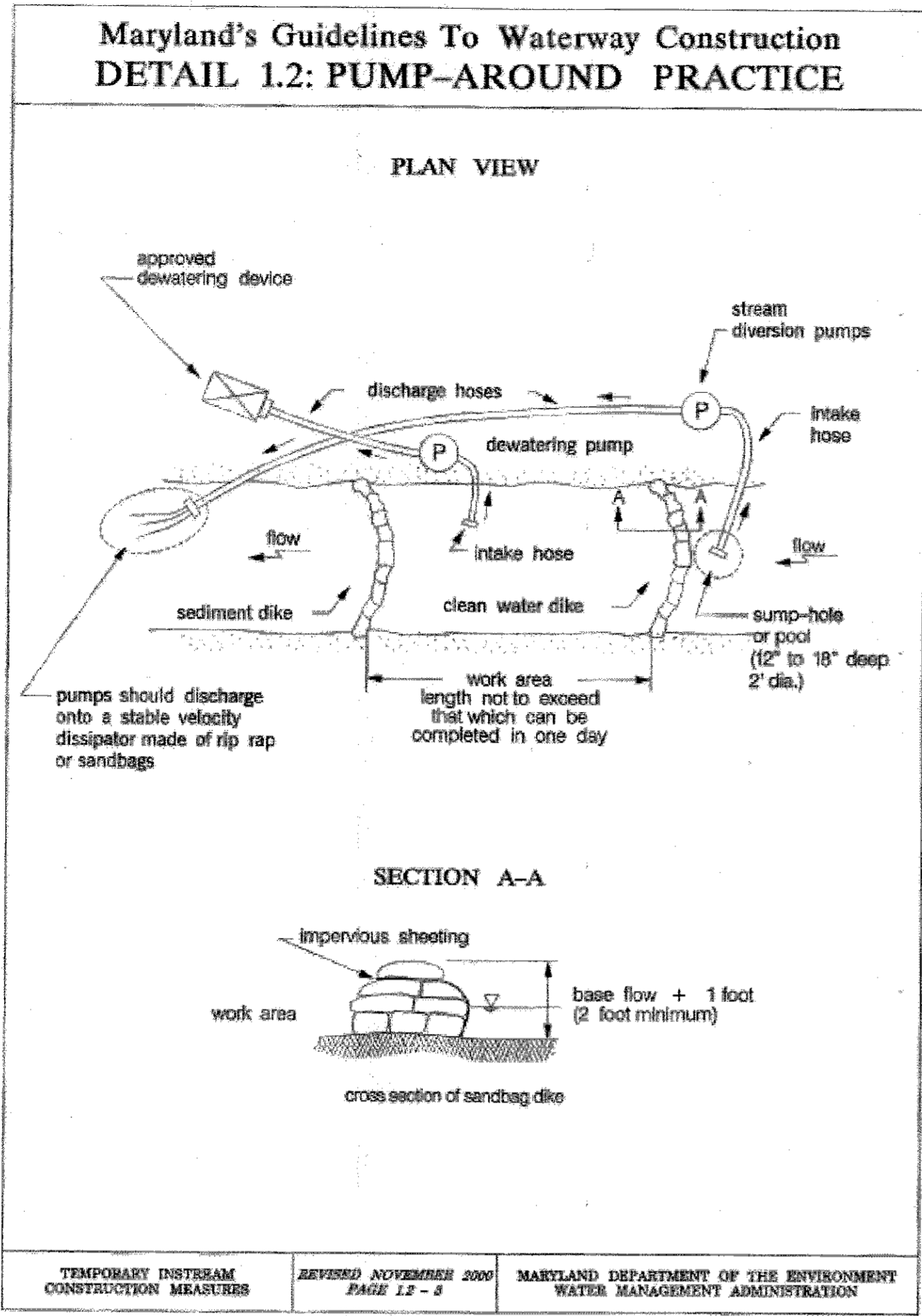
DESIGN: RND					
DRAWN: RND					
CHECKED: ERA					
DATE: 7/29/2016	NO.	REVISION	DATE	BY	

