ELLICOTT CITY RETAINING WALL 1A REPAIR

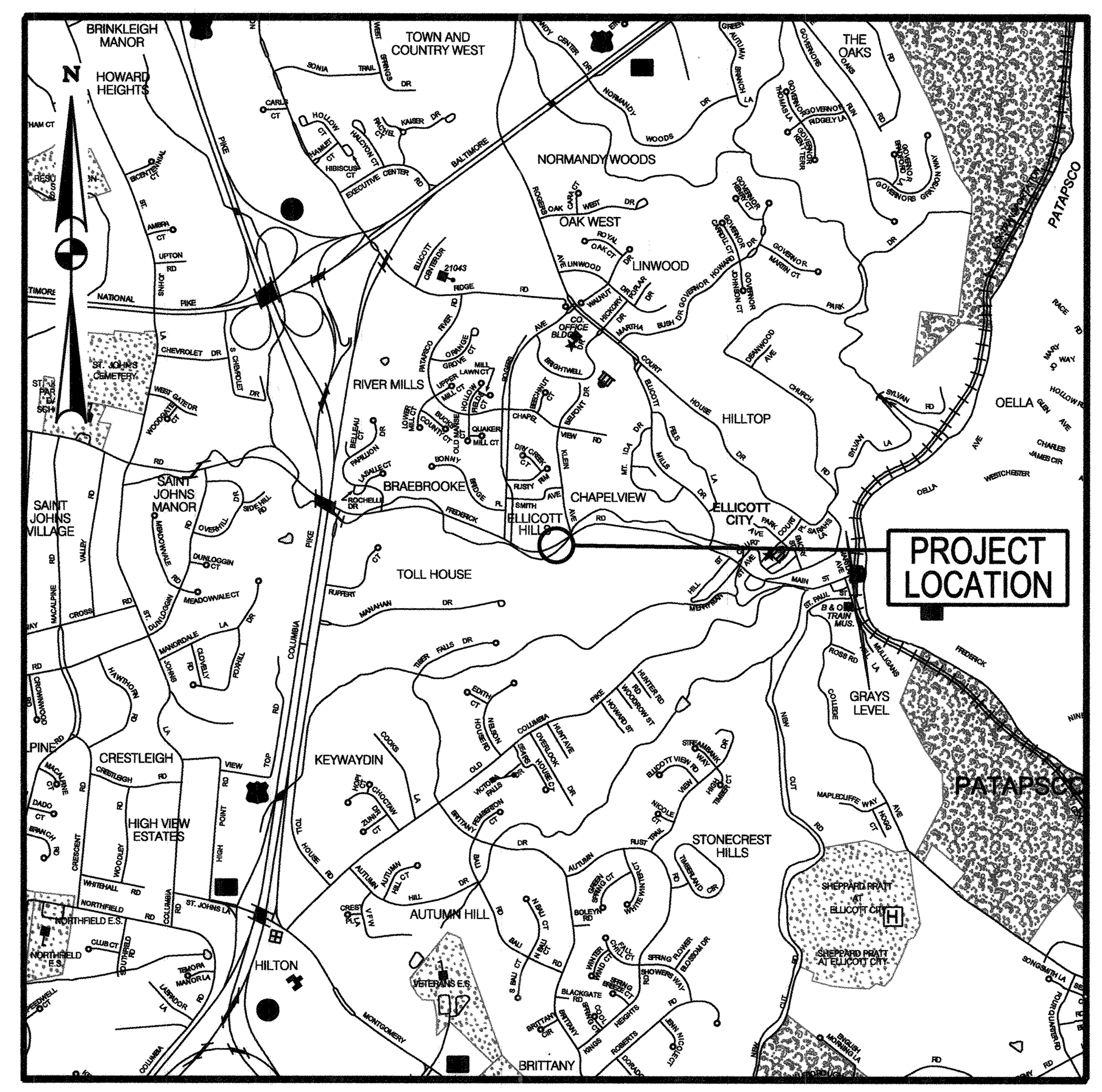
SHEET INDEX

LEGEND

- 430 — EX. CONTOUR
- EX. STORM DRAIN
- EX. SANITARY SEWER
- EX. WATER LINE
- EX. GAS LINE
- EX. OVERHEAD TELEPHONE
- EX. WOODS LINE
- EX. TREE
- TREE TO BE REMOVED
- TREE TO BE SAVED
- SS SD EX. MANHOLE
- EX. UTILITY POLE
- EX. EASEMENT
- PROPERTY LINE
- EDGE OF WATER
- 100-YEAR FLOODPLAIN
- LOD — LIMIT OF DISTURBANCE
- PROPOSED STORM DRAIN
- PROPOSED CURB & GUTTER
- PROPOSED INLET
- RIPRAP OUTFALL PROTECTION
- FULL DEPTH PATCH

HOWARD COUNTY, MARYLAND

STORMWATER MANAGEMENT DIVISION
CAPITAL PROJECT NUMBER D-1165



VICINITY MAP

SCALE: 1" = 2000'

ADC MAP COORD. 5052/K7

HOWARD COUNTY SURVEY CONTROL				
DESIGNATION	PID	NORTHING	EASTING	ELEVATION
127	N/A	583,578.704	1,366,758.717	247.53
306	N/A	583,722.174	1,366,890.326	246.35

AS-BUILT CERTIFICATION
I HEARBY CERTIFY THAT THIS FACILITY SHOWN BY THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND MEETS THE APPROVED PLANS AND SPECIFICATIONS.

SIGNATURE ____ PE NO. 15554 ____ DATE ____

GENERAL INFORMATION

1. THE SUBJECT PROPERTIES ARE ZONED R-ED PER COMPREHENSIVE ZONING PLAN AND THE COMP-LITE ZONING AMENDMENTS.
2. THERE ARE NO BURIAL GROUNDS OR CEMETERY SITES LOCATED ON THE PROJECT SITE.
3. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY CONTAINED HEREIN PLUS MSHA STANDARDS AND SPECIFICATIONS, IF APPLICABLE.
4. THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF PUBLIC WORKS, BUREAU OF ENGINEERING/ CONSTRUCTION INSPECTION DIVISION AT (410) 313-1880 24 HOURS IN ADVANCE OF ANY WORK BEING DONE.
5. THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION WORK BEING DONE.
6. THE COORDINATES SHOWN HEREON ARE BASED ON HOWARD COUNTY GEODETIC CONTROL, WHICH IS BASED UPON THE MARYLAND STATE PLANE COORDINATE SYSTEM. HOWARD COUNTY MONUMENT NUMBERS 17 HA & 17 ID WERE USED FOR THIS SITE.
7. WATER IS PUBLIC.
8. SEWER IS PUBLIC.
9. EXISTING UTILITIES ARE BASED ON FIELD SURVEYS AND AVAILABLE RECORD DRAWINGS.
10. THE EXISTING TOPOGRAPHY IS TAKEN FROM FIELD RUN SURVEY WITH ONE FOOT CONTOUR INTERVALS PREPARED BY HOWARD COUNTY IN MAY 2016 AND JULY 2016.
11. ALL WORK SHALL CONFORM TO THE MDE BEST MANAGEMENT PRACTICES FOR WETLANDS AND WATERWAYS AS LISTED IN THE REQUIREMENTS OF THE NONTIDAL WETLANDS AND WATERWAYS PERMIT APPROVED ON 12/05/2017 (MDE AUTHORIZATION # 201761871/17-NT-3322).
12. NO TRAFFIC STUDY IS REQUIRED FOR THIS PROJECT.
13. OBSTRUCTIONS SHOWN ON THIS DRAWING ARE FOR THE CONVENIENCE OF THE CONTRACTOR ONLY AND KCI TECHNOLOGIES, INC. DOES NOT WARRANT OR GUARANTEE THE CORRECTNESS OR COMPLETENESS OF THE INFORMATION GIVEN. SHOULD THE CONTRACTOR DISCOVER ANY DISCREPANCIES BETWEEN THE PLANS AND THE FIELD CONDITIONS, THE CONTRACTOR MUST VERIFY SUCH INFORMATION TO HIS OWN SATISFACTION. THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY TO RESOLVE THE SITUATION. SHOULD THE CONTRACTOR MAKE FIELD CORRECTIONS OR ADJUSTMENTS WITHOUT NOTIFYING THE ENGINEER, THE CONTRACTOR ASSUMES ALL RESPONSIBILITY FOR THOSE CHANGES.
14. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PROTECT THE EXISTING UTILITIES AND MAINTAIN UNINTERRUPTED SERVICE. ANY DAMAGE INCURRED DUE TO THE CONTRACTOR'S OPERATION SHALL BE REPAIRED IMMEDIATELY AT THE CONTRACTOR'S EXPENSE.
15. THE PROPOSED PROJECT IS LOCATED IN FRONT OF 8629 MAIN STREET IN ELLICOTT CITY.
16. HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS PROJECT MANAGER IS BRIAN CLEARY, P.E. (410) 313-6455.
17. BUREAU OF UTILITY CONTACTS: (410) 313-4900 (WATER AND SANITARY)
    COMCAST: (410) 497-0232
    VERIZON: (301) 282-4508
    BGE: (410) 470-7863 (GAS)
    BGE: (410) 470-7868 (ELECTRIC)
18. HUDSON BRANCH IS NOT TIER II. HUDSON BRANCH IS IMPAIRED (CHLORDANE, TSS, PHOSPHORUS, NITROGEN).

DESIGN NARRATIVE

THIS IS A RETAINING WALL PROJECT THAT WILL STABILIZE THE BANK OF HUDSON BRANCH, LOCATED IN ELLICOTT CITY, MARYLAND. PROJECT IMPROVEMENTS WILL PROTECT NATURAL RESOURCES BY REPLACING A FAILED RETAINING WALL, WHICH WILL AID IN PREVENTING FUTURE BANK DEGRADATION AND TRANSPORT OF SEDIMENT AND STONE DOWNSTREAM. APPROXIMATELY 37 LINEAR FEET OF RETAINING WALL WILL BE REPLACED.

NO IMPERVIOUS AREA CHANGES ARE PROPOSED; THEREFORE, THERE ARE NO SWM REQUIREMENTS TO SATISFY. EROSION AND SEDIMENT CONTROL WILL BE REQUIRED FOR THE DURATION OF THE PROJECT. WATER HANDLING MEASURES WILL INVOLVE DIVERTING BASE FLOW AROUND THE WORK AREA USING A FLEXIBLE PIPE GRAVITY DIVERSION. ACCESS WILL BE FROM MAIN STREET ONTO AN EXISTING PAVED LOT.

SPECIAL CONTRACTOR NOTES

1. THE APPROXIMATE 100-YEAR FLOODPLAIN ELEVATION IS 250.8 FT.
2. HUDSON BRANCH HAS A MARYLAND SURFACE WATER DESIGNATION OF "USE I", PURSUANT TO WHICH IT IS PROTECTED FOR WATER CONTACT RECREATION AND PROTECTION OF NONTIDAL, WARMWATER, AQUATIC LIFE. DUE TO THIS DESIGNATION, IN-STREAM WORK IS PROHIBITED FROM MARCH 1 TO JUNE 15, INCLUSIVE, DURING ANY YEAR. HODPW HAS RECEIVED A WAIVER TO ALLOW INSTREAM WORK DURING THE CLOSURE PERIOD DUE TO THE EMERGENCY NATURE OF THE REPAIR. ALL EFFORTS SHALL BE MADE TO MINIMIZE IMPACTS OF INSTREAM SEDIMENT TRANSPORT DURING THE SPAWNING SEASON, MINIMIZE THE SQUARE FOOTAGE OF DEWATERED STREAM BED, ATTEMPT TO LEAVE PERIODS OF LOW OR NO DISTURBANCE, AND CONCENTRATE INSTREAM WORK TO SHORTER, FOCUSED PERIODS.
3. CONTRACTOR SHALL CONTINUALLY MONITOR WEATHER FORECASTS DURING WORK ACTIVITIES AND SCHEDULE WORK DURING FAVORABLE CONDITIONS.
4. THE CONTRACTOR SHALL EXERCISE CARE IN ACTIVITIES INVOLVING EITHER CUT AND FILL OR GRADING IN THE VICINITY OF TREES THAT ARE TO REMAIN AT THE CONSTRUCTION SITE. ALL EARTH CUTS AND ACTIVITIES IN THE VICINITY OF TREES TO REMAIN SHALL BE MADE IN A MANNER THAT DOES NOT DISTURB THE CRITICAL ROOT ZONE WITHIN THE DRIPLINE OF THE TREE. PROTECTIVE ORANGE FENCING SHALL BE INSTALLED AROUND THE PERIMETER OF THE CRITICAL ROOT ZONE PRIOR TO CONSTRUCTION. THE LOCATION OF THE PROTECTIVE ORANGE FENCING SHALL BE APPROVED BY HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS STORMWATER MANAGEMENT DIVISION PRIOR TO CONSTRUCTION.
5. CONTRACTOR SHALL NOT STORE EQUIPMENT, MATERIALS AND/OR SUPPLIES BEYOND THE ORANGE FENCING SHOWN ON THE PLANS.
6. UPON COMPLETION OF THE WORK, BUT PRIOR TO DE-MOBILIZATION, THE CONTRACTOR SHALL REMOVE ALL REMNANTS OF CONSTRUCTION MATERIALS FROM THE SITE. THE CONTRACTOR SHALL RESTORE ALL DISTURBED AREAS TO A CONDITION EQUAL TO OR BETTER THAN THE PRE-CONSTRUCTION CONDITIONS.
7. PRIOR TO BEGINNING ANY CONSTRUCTION ACTIVITIES, PHOTOGRAPHS OF THE PROPOSED WORK AREA AND ACCESS SHALL BE TAKEN.
8. ALL TREES TO BE REMOVED SHALL BE CUT AT THE BASE WITH A SAW AND NOT PUSHED OVER. TREE STUMPS MAY BE LEFT IN PLACE, UNLESS OTHERWISE DIRECTED ON THE PLANS.
9. ALL MATERIAL SHALL BE REMOVED AND DISPOSED OF OFFSITE UNLESS OTHERWISE NOTED.
10. THE CONTRACTOR SHALL PAY CLOSE ATTENTION TO PEDESTRIANS WALKING NEAR THE WORK SITE.
11. WORKING HOURS ARE 7AM TO 5PM MONDAY THROUGH FRIDAY.

ENGINEER'S CERTIFICATE

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

[signature] P.E. # 20903 — 12-8-17

SIGNATURE OF ENGINEER (PRINT NAME BELOW SIGNATURE) — DATE
JAMES G. KESTER, PE

DEVELOPER'S CERTIFICATE

"I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN FOR SEDIMENT AND EROSION CONTROL, AND THAT ALL RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE THE BEGINNING OF THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT"

[signature] — 12/11/17

SIGNATURE OF DEVELOPER (PRINT NAME BELOW SIGNATURE) — DATE
JAMES M. IRVIN

SITE ANALYSIS DATA CHART

1. TOTAL PROJECT AREA: 0.06 ACRES.
2. DISTURBED AREA: 0.06 ACRES (2,614 SF).
3. PROPOSED USE FOR THE SITE: RETAINING WALL REPAIR
4. APPLICABLE DPZ FILE REFRENCES: N/A.

DEPARTMENT OF PUBLIC WORKS, HOWARD COUNTY, MD

[signature] 12/11/17
DIRECTOR OF PUBLIC WORKS — DATE

[signature] 12/11/17
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES — DATE

[signature] 12/11/17
CHIEF, STORMWATER MANAGEMENT DIVISION — DATE

PERMIT INFORMATION CHART

SUBDIVISION NAME				SECTION/AREA		PARCEL #
-				-		-
PLAT # or L/F	GRID #	ZONING	TAX MAP NO.	ELECT. DISTR.	CENSUS TRACT	
-	-	R-ED	25B	2	-	
WATER CODE				SEWER CODE		
PUBLIC				PUBLIC		

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

[signature] 12/11/17
HOWARD SCD — DATE

OWNER:
HOWARD COUNTY
DEPARTMENT OF PUBLIC WORKS
6751 COLUMBIA GATEWAY DRIVE
COLUMBIA, MD 21046
410-313-6444

[signature] 12/7/17

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. 15554. EXPIRATION DATE: OCTOBER 6, 2019