EROSION & SEDIMENT CONTROL NOTES & DETAILS 1

600 SCALE MAP NO. 43 BLOCK NO. 4

WATER'S EDGE
WATER MAIN LOOP
BLUE STREAM DR TO SPREADING OAK LN
CAPITAL PROJECT NO.: W-8324
CONTRACT NO.: 44-4981
2ND ELECTION DISTRICT, HOWARD COUNTY, MD

SCALE AS SHOWN
SHEET 5 OF 7

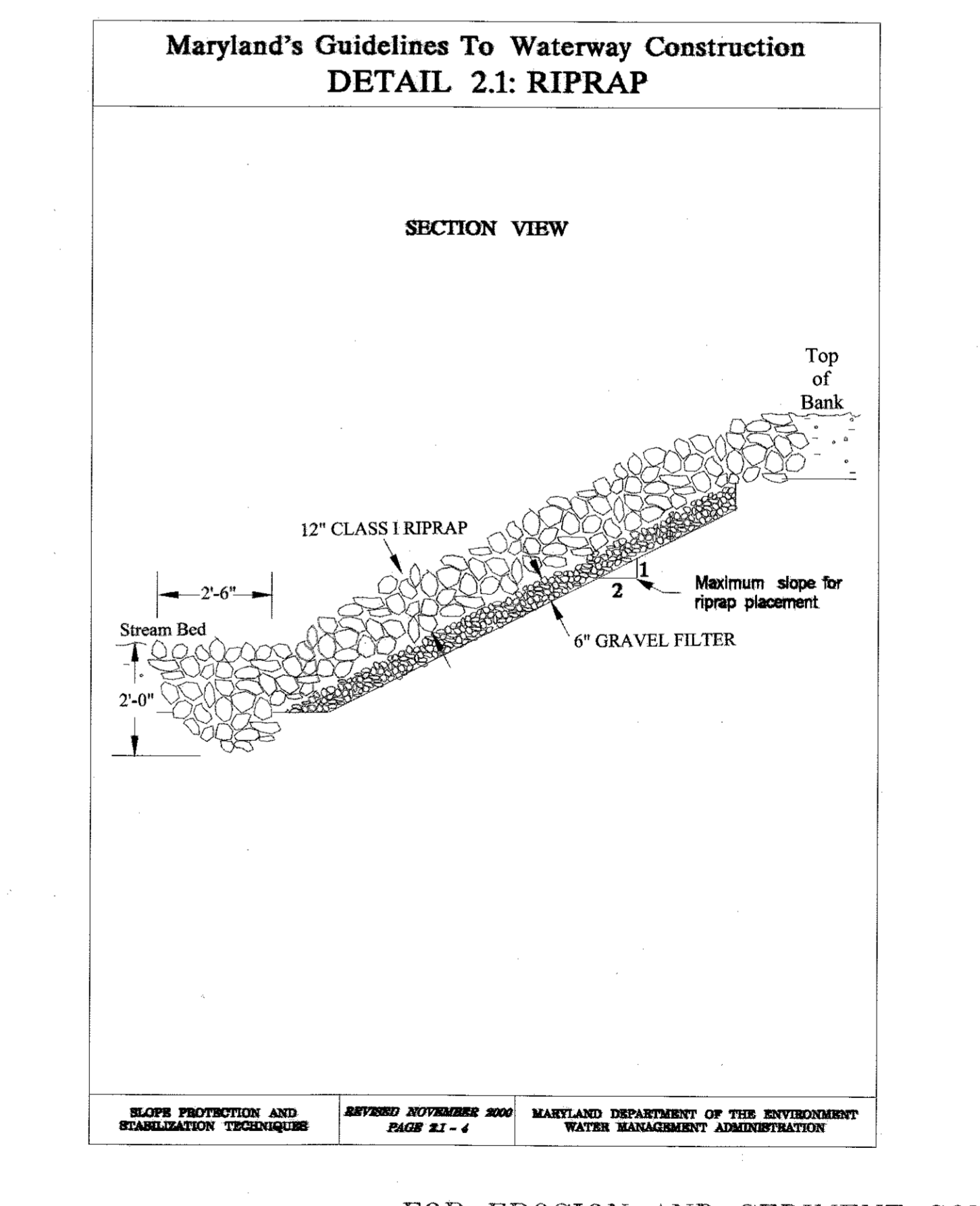


- ### BEST MANAGEMENT PRACTICES FOR WORKING IN NONTIDAL WETLANDS, WETLAND BUFFERS, WATERWAYS, AND 100-YEAR FLOODPLAINS
- No excess fill, construction material, or debris shall be stockpiled or stored in nontidal wetlands, nontidal wetland buffers, waterways, or the 100-year floodplain.
 - Place materials in a location and manner which does not adversely impact surface or subsurface water flow into or out of nontidal wetlands, nontidal wetland buffers, waterways, or the 100-year floodplain.
 - Do not use the excavated material as backfill if it contains waste metal products, unsightly debris, toxic material, or any other deleterious substance. If additional backfill is required, use clean material free of waste metal products, unsightly debris, toxic material, or any other deleterious substance.
 - Place heavy equipment on mats or suitably operate the equipment to prevent damage to nontidal wetlands, nontidal wetland buffers, waterways, or the 100-year floodplain.
 - Repair and maintain any serviceable structure or fill so there is no permanent loss of nontidal wetlands, nontidal wetland buffers, or waterways, or permanent modification of the 100-year floodplain in excess of that lost under the originally authorized structure or fill.
 - Rectify any nontidal wetlands, wetland buffers, waterways, or 100-year floodplain temporarily impacted by any construction.
 - All stabilization in the nontidal wetland and nontidal wetland buffer shall consist of the following species: Annual Ryegrass (*Lolium multiflorum*), Millet (*Setaria italica*), Barley (*Hordeum sp.*), Oats (*Avena sp.*), and/or Rye (*Siccaria graeale*). These species will allow for the stabilization of the site while also allowing for the voluntary revegetation of natural wetland species. Other non-persistent vegetation may be acceptable, but must be approved by the Nontidal Wetlands and Waterways Division. Kentucky 31 fescue shall not be utilized in wetland or buffer areas. The area should be seeded and mulched to reduce erosion after construction activities have been completed.
 - After installation has been completed, make post-construction grades and elevations the same as the original grades and elevations in temporarily impacted areas.
 - To protect aquatic species, in-stream work is prohibited as determined by the classification of the stream:
 - Use I waters: In-stream work shall not be conducted during the period March 1 through June 15, inclusive, during any year.
 - Use III waters: In-stream work shall not be conducted during the period October 1 through April 30, inclusive, during any year.
 - Use IV waters: In-stream work shall not be conducted during the period March 1 through May 31, inclusive, during any year.
 - Stormwater runoff from impervious surfaces shall be controlled to prevent the washing of debris into the waterway.
 - Culverts shall be constructed and any riprap placed so as not to obstruct the movement of aquatic species, unless the purpose of the activity is to impound water.