NO.	REVISIONS DESCRIPTION	DATE

KCI FILE: M:\ 2013 \ 17133314.50\

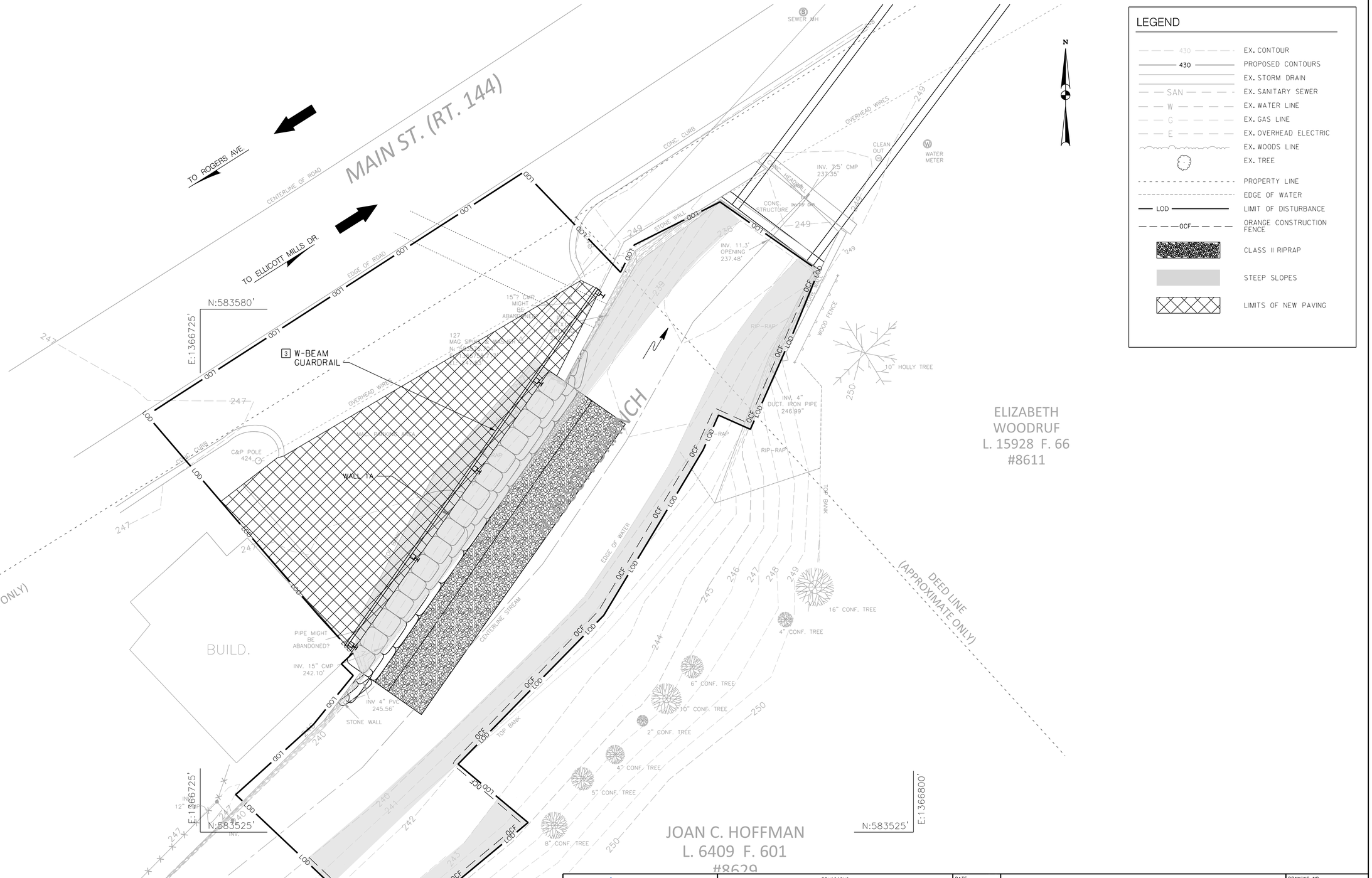
KCI TECHNOLOGIES
936 RIDGEBROOK ROAD
SPARKS, MARYLAND 21152
TELEPHONE: (410) 316-7800
FAX: (410) 316-7818
www.kci.com

ELLICOTT CITY RETAINING WALL 1A REPAIR
CAPITAL PROJECT D-1165
HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
STORMWATER MANAGEMENT DIVISION
6751 COLUMBIA GATEWAY DRIVE
COLUMBIA, MD 21046

PARCELS — TAX MAP —
ZONING — ELECTION DISTRICT 2 GRID/BLOCK —

TITLE SHEET

SCALE:	AS SHOWN
DATE:	NOVEMBER 2017
KCI JOB NO.:	17133314.109
CAPITAL PROJECT NO.:	D-1165
PERMIT ISSUE:	
CONSTRUCTION ISSUE:	



LEGEND

- EX. CONTOUR
- PROPOSED CONTOURS
- EX. STORM DRAIN
- EX. SANITARY SEWER
- EX. WATER LINE
- EX. GAS LINE
- EX. OVERHEAD ELECTRIC
- EX. WOODS LINE
- EX. TREE
- PROPERTY LINE
- EDGE OF WATER
- LOD — LIMIT OF DISTURBANCE
- OCF — ORANGE CONSTRUCTION FENCE
- CLASS II RIPRAP
- STEEP SLOPES
- LIMITS OF NEW PAVING

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. 15554 EXPIRATION DATE: 10062019

12/7/17

DEPARTMENT OF PUBLIC WORKS, HOWARD COUNTY, MD

CHIEF, BUREAU OF ENVIRONMENTAL SERVICES — DATE 12/11/17

ENGINEERS PLANNERS SCIENTISTS CONSTRUCTION MANAGERS
KCI TECHNOLOGIES

REVISIONS			
NO.	DATE	DESCRIPTION	BY
3	1/23/2018	ADDED W-BEAM GUARDRAIL AS-BUILT	RDL

DATE 11/2017
SCALE 1" = 5'
DESIGNED BY RDL
DRAWN BY DRC

HOWARD COUNTY
ELLICOTT CITY
RETAINING WALL 1A REPAIR
SITE PLAN

DRAWING NO.
SHEET 2 OF 9
KCI JOB NUMBER 17133314.109

PLOTTED: Friday, March 23, 2018 AT 01:43 PM
FILE: C:\KCI\2013\17133314.109\Drawings\dgn\SP-SP00_EllicottCity.IA.dgn

3 DAYS
1. OBTAIN GRADING PERMIT. THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777. CONTRACTOR SHALL COORDINATE AN ON-SITE PRE-CONSTRUCTION MEETING THAT SHALL INCLUDE COUNTY PROJECT MANAGER, THE CONTRACTOR, AND THE ENGINEER. MDE PERMIT TRACKING # IS 201761871.
2. MARK LOD PRIOR TO PRE-CONSTRUCTION MEETING.
3. PLACE ORANGE CONSTRUCTION FENCE ALONG LOD AS SHOWN PRIOR TO COMMENCEMENT OF WORK.

2 DAYS 4. PLACE DIVERSION PER DETAIL C-6 AS SHOWN ON THE PLAN.

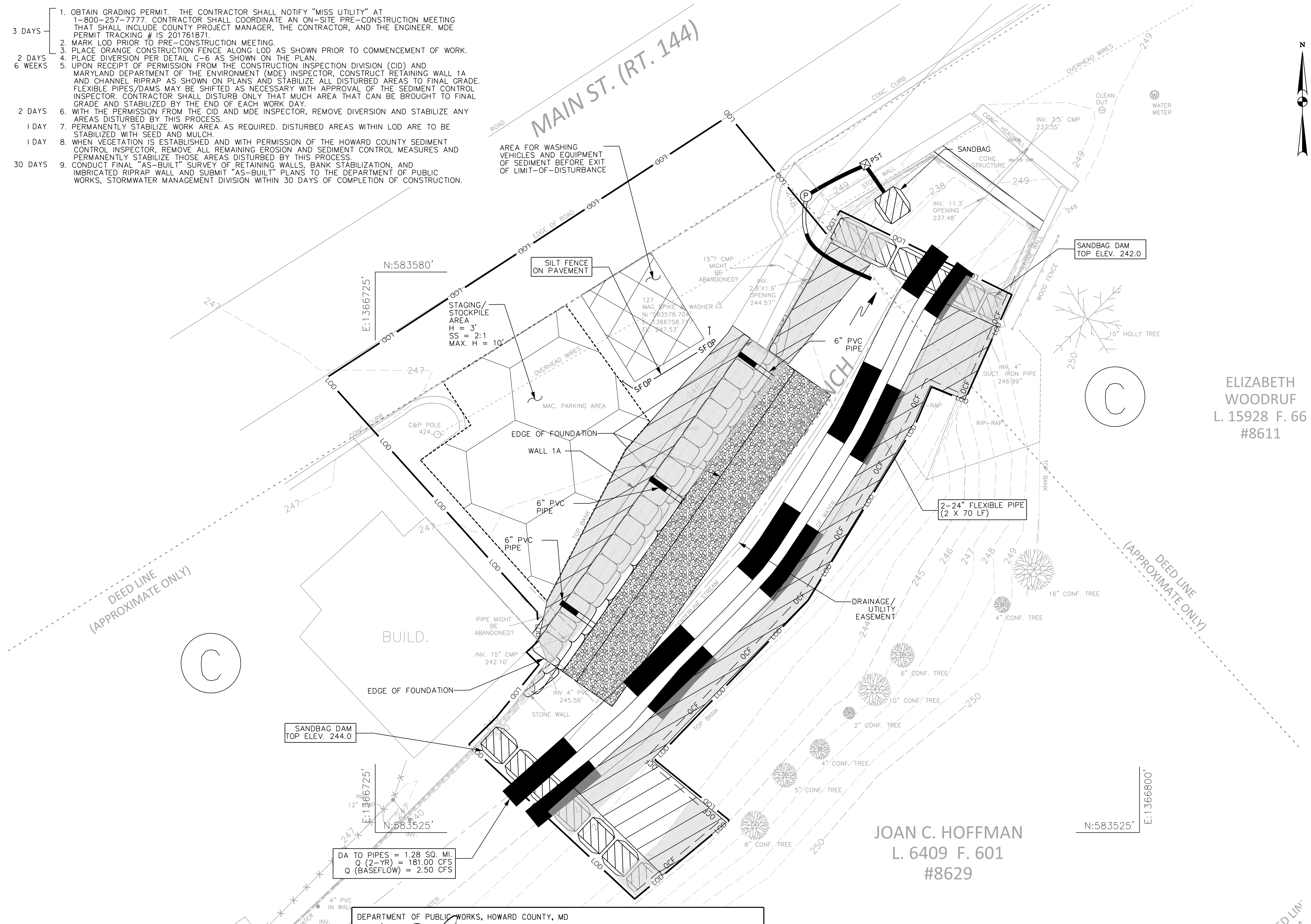
6 WEEKS 5. UPON RECEIPT OF PERMISSION FROM THE CONSTRUCTION INSPECTION DIVISION (CID) AND MARYLAND DEPARTMENT OF THE ENVIRONMENT (MDE) INSPECTOR, CONSTRUCT RETAINING WALL 1A AND CHANNEL RIPRAP AS SHOWN ON PLANS AND STABILIZE ALL DISTURBED AREAS TO FINAL GRADE. FLEXIBLE PIPES/DAMS MAY BE SHIFTED AS NECESSARY WITH APPROVAL OF THE SEDIMENT CONTROL INSPECTOR. CONTRACTOR SHALL DISTURB ONLY THAT MUCH AREA THAT CAN BE BROUGHT TO FINAL GRADE AND STABILIZED BY THE END OF EACH WORK DAY.