- ### HOWARD SOIL CONSERVATION DISTRICT (HSCD) STANDARD SEDIMENT CONTROL NOTES
- A pre-construction meeting must occur with the Howard County Department of Public Works, Construction Inspection Division (CID), 410-313-1855 after the future LOD and protected areas are marked clearly in the field. A minimum of 48 hour notice to CID must be given at the following stages:
 - Prior to the start of earth disturbance.
 - Upon completion of the installation of perimeter erosion and sediment controls, but before proceeding with any other earth disturbance or grading.
 - Prior to the start of another phase of construction or opening of another grading unit.
 - Prior to the removal or modification of sediment control practices.
 Other building or grading inspection approvals may not be authorized until this initial approval by the inspection agency is made. Other related state and federal permits shall be referenced, to ensure coordination and to avoid conflicts with this plan.
 - All vegetative and structural practices are to be installed according to the provisions of this plan and are to be in conformance with the 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL, and revisions thereto.
 - Following initial soil disturbance or re-disturbance, permanent or temporary stabilization is required within three (3) calendar days as to the surface of all perimeter controls, dikes, swales, ditches, perimeter slopes, and all slopes steeper than 1 vertical (3:1); and seven (7) calendar days as to all other disturbed areas on the project site except for those areas under active grading.
 - All disturbed areas must be stabilized within the time period specified above in accordance with the 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL for topsoil (Sec. B-4-2), permanent seeding (Sec. B-4-5), temporary seeding (Sec. B-4-4) and mulching (Sec. B-4-3). Temporary stabilization with mulch alone can only be applied between the fall and spring seeding dates if the ground is frozen. Incremental stabilization (Sec. B-4-1) specifications shall be enforced in areas with >15' of cut and/or fill. Stockpiles (Sec. B-4-8) in excess of 20 ft. must be benched with stable outlet. All concentrated flow, steep slope, and highly erodible areas shall receive soil stabilization matting (Sec. B-4-6).
 - All sediment control structures are to remain in place, and are to be maintained in operative condition until permission for their removal has been obtained from the CID.
 - Site Analysis:

Total Area of Site:	0.32	Acres
Area Disturbed:	0.32	Acres
Area to be roofed or paved:	0	Acres
Area to be vegetatively stabilized:	0.23	Acres
Total Cut:	0	Cu. Yds.
Total Fill:	0	Cu. Yds.
Offsite waste/borrow area location:	N/A	
 - Any sediment control practice which is disturbed by grading activity for placement of utilities must be repaired on the same day of disturbance.
 - Additional sediment control must be provided, if deemed necessary by the CID. The site and all controls shall be inspected by the contractor weekly; and the next day after each rain event. A written report by the contractor, made available upon request, is part of every inspection and should include:
 - Inspection date
 - Inspection time (routine, pre-storm event, during rain event)
 - Name and title of inspector
 - Weather information (current conditions as well as time and amount of last recorded precipitation)
 - Brief description of project's status (e.g., percent complete) and/or current activities
 - Evidence of sediment discharges
 - Identification of plan deficiencies
 - Identification of sediment controls that require maintenance
 - Identification of missing or improperly installed sediment controls
 - Compliance status regarding the sequence of construction and stabilization requirements
 - Photographs
 - Monitoring/sampling
 - Maintenance and/or corrective action performed
 - Other inspection items as required by the General Permit for Stormwater Associated with Construction Activities (NPDES, MDE):
 - Trenches for the construction of utilities is limited to three pipe lengths or that which can and shall be back-filled and stabilized by the end of each workday, whichever is shorter.
 - Any major changes or revisions to the plan or sequence of construction must be reviewed and approved by the HSCD prior to proceeding with construction. Minor revisions may be reviewed by the CID per the list of HSCD-approved field changes.
 - Disturbance shall not occur outside the L.O.D. A project is to be sequenced so that grading activities begin on one grading unit (maximum acreage of 20 ac. per grading unit) at a time. Work may proceed to a subsequent grading unit when at least 50 percent of the disturbed area in the preceding grading unit has been stabilized and approved by the CID. Unless otherwise specified and approved by the HSCD, no more than 30 acres cumulatively may be disturbed at a given time.
 - Wash water from any equipment, vehicles, wheels, pavement, and other sources must be treated in a sediment basin or other approved washout structure.
 - Topsoil shall be stockpiled and preserved on-site for redistribution onto final grade.
 - All Silt Fence and Super Silt Fence shall be placed on the end-of-the-contour, and be imbricated at 25' minimum intervals, with lower ends curled uphill by 2' in elevation.
 - Stream channels must not be disturbed during the following restricted time periods (inclusive):
 - Use I and IIP March 1 - June 15
 - Use III and IIP October 1 - April 30
 - Use IV March 1 - May 31
 - A copy of this plan, the 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL, and associated permits shall be on-site and available when the site is active.

- ### Maryland's Guidelines To Waterway Construction DETAIL 2.1: RIPRAP
- SECTION VIEW
-
- 12" CLASS I RIPRAP, 6" GRAVEL FILTER, Stream Bed, Top of Bank, 2'-6", 2'-0", Maximum slope for riprap placement.
- Inspection date
 - Inspection time (routine, pre-storm event, during rain event)
 - Name and title of inspector
 - Weather information (current conditions as well as time and amount of last recorded precipitation)
 - Brief description of project's status (e.g., percent complete) and/or current activities
 - Evidence of sediment discharges
 - Identification of plan deficiencies
 - Identification of sediment controls that require maintenance
 - Identification of missing or improperly installed sediment controls
 - Compliance status regarding the sequence of construction and stabilization requirements
 - Photographs
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 - Maintenance and/or corrective action performed
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 - Disturbance shall not occur outside the L.O.D. A project is to be sequenced so that grading activities begin on one grading unit (maximum acreage of 20 ac. per grading unit) at a time. Work may proceed to a subsequent grading unit when at least 50 percent of the disturbed area in the preceding grading unit has been stabilized and approved by the CID. Unless otherwise specified and approved by the HSCD, no more than 30 acres cumulatively may be disturbed at a given time.
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 - Topsoil shall be stockpiled and preserved on-site for redistribution onto final grade.
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 - Stream channels must not be disturbed during the following restricted time periods (inclusive):
 - Use I and IIP March 1 - June 15
 - Use III and IIP October 1 - April 30
 - Use IV March 1 - May 31
 - A copy of this plan, the 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL, and associated permits shall be on-site and available when the site is active.
- Rev. 8.2016
- MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL
U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE | 2011 | MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION



DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Director of Public Works: [Signature] 10/16/17
Chief, Bureau of Engineering: [Signature] 10/15/17
Chief, Bureau of Utilities: [Signature] 10/14/17
Chief, Utility Design Division: [Signature] 10/17/17

Michael Baker International
MICHAEL BAKER INTERNATIONAL, INC.
1304 Concourse Drive, Suite 200
Annapolis, MD 21406-1014
Phone: (410) 688-3400

PROFESSIONAL CERTIFICATION
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME AND THAT I AM A DAILY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND.
LICENSE NO.: 28602
EXPIRES DATE: 11/11/2018
EVAN R. ANDREWS, P.E.

DESIGN: RND					
DRAWN: RND					
CHECKED: ERA					
DATE: 7/29/2016	NO.	REVISION	DATE	BY	

EROSION & SEDIMENT CONTROL NOTES & DETAILS 2

600 SCALE MAP NO. 43 | BLOCK NO. 4

WATER'S EDGE
WATER MAIN LOOP
BLUE STREAM DR TO SPREADING OAK LN
CAPITAL PROJECT NO.: W-8324
CONTRACT NO.: 44-4981
2ND ELECTION DISTRICT, HOWARD COUNTY, MD

SCALE AS SHOWN
SHEET 6 OF 7

B-2 STANDARDS AND SPECIFICATIONS

FOR

SOIL PREPARATION, TOPSOILING, AND SOIL AMENDMENTS

Definition

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

Purpose

To provide a suitable soil medium for vegetative growth.

Conditions Where Practice Applies

Where vegetative stabilization is to be established.