2 DAYS 6. WITH THE PERMISSION FROM THE CID AND MDE INSPECTOR, REMOVE DIVERSION AND STABILIZE ANY AREAS DISTURBED BY THIS PROCESS.

1 DAY 7. PERMANENTLY STABILIZE WORK AREA AS REQUIRED. DISTURBED AREAS WITHIN LOD ARE TO BE STABILIZED WITH SEED AND MULCH.

1 DAY 8. WHEN VEGETATION IS ESTABLISHED AND WITH PERMISSION OF THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR, REMOVE ALL REMAINING EROSION AND SEDIMENT CONTROL MEASURES AND PERMANENTLY STABILIZE THOSE AREAS DISTURBED BY THIS PROCESS.

30 DAYS 9. CONDUCT FINAL "AS-BUILT" SURVEY OF RETAINING WALLS, BANK STABILIZATION, AND IMBRICATED RIPRAP WALL AND SUBMIT "AS-BUILT" PLANS TO THE DEPARTMENT OF PUBLIC WORKS, STORMWATER MANAGEMENT DIVISION WITHIN 30 DAYS OF COMPLETION OF CONSTRUCTION.



LEGEND

— 430 —	EX. CONTOUR
— 430 —	PROPOSED CONTOURS
	EX. STORM DRAIN
— SAN —	EX. SANITARY SEWER
— W —	EX. WATER LINE
— G —	EX. GAS LINE
— E —	EX. OVERHEAD ELECTRIC
	EX. WOODS LINE
	EX. TREE
	PROPERTY LINE
	EDGE OF WATER
— LOD —	LIMIT OF DISTURBANCE
— OCF —	ORANGE CONSTRUCTION FENCE
	SANDBAG DAM
	24" FLEXIBLE PIPE
	CLASS II RIPRAP
Ⓒ	HYDROLOGIC SOIL GROUP
	STEEP SLOPES
Ⓟ	PUMP
☒PST	PORTABLE SEDIMENT TANK
	TEMPORARY SLOPE STABILIZATION MATTING
— SFOP —	SILT FENCE ON PAVEMENT

SOILS DATA TABLE

SYMBOL	DESCRIPTION	HSG	K FACTOR
Co	CODORUS AND HATBORO SILT LOAMS	C	0.37

NOTE: SOIL ERODIBILITY FACTOR OF 0.37 APPLIES THROUGHOUT THE LOD.

STREAM DIVERSION NOTES

1. CONSTRUCTION SHALL BE PERFORMED FROM THE STREAM BANKS TO THE EXTENT POSSIBLE. EVERY EFFORT MUST BE TAKEN TO AVOID UNDUE DISTURBANCE TO THE STREAM CHANNEL.
2. HUDSON BRANCH HAS A MARYLAND SURFACE WATER DESIGNATION OF 'USE I', PURSUANT TO WHICH IT IS PROTECTED FOR WATER CONTACT RECREATION AND PROTECTION OF NONTIDAL, WARMWATER, AQUATIC LIFE. DUE TO THIS DESIGNATION, IN-STREAM WORK IS PROHIBITED FROM MARCH 1 TO JUNE 15, INCLUSIVE, DURING ANY YEAR. HODPW HAS RECEIVED A WAIVER TO ALLOW INSTREAM WORK DURING THE CLOSURE PERIOD DUE TO THE EMERGENCY NATURE OF THE REPAIR. ALL EFFORTS SHALL BE MADE TO MINIMIZE IMPACTS OF INSTREAM SEDIMENT TRANSPORT DURING THE SPAWNING SEASON, MINIMIZE THE SQUARE FOOTAGE OF DEWATERED STREAM BED, ATTEMPT TO LEAVE PERIODS OF LOW OR NO DISTURBANCE, AND CONCENTRATE INSTREAM WORK TO SHORTER, FOCUSED PERIODS.
3. CONSTRUCT SANDBAG DAM TO ELEVATIONS AS SHOWN ON THIS PLAN.
4. THE CONTRACTOR IS ALERTED TO THE FACT THAT THE STREAM DIVERSION MAY NOT PASS THE 2-YEAR STORM. THE CONTRACTOR IS RESPONSIBLE FOR THE REMOVAL OR PROTECTION OF ANY TOOLS, EQUIPMENT, MATERIALS OR OTHER ITEMS NEEDED TO COMPLETE THE WORK THAT COULD BE AFFECTED BY STORM FLOW IN HUDSON BRANCH.
5. THE CONTRACTOR SHALL CLOSELY MONITOR NWS WEATHER FORECASTS AND SHALL TEMPORARILY STABILIZE THE CHANNEL PER DETAIL 1.6 ON SHEET 5, SHOULD ANTICIPATED FLOW OVERTOP THE SANDBAG DAM, OR AS DIRECTED BY THE CID INSPECTOR.
6. HUDSON BRANCH IS NOT A TIER II STREAM. HUDSON BRANCH IS IMPAIRED (CHLORDANE, TSS, PHOSPHORUS, NITROGEN).

PLOTTED: Friday, March 16, 2018 AT 01:38 PM
BY: david.clayton
FILE: M:\2017\17133314\09\Drawings\00-pES-P001.EllicottCity-1A.dgn

STATE OF MARYLAND — NO. 20903 — REGISTERED PROFESSIONAL ENGINEER — 12-11-17

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. 20903 EXPIRATION DATE: 7/18/2019

DEPARTMENT OF PUBLIC WORKS, HOWARD COUNTY, MD
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES — DATE 12/11/17

THIS DEVELOPMENT IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.
HOWARD SCD — DATE 12/11/17

KCI TECHNOLOGIES — ENGINEERS, PLANNERS, SCIENTISTS, CONSTRUCTION MANAGERS

REVISIONS			
NO.	DATE	DESCRIPTION	BY

DATE 11/2017
SCALE 1" = 5'
DESIGNED BY JGK
DRAWN BY MSK

HOWARD COUNTY ELLICOTT CITY RETAINING WALL 1A REPAIR
EROSION & SEDIMENT CONTROL PLAN

DRAWING NO.
SHEET 3 OF 9
KCI JOB NUMBER 17133314.109

HOWARD SOIL CONSERVATION DISTRICT (HSCD)
STANDARD SEDIMENT CONTROL NOTES

1. A pre-construction meeting must occur with the Howard County Department of Public Works, Construction Inspection Division (CID), 410-313-1855 after the future LOD and protected areas are marked clearly in the field. A minimum of 48 hour notice to CID must be given at the following stages:

   a. Prior to the start of earth disturbance,
   b. Upon completion of the installation of perimeter erosion and sediment controls, but before proceeding with any other earth disturbance or grading,
   c. Prior to the start of another phase of construction or opening of another grading unit,
   d. Prior to the removal or modification of sediment control practices.

   Other building or grading inspection approvals may not be authorized until this initial approval by the inspection agency is made. Other related state and federal permits shall be referenced, to ensure coordination and to avoid conflicts with this plan.

2. All vegetative and structural practices are to be installed according to the provisions of this plan and are to be in conformance with the 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL, and revisions thereto.

3. Following initial soil disturbance or re-disturbance, permanent or temporary stabilization is required within three (3) calendar days as to the surface of all perimeter controls, dikes, swales, ditches, perimeter slopes, and all slopes steeper than 3 horizontal to 1 vertical (3:1); and seven (7) calendar days as to all other disturbed areas on the project site except for those areas under active grading.

4. 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).

5. 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.

6. Site Analysis:

Total Area of Site:	0.06	Acres
Area Disturbed:	0.06	Acres
Area to be roofed or paved:	0.0	Acres
Area to be vegetatively stabilized:	0.01	Acres
Total Cut:	120	Cu. Yds.
Total Fill:	120	Cu. Yds.
Offsite waste/borrow area location:	SITE WITH ACTIVE GRADING PERMIT	

7. Any sediment control practice which is disturbed by grading activity for placement of utilities must be repaired on the same day of disturbance.

8. Additional sediment control must be provided, if deemed necessary by the CID. The site and all controls shall be inspected by the contractor weekly; and the next day after each rain event. A written report by the contractor, made available upon request, is part of every inspection and should include:
   - Inspection date
   - Inspection type (routine, pre-storm event, during rain event)
   - Name and title of inspector
   - Weather information (current conditions as well as time and amount of last recorded precipitation)
   - Brief description of project's status (e.g., percent complete) and/or current activities
   - Evidence of sediment discharges
   - Identification of plan deficiencies
   - Identification of sediment controls that require maintenance
   - Identification of missing or improperly installed sediment controls
   - Compliance status regarding the sequence of construction and stabilization requirements
   - Photographs
   - Monitoring/sampling
   - Maintenance and/or corrective action performed
   - Other inspection items as required by the General Permit for Stormwater Associated with Construction Activities (NPDES, MDE).