Criteria

- A. Soil Preparation
1. Temporary Stabilization
a. Seeded preparation consists of loosening soil to a depth of 3 to 5 inches by means of suitable agricultural or construction equipment...
b. Apply fertilizer and lime as prescribed on the plans.
c. Incorporate lime and fertilizer into the top 3 to 5 inches of soil by disking or other suitable means.
2. Permanent Stabilization
a. A soil test is required for any earth disturbance of 5 acres or more. The minimum soil conditions required for permanent vegetative establishment are:
i. Soil pH between 6.0 and 7.0.
ii. Soluble salts less than 500 parts per million (ppm).
iii. Soil contains less than 40 percent clay but enough fine grained material (greater than 30 percent silt plus clay) to provide the capacity to hold a moderate amount of moisture.
iv. Soil contains 1.5 percent minimum organic matter by weight.
v. Soil contains sufficient pore space to permit adequate root penetration.
b. Application of amendments or topsoil is required if on-site soils do not meet the above conditions.
c. Graded areas must be maintained in a true and even grade as specified on the approved plan, then scarified or otherwise loosened to a depth of 3 to 5 inches.
d. Apply soil amendments as specified on the approved plan or as indicated by the results of a soil test.
e. Mix soil amendments into the top 3 to 5 inches of soil by disking or other suitable means.
B. Topsoiling
1. Topsoil is placed over prepared subsoil prior to establishment of permanent vegetation.
2. Topsoil salvaged from an existing site may be used provided it meets the standards as set forth in these specifications.
3. Topsoiling is limited to areas having 2:1 or flatter slopes where:
a. The texture of the exposed subsoil/parent material is not adequate to produce vegetative growth.
b. The soil material is so shallow that the rooting zone is not deep enough to support plants or furnish continuing supplies of moisture and plant nutrients.
c. The original soil to be vegetated contains material toxic to plant growth.
d. The soil is so acidic that treatment with limestone is not feasible.
4. Areas having slopes steeper than 2:1 require special consideration and design.
5. Topsoil Specifications: Soil to be used as topsoil must meet the following criteria:
a. Topsoil must be a loam, sandy loam, clay loam, silt loam, sandy clay loam, or loamy sand.
b. Topsoil must be free of noxious plants or plant parts such as Bermuda grass, quack grass, Johnson grass, nut sedge, poison ivy, thistle, or others as specified.
c. Topsoil substitutes or amendments, as recommended by a qualified agronomist or soil scientist and approved by the appropriate approval authority, may be used in lieu of natural topsoil.
6. Topsoil Application
a. Erosion and sediment control practices must be maintained when applying topsoil.
b. Uniformly distribute topsoil in a 5 to 8 inch layer and lightly compact to a minimum thickness of 4 inches.
c. Topsoil must not be placed if the topsoil or subsoil is in a frozen or muddy condition, when the subsoil is excessively wet or in a condition that may otherwise be detrimental to proper grading and seeded preparation.

B-3 STANDARDS AND SPECIFICATIONS

FOR

SEEDING AND MULCHING

Definition

The application of seed and mulch to establish vegetative cover.

Purpose

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

Conditions Where Practice Applies

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

Criteria

- A. Seeding
1. Specifications
a. All seed must meet the requirements of the Maryland State Seed Law. All seed must be subject to re-testing by a recognized seed laboratory.
b. Mulch alone may be applied between the fall and spring seeding dates only if the ground is frozen.
c. Inoculants: The inoculant for treating legume seed in the seed mixtures must be a pure culture of nitrogen fixing bacteria prepared specifically for the species.
d. Sod or seed must not be placed on soil which has been treated with soil sterilants or chemicals used for weed control until sufficient time has elapsed (14 days min.) to permit dissipation of phytotoxic materials.
2. Application
a. Dry Seeding: This includes use of conventional drop or broadcast spreaders.
i. Incorporate seed into the subsoil at the rates prescribed on Temporary Seeding Table B.1.
ii. Apply seed in two directions, perpendicular to each other.
b. Drill or Cultivator Seeding: Mechanized seeders that apply and cover seed with soil.
i. Cultivator seeders are required to bury the seed in such a fashion as to provide at least 1/4 inch of soil covering.
ii. Apply seed in two directions, perpendicular to each other.
c. Hydroseeding: Apply seed uniformly with hydroseeder (slurry includes seed and fertilizer).
i. If fertilizer is being applied at the time of seeding, the application rates should not exceed the following: nitrogen, 100 pounds per acre of total soluble nitrogen; P2O5 (phosphorus), 200 pounds per acre; K2O (potassium), 200 pounds per acre.
ii. Lime: Use only ground agricultural limestone (up to 3 tons per acre may be applied by hydroseeding).
iii. Mix seed and fertilizer on site and seed immediately and without interruption.
iv. When hydroseeding do not incorporate seed into the soil.
B. Mulching
1. Mulch Materials (in order of preference)
a. Straw consisting of thoroughly threshed wheat, rye, oat, or barley and reasonably bright in color.
b. Wood Cellulose Fiber Mulch (WCFM) consisting of specially prepared wood cellulose processed into a uniform fibrous physical state.
i. WCFM is to 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.
ii. WCFM, including dye, must contain no germination or growth inhibiting factors.
iii. WCFM materials are to 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.
iv. WCFM material must not contain elements or compounds at concentration levels that will be phytotoxic.
v. WCFM must conform to the following physical requirements: fiber length of approximately 10 millimeters, diameter approximately 1 millimeter, pH range of 4.0 to 8.5, ash content of 1.6 percent maximum and water holding capacity of 90 percent minimum.
2. Application
a. Apply mulch to all seeded areas immediately after seeding.
b. When straw mulch is used, spread it over all seeded areas at the rate of 2 tons per acre to a uniform loose depth of 1 to 2 inches.
c. Wood cellulose fiber used as mulch must be applied at a net dry weight of 1500 pounds per acre.
3. Anchoring
a. Perform mulch anchoring immediately following application of mulch to minimize loss by wind or water.
i. A mulch anchoring tool is a tractor drawn implement designed to punch and anchor mulch into the soil surface a minimum of 2 inches.
ii. Wood cellulose fiber may be used for anchoring straw.
iii. Synthetic binders such as Acrylic DLR (Agro-Tack), DCA-70, Petrosol, Terra Tack II, Terra Tack AR or other approved equal may be used.
iv. Lightweight plastic netting may be stapled over the mulch according to manufacturer recommendations.

B-4 STANDARDS AND SPECIFICATIONS

FOR

TEMPORARY STABILIZATION

Definition

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

Purpose

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

Conditions Where Practice Applies

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

Criteria

- 1. Select one or more of the species or seed mixtures listed in Table B.1 for the appropriate Plant Hardiness Zone (from Figure B.3), and enter them in the Temporary Seeding Summary below along with application rates, seeding dates and seeding depths.
2. For sites having soil tests performed, use and show the recommended rates by the testing agency.
3. When stabilization is required outside of a seeding season, apply seed and mulch or straw mulch alone as prescribed in Section B-4-3.A.1.a and maintain until the next seeding season.

Temporary Seeding Summary

Table with columns: Hardness Zone, Seed Mixture, Application Rate, Seeding Dates, Seeding Depths, Fertilizer Rate, Lime Rate. Includes rows for Ryegrass and Pearl Millet.

B-5 STANDARDS AND SPECIFICATIONS

FOR

PERMANENT STABILIZATION

Definition

To stabilize disturbed soils with permanent vegetation.

Purpose

To use long-lived perennial grasses and legumes to establish permanent ground cover on disturbed soils.

Conditions Where Practice Applies

Exposed soils where ground cover is needed for 6 months or more.