9. 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.

10. Any major changes or revisions to the plan or sequence of construction must be reviewed and approved by the HSCD prior to proceeding with construction. Minor revisions may allowed by the CID per the list of HSCD-approved field changes.

11. 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 CID, no more than 30 acres cumulatively may be disturbed at a given time.

12. Wash water from any equipment, vehicles, wheels, pavement, and other sources must be treated in a sediment basin or other approved washout structure.

13. Topsoil shall be stockpiled and preserved on-site for redistribution onto final grade.

14. All Silt Fence and Super Silt Fence shall be placed on-the-contour, and be imbricated at 25' minimum intervals, with lower ends curled uphill by 2' in elevation.

15. Stream channels must not be disturbed during the following restricted time periods (inclusive):
   - Use I and IP March 1 - June 15
   - Use III and IIIP October 1 - April 30
   - Use IV March 1 - May 31

16. 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.

TOTAL DISTURBED AREA: 0.06 AC.

B-4-1 STANDARDS AND SPECIFICATIONS

FOR

INCREMENTAL STABILIZATION

Definition

Establishment of vegetative cover on cut and fill slopes.

Purpose

To provide timely vegetative cover on cut and fill slopes as work progresses.

Conditions Where Practice Applies

Any cut or fill slope greater than 15 feet in height. This practice also applies to stockpiles.

Criteria

A. Incremental Stabilization - Cut Slopes

1. Excavate and stabilize cut slopes in increments not to exceed 15 feet in height. Prepare seedbed and apply seed and mulch on all cut slopes as the work progresses.
2. Construction sequence example (Refer to Figure B.1):
   a. Construct and stabilize all temporary swales or dikes that will be used to convey runoff around the excavation.
   b. Perform Phase 1 excavation, prepare seedbed, and stabilize.
   c. Perform Phase 2 excavation, prepare seedbed, and stabilize. Overseed Phase 1 areas as necessary.
   d. Perform final phase excavation, prepare seedbed, 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 or completing the operation out of the seeding season will necessitate the application of temporary stabilization.

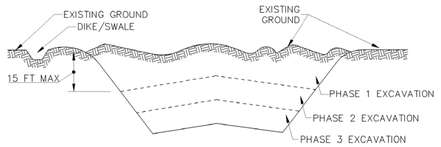


Figure B.1: Incremental Stabilization – Cut

B. Incremental Stabilization - Fill Slopes

1. Construct and stabilize fill slopes in increments not to exceed 15 feet in height. Prepare seedbed and apply seed and mulch on all slopes as the work progresses.
2. Stabilize slopes immediately when the vertical height of a lift reaches 15 feet, or when the grading operation ceases as prescribed in the plans.
3. At the end of each day, install temporary water conveyance practice(s), as necessary, to intercept surface runoff and convey it down the slope in a non-erosive manner.
4. Construction sequence example (Refer to Figure B.2):
   a. Construct and stabilize all temporary swales or dikes that will be used to divert runoff around the fill. Construct silt fence on low side of fill unless other methods shown on the plans address this area.
   b. At the end of each day, install temporary water conveyance practice(s), as necessary, to intercept surface runoff and convey it down the slope in a non-erosive manner.
   c. Place Phase 1 fill, prepare seedbed, and stabilize.
   d. Place Phase 2 fill, prepare seedbed, and stabilize.
   e. Place final phase fill, prepare seedbed, 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 of the seeding season will necessitate the application of temporary stabilization.

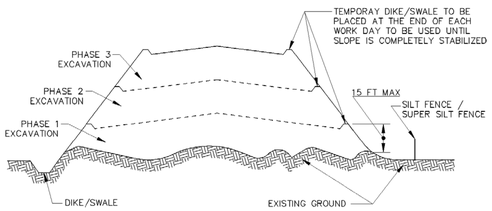


Figure B.2: Incremental Stabilization – Fill

B-4-2 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. Seedbed preparation consists of loosening soil to a depth of 3 to 5 inches 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 must not be rolled or dragged smooth but left in the roughened condition. Slopes 3:1 or flatter are to be tracked with ridges running parallel to the contour of the slope.
   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. An exception: if lovegrass will be planted, then a sandy soil (less than 30 percent silt plus clay) would be acceptable.
      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. Rake lawn areas to smooth the surface, remove large objects like stones and branches, and ready the area for seed application. Loosen surface soil by dragging with a heavy chain or other equipment to roughen the surface where site conditions will not permit normal seedbed preparation. Track slopes 3:1 or flatter with tracked equipment leaving the soil in an irregular condition with ridges running parallel to the contour of the slope. Leave the top 1 to 3 inches of soil loose and friable. Seedbed loosening may be unnecessary on newly disturbed areas.

B. Topsoiling

1. Topsoil is placed over prepared subsoil prior to establishment of permanent vegetation. The purpose is to provide a suitable soil medium for vegetative growth. Soils of concern have low moisture content, low nutrient levels, low pH, materials toxic to plants, and/or unacceptable soil gradation.
2. Topsoil salvaged from an existing site may be used provided it meets the standards as set forth in these specifications. Typically, the depth of topsoil to be salvaged for a given soil type can be found in the representative soil profile section in the Soil Survey published by USDA-NRCS.
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. Other soils may be used if recommended by an agronomist or soil scientist and approved by the appropriate approval authority. Topsoil must not be a mixture of contrasting textured subsoils and must contain less than 5 percent by volume of cinders, stones, slag, coarse fragments, gravel, sticks, roots, trash, or other materials larger than 1½ inches in diameter.
   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. Spreading is to be performed in such a manner that sodding or seeding can proceed with a minimum of additional soil preparation and tillage. Any irregularities in the surface resulting from topsoiling or other operations must be corrected in order to prevent the formation of depressions or water pockets.
   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 seedbed preparation.

C. Soil Amendments (Fertilizer and Lime Specifications)

1. Soil tests must be performed to determine the exact ratios and application rates for both lime and fertilizer on sites having disturbed areas of 5 acres or more. Soil analysis may be performed by a recognized private or commercial laboratory. Soil samples taken for engineering purposes may also be used for chemical analyses.
2. Fertilizers must be uniform in composition, free flowing and suitable for accurate application by appropriate equipment. Manure may be substituted for fertilizer with prior approval from the appropriate approval authority. Fertilizers must all be delivered to the site fully labeled according to the applicable laws and must bear the name, trade name or trademark and warranty of the producer.
3. Lime materials must be ground limestone (hydrated or burnt lime may be substituted except when hydroseeding) which contains at least 50 percent total oxides (calcium oxide plus magnesium oxide). Limestone must be ground to such fineness that at least 50 percent will pass through a #100 mesh sieve and 98 to 100 percent will pass through a #20 mesh sieve.
4. Lime and fertilizer are to be evenly distributed and incorporated into the top 3 to 5 inches of soil by disking or other suitable means.
5. Where the subsoil is either highly acidic or composed of heavy clays, spread ground limestone at the rate of 4 to 8 tons/acre (200-400 pounds per 1,000 square feet) prior to the placement of topsoil.

B-4-4 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. If this Summary is not put on the plan and completed, then Table B.1 plus fertilizer and lime rates must be put on the plan.
2. For sites having soil tests performed, use and show the recommended rates by the testing agency. Soil tests are not required for Temporary Seeding.
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.b and maintain until the next seeding season.

Temporary Seeding Summary

HARDINESS ZONE (FROM FIGURE B.3): 6B SEED MIXTURE (FROM TABLE B.1)					FERTILIZER RATE (10-20-20)	LIME RATE
NO.	SPECIES	APPLICATION RATE (LB/AC)	SEEDING DATES	SEEDING DEPTHS		
1	CEREAL RYE	112	3/15-5/15 8/1-11/15	1 INCH	436 LB/AC (10 LB/1000 SF)	2 tons/ac (90 LB/ 1000 SF)
2	FOXTAIL MILLET	20	5/16-7/31	1/2 INCH		

NOTES:

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

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

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

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

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

DEPARTMENT OF PUBLIC WORKS, HOWARD COUNTY, MD

CHIEF, BUREAU OF ENVIRONMENTAL SERVICES — DATE 12/11/17

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

HOWARD SCD — DATE 12/11/17

STATE OF MARYLAND — JOHN G. LATTNER — NO. 20903 — REGISTERED PROFESSIONAL ENGINEER — 12-8-17

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. 20903 EXPIRATION DATE: 7/62019

KCI TECHNOLOGIES — ENGINEERS, PLANNERS, SCIENTISTS, CONSTRUCTION MANAGERS

REVISIONS			
NO.	DATE	DESCRIPTION	BY

DATE 11/2017
SCALE N/A
DESIGNED BY JGK
DRAWN BY MSK

HOWARD COUNTY
ELLICOTT CITY
RETAINING WALL 1A REPAIR
EROSION & SEDIMENT CONTROL NOTES

DRAWING NO.
SHEET 4 OF 9
KCI JOB NUMBER 17133314.109

PLOTTED: Friday, March 16, 2018 AT 01:38 PM
FILE: C:\Projects\17133314.09\Drawings\11-pES-N001_Ellicott City.dgn

B-4-3 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. All seed used must have been tested within the 6 months immediately preceding the date of sowing such material on any project. Refer to Table B.4 regarding the quality of seed. Seed tags must be available upon request to the inspector to verify type of seed and seeding rate.
   b. Mulch alone may be applied between the fall and spring seeding dates only if the ground is frozen. The appropriate seeding mixture must be applied when the ground thaws.
   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. Inoculants must not be used later than the date indicated on the container. Add fresh inoculants as directed on the package. Use four times the recommended rate when hydroseeding. Note: It is very important to keep inoculant as cool as possible until used. Temperatures above 75 to 80 degrees Fahrenheit can weaken bacteria and make the inoculant less effective.
   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 phyto-toxic 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, Permanent Seeding Table B.3, or site-specific seeding summaries.
      ii. Apply seed in two directions, perpendicular to each other. Apply half the seeding rate in each direction. Roll the seeded area with a weighted roller to provide good seed to soil contact.
   b. Drill or Cultipacker Seeding: Mechanized seeders that apply and cover seed with soil.
      i. 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.
      ii. Apply seed in two directions, perpendicular to each other. Apply half the seeding rate in each direction.
   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 total of soluble nitrogen; P_2O_5 (phosphorous), 200 pounds per acre; K_2O (potassium), 200 pounds per acre.
      ii. 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.
      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. Straw is to be free of noxious weed seeds as specified in the Maryland Seed Law and not musty, moldy, caked, decayed, or excessively dusty. **Note: Use only sterile straw mulch in areas where one species of grass is desired.**
   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. The mulch material must form a blotter-like ground cover, on application, having moisture absorption and percolation properties and must cover and hold grass seed in contact with the soil without inhibiting the growth of the grass seedlings.
      iv. WCFM material must not contain elements or compounds at concentration levels that will be phyto-toxic.
      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.
   c. Application
      i. Apply mulch to all seeded areas immediately after seeding.
      ii. 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. Apply mulch to achieve a uniform distribution and depth so that the soil surface is not exposed. When using a mulch anchoring tool, increase the application rate to 2.5 tons per acre.
      iii. Wood cellulose fiber used as mulch must be applied at a net dry weight of 1500 pounds per acre. Mix the wood cellulose fiber with water to attain a mixture with a maximum of 50 pounds of wood cellulose fiber per 100 gallons of water.
   d. Anchoring
      i. Perform mulch anchoring immediately following application of mulch to minimize loss by wind or water. This may be done by one of the following methods (listed by preference), depending upon the size of the 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 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 follow the contour.
         ii. Wood cellulose fiber may be used for anchoring straw. Apply the fiber binder at a net dry weight of 750 pounds per acre. Mix the wood cellulose fiber with water at a maximum of 50 pounds of wood cellulose fiber per 100 gallons of water.
         iii. Synthetic binders such as Acrylic DLR (Agro-Tack), DCA-70, Petroset, Terra Tax II, Terra Tack AR or other approved equal may be used. Follow application rates as specified by the manufacturer. Application of liquid binders needs to be heavier at the edges where wind catches mulch, such as in valleys and on crests of banks. **Use of asphalt binders is strictly prohibited**.
         iv. Lightweight plastic netting may be stapled over the mulch according to manufacturer recommendations. Netting is usually available in rolls 4 to 15 feet wide and 300 to 3,000 feet long.

B-4-5 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 found on Table B.2. Enter selected mixture(s), application rates, and seeding dates in the Permanent Seeding Summary. The Summary is to be placed on the plan.
   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 area 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 ½ 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 turfgrass 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. Enter selected mixture(s), application rates, and seeding dates in the Permanent Seeding Summary. The summary is to be placed on the plan.
      i. Kentucky Bluegrass: Full Sun Mixture: For use in areas that receive intensive management. Irrigation required in the areas of central Maryland and Eastern Shore. Recommended Certified Kentucky Bluegrass Cultivars Seeding Rate: 1.5 to 2.0 pounds per 1000 square feet. Choose a minimum of three Kentucky bluegrass cultivars with each ranging from 10 to 35 percent of the total mixture by weight.
      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. Certified Perennial Ryegrass Cultivars/Certified Kentucky Bluegrass Seeding Rate: 2 pounds mixture per 1000 square feet. Choose a minimum of three Kentucky bluegrass cultivars with each ranging from 10 to 35 percent of the total mixture by weight.
      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. Recommended mixture includes; Certified Tall Fescue Cultivars 95 to 100 percent, Certified Kentucky Bluegrass Cultivars 0 to 5 percent. Seeding Rate: 5 to 8 pounds per 1000 square feet. One or more cultivars may be blended.
      iv. Kentucky Bluegrass/Fine Fescue: Shade Mixture: For use in areas with shade in Bluegrass lawns. For establishment in high quality, intensively managed turf area. Mixture includes; Certified Kentucky Bluegrass Cultivars 30 to 40 percent and Certified Fine Fescue and 60 to 70 percent. Seeding Rate: 1½ to 3 pounds per 1000 square feet.

      Notes:
      Select turfgrass varieties from those listed in the most current University of Maryland Publication, Agronomy Memo #77, "Turfgrass Cultivar Recommendations for Maryland"

      Choose certified material. Certified material is the best guarantee of cultivar purity. The certification program of the Maryland Department of Agriculture, Turf and Seed Section, provides a reliable means of consumer protection and assures a pure genetic line
   c. Ideal Times of Seeding for Turf Grass Mixtures

      Western MD: March 15 to June 1, August 1 to October 1 (Hardiness Zones: 5b, 6a)

      Central MD: March 1 to May 15, August 15 to October 15 (Hardiness Zone: 6b)

      Southern MD, Eastern Shore: March 1 to May 15, August 15 to October 15 (Hardiness Zones: 7a, 7b)
   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. Remove stones and debris over 1½ inches in diameter. The resulting seedbed must be in such condition that future mowing of grasses will pose no difficulty.
   e. If soil moisture is deficient, supply new seedings with adequate water for plant growth (½ to 1 inch every 3 to 4 days depending on soil texture) until they are firmly established. This is especially true when seedings are made late in the planting season, in abnormally dry or hot seasons, or on adverse sites.

B-4-8 STANDARDS AND SPECIFICATIONS

FOR

STOCKPILE AREA

Definition

A mound or pile of soil protected by appropriately designed erosion and sediment control measures.

Purpose

To provide a designated location for the temporary storage of soil that controls the potential for erosion, sedimentation, and changes to drainage patterns.

Conditions Where Practice Applies

Stockpile areas are utilized when it is necessary to salvage and store soil for later use.

Criteria

1. The stockpile location and all related sediment control practices must be clearly indicated on the erosion and sediment control plan.
2. The footprint of the stockpile must be sized to accommodate the anticipated volume of material and based on a side slope ratio no steeper than 2:1. Benching must be provided in accordance with Section B-3 Land Grading.
3. Runoff from the stockpile area must drain to a suitable sediment control practice.
4. Access the stockpile area from the upgrade side.
5. Clear water runoff into the stockpile area must be minimized by use of a diversion device such as an earth dike, temporary swale or diversion fence. Provisions must be made for discharging concentrated flow in a non-erosive manner.
6. Where runoff concentrates along the toe of the stockpile fill, an appropriate erosion/sediment control practice must be used to intercept the discharge.
7. Stockpiles must be stabilized in accordance with the 3/7 day stabilization requirement as well as Standard B-4-1 Incremental Stabilization and Standard B-4-4 Temporary Stabilization.
8. If the stockpile is located on an impervious surface, a liner should be provided below the stockpile to facilitate cleanup. Stockpiles containing contaminated material must be covered with impermeable sheeting.

Maintenance

The stockpile area must continuously meet the requirements for Adequate Vegetative Establishment in accordance with Section B-4 Vegetative Stabilization. Side slopes must be maintained at no steeper than a 2:1 ratio. The stockpile area must be kept free of erosion. If the vertical height of a stockpile exceeds 20 feet for 2:1 slopes, 30 feet for 3:1 slopes, or 40 feet for 4:1 slopes, benching must be provided in accordance with Section B-3 Land Grading.

Permanent Seeding Summary

HARDINESS ZONE (FROM FIGURE B.3): 6B SEED MIXTURE (FROM TABLE B.3)				FERTILIZER RATE (10-20-20)			LIME
NO. SPECIES	APPLICATION RATE (LB/AC)	SEEDING DATES	SEEDING DEPTHS	N	P205	K20	
1 SWITCH GRASS CREEPING RED FESCUE BUSH CLOVER	10 15 2	3/1-5/15 5/16-6/15	1/4-1/2 INCH	45 LB/AC (1.0 LB/ 1000 SF)	90 lb/ac (2.0 LB/ 1000 SF)	90 lb/ac (2.0 LB/ 1000 SF)	2 tons/ac (90 LB/ 1000 SF)
7 CREEPING RED FESCUE KENTUCKY BLUEGRASS	60 15	3/1-5/15 8/1-10/15	1/4-1/2 INCH				

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 ¾ inch, plus or minus ¼ inch, at the time of cutting. Measurement for thickness must exclude top growth and thatch. Broken pads and torn or uneven ends will not be acceptable.
   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. Sod not transplanted within this period must be approved by an agronomist or soil scientist prior to its installation.