Criteria

- A. Seed Mixtures
1. General Use
a. Select one or more of the species or mixtures listed in Table B.3 for the appropriate Plant Hardiness Zone (from Figure B.3) and based on the site condition or purpose shown on Table B.2.
b. Additional planting specifications for exceptional sites such as shorelines, stream banks, or dunes or for special purposes such as wildlife or aesthetic treatment may be found in USDA-NRCS Technical Field Office Guide, Section 342 - Critical Area Planting.
c. For sites having disturbed areas over 5 acres, use and show the rates recommended by the soil testing agency.
d. For areas receiving low maintenance, apply urea form fertilizer (46-0-0) at 3 1/2 pounds per 1000 square feet (150 pounds per acre) at the time of seeding in addition to the soil amendments shown in the Permanent Seeding Summary.
2. Turfgrass Mixtures
a. Areas where turfgrasses may be desired include lawns, parks, playgrounds, and commercial sites which will receive a medium to high level of maintenance.
b. Select one or more of the species or mixtures listed below based on the site conditions or purpose.
i. Kentucky Bluegrass: Full Sun Mixture: For use in areas that receive intensive management.
ii. Kentucky Bluegrass/Perennial Rye: Full Sun Mixture: For use in full sun areas where rapid establishment is necessary and when turf will receive medium to intensive management.
iii. Tall Fescue/Kentucky Bluegrass: Full Sun Mixture: For use in drought prone areas and/or for areas receiving low to medium management in full sun to medium shade.
iv. Kentucky Bluegrass/Fine Fescue: Shade Mixture: For use in areas with shade in Bluegrass lawns.
c. Ideal Times of Seeding for Turfgrass Mixtures
Western MD: March 15 to June 1, August 1 to October 1 (Hardiness Zones: 5b, 6a)
Central MD: March 1 to May 15, August 15 to October 15 (Hardiness Zones: 6b)
Southern MD, Eastern Shore: March 1 to May 15, August 15 to October 15 (Hardiness Zones: 7a, 7b)
d. Till areas to receive seed by disking or other approved methods to a depth of 2 to 4 inches, level and rake the areas to prepare a proper seedbed.
e. If soil moisture is deficient, supply new seedlings with adequate water for plant growth (1/2 to 1 inch every 3 to 4 days depending on soil texture) until they are firmly established.

Permanent Seeding Summary

Table with columns: Hardness Zone, Seed Mixture, Application Rate, Seeding Dates, Seeding Depths, Fertilizer Rate (N, P2O5, K2O), Lime Rate. Includes rows for Switch Grass and Creeping Red Fescue.

- B. Sod: To provide quick cover on disturbed areas (2:1 grade or flatter).
1. General Specifications
a. Class of turfgrass sod must be Maryland State Certified. Sod labels must be made available to the job foreman and inspector.
b. Sod must be machine cut at a uniform soil thickness of 1/2 inch, plus or minus 1/8 inch, at the time of cutting.
c. Standard size sections of sod must be strong enough to support their own weight and retain their size and shape when suspended vertically with a firm grasp on the upper 10 percent of the section.
d. Sod must not be harvested or transplanted when moisture content (excessively dry or wet) may adversely affect its survival.
e. Sod must be harvested, delivered, and installed within a period of 36 hours.
2. Sod Installation
a. During periods of excessively high temperature or in areas having dry subsoil, lightly irrigate the subsoil immediately prior to laying the sod.
b. Lay the first row of sod in a straight line with subsequent rows placed parallel to it and tightly wedged against each other.
c. Wherever possible, lay sod with the long edges parallel to the contour and with staggering joints.
d. Water the sod immediately following rolling and tamping until the underside of the new sod pad and soil surface below the sod are thoroughly wet.

FOR EROSION AND SEDIMENT CONTROL ONLY.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND
Director of Public Works, Chief, Bureau of Engineering, Chief, Utility Design Division

Michael Baker International, Inc.
PROFESSIONAL CERTIFICATION
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A FULLY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND.

DESIGN: RND
DRAWN: RND
CHECKED: ERA
DATE: 7/29/2016

EROSION & SEDIMENT CONTROL NOTES & DETAILS 3

WATER'S EDGE
WATER MAIN LOOP
BLUE STREAM DR TO SPREADING OAK LN
CAPITAL PROJECT NO.: W-8324
CONTRACT NO.: 44-4981
2ND ELECTION DISTRICT, HOWARD COUNTY, MD

SCALE AS SHOWN
SHEET 7 OF 7