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. Stagger lateral joints to promote more uniform growth and strength. Ensure that sod is not stretched or overlapped and that all joints are butted tight in order to prevent voids which would cause air drying of the roots.
   c. Wherever possible, lay sod with the long edges parallel to the contour and with staggering joints. Roll and tamp, peg or otherwise secure the sod to prevent slippage on slopes. Ensure solid contact exists between sod roots and the underlying soil surface.
   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. Complete the operations of laying, tamping and irrigating for any piece of sod within eight hours.

3. Sod Maintenance
   a. In the absence of adequate rainfall, water daily during the first week or as often and sufficiently as necessary to maintain moist soil to a depth of 4 inches. Water sod during the heat of the day to prevent wilting.
   b. After the first week, sod watering is required as necessary to maintain adequate moisture content.
   c. Do not mow until the sod is firmly rooted. No more than ⅓ of the grass leaf must be removed by the initial cutting or subsequent cuttings. Maintain a grass height of at least 3 inches unless otherwise specified.

PLOTTED: Friday, March 16, 2018 AT 01:38 PM
FILE: K:\2013\17133314.09\Drawings\V2-pES-N00_EllicottCity.dgn

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. 20903 EXPIRATION DATE: 7/8/2019

DEPARTMENT OF PUBLIC WORKS, HOWARD COUNTY, MD

CHIEF, BUREAU OF ENVIRONMENTAL SERVICES — DATE 12/11/17

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

HOWARD SCD — DATE 12/11/17

KCI TECHNOLOGIES
ENGINEERS
PLANNERS
SCIENTISTS
CONSTRUCTION MANAGERS

REVISIONS			
NO.	DATE	DESCRIPTION	BY

DATE 11/2017
SCALE N/A
DESIGNED BY JGK
DRAWN BY MSK

HOWARD COUNTY
ELLICOTT CITY
RETAINING WALL 1A REPAIR
EROSION & SEDIMENT CONTROL NOTES

DRAWING NO.
SHEET 5 OF 9
KCI JOB NUMBER 17133314.109

C-6 STANDARDS AND SPECIFICATIONS FOR CLEAR WATER DIVERSION PIPE

Definition

A temporary pipe installed in conjunction with sandbag dikes. Use of flexible pipe is preferred.

Purpose

To convey channel or pipe flow around a work area.

Conditions Where Practice Applies

This practice is used when the proposed work is located in a drainage way.

Design Criteria

Table C.6: Clear Water Diversion Pipe Design Criteria

Maximum Drainage Area (acres)	Pipe Diameter (inches)
0.5	12
1.5	18
2.5	21
3.5	24
5.0	twin 24

1. The height of the sandbag dike must be a minimum of twice the diameter of the diversion pipe.
2. The diversion pipe must outlet onto a stable area at a non-erosive velocity. Provide outlet protection, if necessary, in accordance with Section D - Erosion Control.
3. If the drainage area to the pipe diversion exceeds 5 acres, an engineering design must be used and based on the two-year storm event.

Note: A waterway construction permit is required when this practice is used to convey base flow for areas designated as waters of the State.

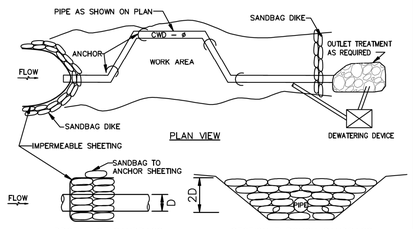
Maintenance

The point of discharge must be kept free of erosion. Water tight connections and positive drainage must be maintained. Sandbags and impermeable sheeting must be replaced if torn.

DETAIL C-6 CLEAR WATER DIVERSION PIPE

STANDARD SYMBOL: CWD – 12

DESIGNATION CWD-12 REFERS TO 12 INCH CLEAR WATER DIVERSION.



CONSTRUCTION SPECIFICATIONS

1. FLEXIBLE PIPE IS PREFERRED. HOWEVER, CORRUGATED METAL PIPE OR EQUIVALENT PVC PIPE CAN BE USED. MAKE ALL JOINTS WATERTIGHT.
2. FOR SANDBAGS USE MATERIALS THAT ARE RESISTANT TO ULTRA-VIOLENT RADIATION, TEARING, AND PUNCTURE AND WOVEN TIGHTLY ENOUGH TO PREVENT LEAKAGE OF FILL MATERIAL.
3. USE 10 MIL OR THICKER, UV RESISTANT, IMPERMEABLE SHEETING OR OTHER APPROVED MATERIAL THAT IS IMPERMEABLE AND RESISTANT TO PUNTURING AND TEARING.
4. PLACE IMPERMEABLE SHEETING SUCH THAT UPGRADE PORTION OVERLAPS DOWNGRADE PORTION BY A MINIMUM OF 18 INCHES.
5. SET HEIGHT OF SANDBAG DIKE AT TWICE THE PIPE DIAMETER. MAINTAIN HEIGHT ALONG LENGTH OF SANDBAG DIKE. PLACE DOUBLE ROW OF SANDBAGS.
6. AT A MINIMUM, SECURELY ANCHOR DIVERSION PIPE AT EACH DOWNGRADE JOINT.
7. SET OUTLET END OF DIVERSION PIPE LOWER THAN INLET END.
8. PROVIDE OUTLET PROTECTION AS REQUIRED ON APPROVED PLAN.
9. DEWATER WORK AREA USING AN APPROVED EROSION AND SEDIMENT CONTROL PRACTICE AS SPECIFIED ON APPROVED PLAN.
10. KEEP POINT OF DISCHARGE FREE OF EROSION. MAINTAIN WATER TIGHT CONNECTIONS AND POSITIVE DRAINAGE. REPLACE SANDBAGS AND IMPERMEABLE SHEETING IF TORN.

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

MGWC 1.6: FABRIC-BASED CHANNEL DIVERSION

Temporary measure for dewatering in-channel construction sites

DESCRIPTION

The work should consist of installing fabric-based diversion channels for the purpose of erosion control when construction activities occur within the stream channel.

EFFECTIVE USES & LIMITATIONS

Diversions are used to divert flow during construction of in-stream projects. Diversions which have an insuffic flow capacity can fail and severely erode the disturbed channel section under construction. Therefore, in-chanr construction activities should occur only during periods of low rainfall.

MATERIAL SPECIFICATIONS

Materials for fabric-based channel diversions should meet the following requirements:

- *Riprap:* Class I riprap should be used with fabric-based channel diversions.
- *Filter Cloth:* Filter cloth should be a woven or non-woven fabric consisting only of continuous chain polyn filaments or yarns of polyester. The fabric should be inert to commonly encountered chemicals, hydro-car and mildew and should be rot resistant.
- *Anchor Pins:* Hold down pins should have a minimum length of 18 inches (0.45 meters), and accompanyin washers should have a minimum diameter of 1 inch (2.5 centimeters).
- *Sandbags:* Sandbags should consist of materials which are resistant to ultra-violet radiation, tearing, and puncture and should be woven tightly enough to prevent leakage of fill material (i.e., sand, fine gravel, etc.
- *Sheeting:* Sheeting should consist of polyethylene or other material which is impervious and resistant to puncture and tearing.

INSTALLATION GUIDELINES

All erosion and sediment control devices, including mandatory dewatering basins, should be installed as the fir order of business according to a plan approved by the WMA or local authority. Installation should proceed fro upstream to downstream during periods of low flow.

Construction of fabric-based channel diversions involves channel excavation, placement of geotextile fabric, a installation of flow diverters for both the main channel and all tributaries contributing flow to the work area (re Detail 1.6).

Channel Excavation

1. All disturbances resulting from construction of the channel should be contained by appropriate sediment co measures.
2. Excavation of the channel should begin at the downstream end and proceed upstream. The channel should a minimum capacity sufficient to convey the stream's base flow for projects with duration of 2 weeks or le For projects of longer duration, channels should have a capacity sufficient to convey bankfull flow. All excavated materials should be stockpiled outside of the 100 year flood plain and temporarily stabilized to

MGWC 1.6: FABRIC-BASED CHANNEL DIVERSION

prevent re-entry into the stream channel.

3. The process of excavation and stabilization with fabric should be a continuous and uninterrupted operation. All materials should be on-site prior to channel construction.
4. The downstream and upstream connection to the natural channel should be constructed under dry conditions. The stream should be contained by sandbags along the opposing bank during the process of cutting the diversion channel into the natural stream channel. Excavation and stabilization should be a continuous and uninterrupted operation.
5. All debris such as rocks, sticks, etc. should be removed and the channel surfaces made smooth so that the fabric will rest flush with the channel at all sides and bottom.

Stabilization with Geotextile Fabric

1. The fabric should have a minimum width such that it is keyed in and anchored at the top of stream bank.
2. Fabric should be placed so that it rests flush with the channel at all points of contact.
3. Fabric should be placed such that one piece will line the entire channel. If this is not possible, fabric should be placed so that transverse overlapping occurs in accordance with the detail. Longitudinal overlaps should not be allowed. Upstream sections should overlap downstream sections. Overlap width should equal 2 feet (0.6 meters) minimum.
4. The fabric should be keyed into 2 by 2-foot (0.6 by 0.6-meter) trenches located at the upstream edge and at 50-foot (15.25-meter) intervals with the overlap placed nearest to each 50 feet increment. The key-in should be from top of channel to top of channel. Class I riprap should be carefully placed into the trench with zero drop height.
5. The fabric sections should be secured with hold down pins and washers. Overlaps should be pinned along transverse and longitudinal axes with spacing equal to 3 feet (0.9 meters) maximum.
6. Sediment from surrounding areas of disturbance should not be allowed to enter the diversion channel.

Alternate Methods of Placing the Fabric

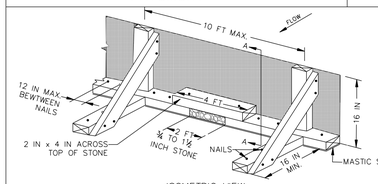
1. The above design may be modified to allow sewing of the geotextile fabric. Sewing of the geotextile fabric, rather than overlapping, should eliminate the requirement for transverse placement of the fabric. Either transverse or longitudinal placement should work equally well.
2. The spacing of the pins could be either larger or smaller depending on the anticipated velocities and thickness and type of geotextile fabric.
3. The entire bottom of the channel could be riprapped if high velocities are anticipated. When the area is riprapped, it is not required that the geotextile fabric underneath the riprap be pinned.

Removal of Diversion

1. Water should not be allowed through the natural stream until all construction is completed.
2. After redirecting the flow through the natural channel, all fabric should be removed from the temporary diversion. The diversion should then be backfilled and stabilized. Points of tie-in to the natural channel should be protected with riprap according to the riprap guidelines.

DETAIL E-2 SILT FENCE ON PAVEMENT

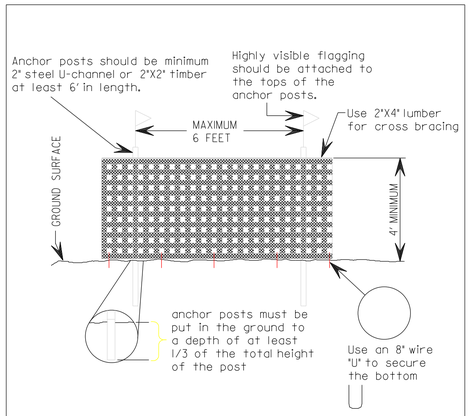
STANDARD SYMBOL: SFOP



CONSTRUCTION SPECIFICATIONS

1. USE NOMINAL 2 INCH X 4 INCH LUMBER.
2. USE WOVEN SLIT FILM GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS.
3. PROVIDE MANUFACTURER CERTIFICATION TO THE AUTHORIZED REPRESENTATIVE OF THE INSPECTION/ENFORCEMENT AUTHORITY SHOWING THAT THE GEOTEXTILE USED MEETS THE REQUIREMENTS IN SECTION H-1 MATERIALS.
4. SPACE UPRIGHT SUPPORTS NO MORE THAN 10 FEET APART.
5. PROVIDE A TWO FOOT OPENING BETWEEN EVERY SET OF SUPPORTS AND PLACE STONE IN THE OPENING OVER GEOTEXTILE.
6. KEEP SILT FENCE TAUT AND SECURELY STAPLE TO THE UPSLOPE SIDE OF UPRIGHT SUPPORTS. EXTEND GEOTEXTILE UNDER 2x4.
7. WHERE TWO SECTIONS OF GEOTEXTILE ADJOIN: OVERLAP, FOLD, AND STAPLE TO POST IN ACCORDANCE WITH THIS DETAIL. ATTACH LATHE.
8. PROVIDE A MASTIC SEAL BETWEEN PAVEMENT, GEOTEXTILE, AND 2x4 TO PREVENT SEDIMENT-LADEN WATER FROM ESCAPING BENEATH SILT FENCE INSTALLATION.
9. SECURE BOARDS TO PAVEMENT WITH 40D 5 INCH MINIMUM LENGTH NAILS.
10. REMOVE ACCUMULATED SEDIMENT AND DEBRIS WHEN BULGES DEVELOP IN SILT FENCE OR WHEN SEDIMENT REACHES 25% OF FENCE HEIGHT. REPLACE GEOTEXTILE IF TORN. MAINTAIN WATER TIGHT SEAL ALONG BOTTOM. REPLACE STONE IF DISPLACED.

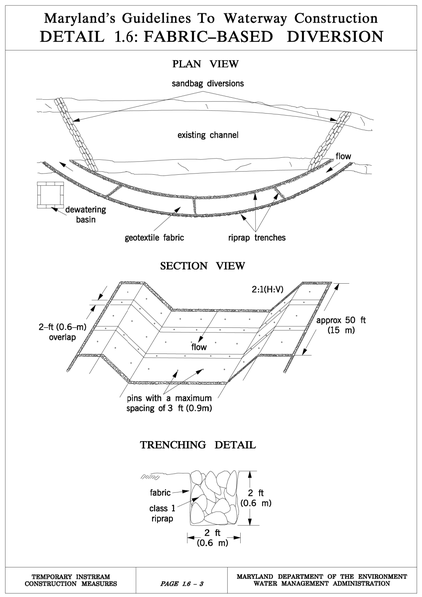
MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL		
U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION



DETAIL FOR BLAZE ORANGE PLASTIC MESH SAFETY FENCE

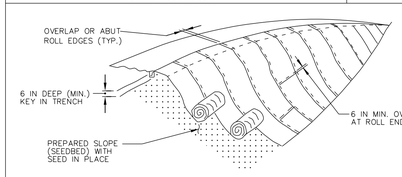
NOT TO SCALE

Maryland's Guidelines To Waterway Construction
DETAIL 1.6: FABRIC-BASED DIVERSION



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

STANDARD SYMBOL: TSSMS – 0.12 lb/ft²



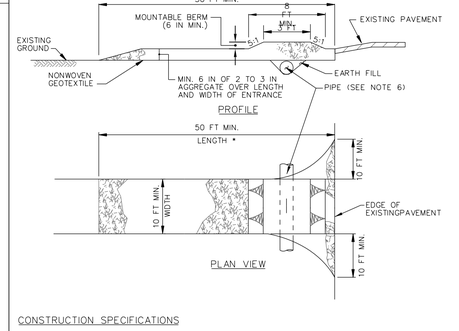
CONSTRUCTION SPECIFICATIONS

1. USE MATTING THAT HAS A DESIGN VALUE FOR SHEAR STRESS EQUAL TO OR HIGHER THAN THE SHEAR STRESS DESIGNATED ON APPROVED PLANS.
2. USE TEMPORARY SOIL STABILIZATION MATTING MADE OF DEGRADABLE (LASTS 6 MONTHS MINIMUM) NATURAL OR MAN-MADE FIBERS (MOSTLY ORGANIC). MAT MUST HAVE UNIFORM THICKNESS AND DISTRIBUTION OF FIBERS THROUGHOUT AND BE SMOLDER RESISTANT. CHEMICALS USED IN THE MAT MUST BE NON-LEACHING AND NON-TOXIC TO VEGETATION AND SEED GERMINATION AND NON-INJURIOUS TO THE SKIN. IF PRESENT, NETTING MUST BE EXTRUDED PLASTIC WITH A MAXIMUM MESH OPENING OF 2x2 INCHES AND SUFFICIENTLY BONDED OR SEWN ON 2 INCH CENTERS ALONG LONGITUDINAL AXIS OF THE MATERIAL TO PREVENT SEPARATION OF THE NET FROM THE PARENT MATERIAL.
3. SECURE MATTING USING STEEL STAPLES, WOOD STAKES, OR BIODEGRADABLE EQUIVALENT. STAPLES MUST BE "U" OR "T" SHAPED STEEL WIRE HAVING A MINIMUM GAUGE OF NO. 11 AND NO. 8 RESPECTIVELY. "U" SHAPED STAPLES MUST AVERAGE 1 TO 1½ INCHES WIDE AND BE A MINIMUM OF 6 INCHES LONG. "T" SHAPED STAPLES MUST HAVE A MINIMUM 8 INCH MAIN LEG, A MINIMUM 1 INCH SECONDARY LEG, AND A MINIMUM 4 INCH HEAD. WOOD STAKES MUST BE ROUGH-SAWN HARDWOOD, 12 TO 24 INCHES IN LENGTH, 1x3 INCH IN CROSS SECTION, AND WEDGE SHAPED AT THE BOTTOM.
4. PERFORM FINAL GRADING, TOPSOIL APPLICATION, SEEDBED PREPARATION, AND PERMANENT SEEDING IN ACCORDANCE WITH SPECIFICATIONS. PLACE MATTING WITHIN 48 HOURS OF COMPLETING SEEDING OPERATIONS UNLESS END OF WORKDAY STABILIZATION IS SPECIFIED ON THE APPROVED EROSION & SEDIMENT CONTROL PLAN.
5. UNROLL MATTING DOWNSLOPE. LAY MAT SMOOTHLY AND FIRMLY UPON THE SEEDED SURFACE. AVOID STRETCHING THE MATTING.
6. OVERLAP OR ABUT ROLL EDGES PER MANUFACTURER RECOMMENDATIONS. OVERLAP ROLL ENDS BY 6 INCHES (MINIMUM), WITH THE UPSLOPE MAT OVERLAPPING ON TOP OF THE DOWNSLOPE MAT.
7. KEY IN THE UPSLOPE END OF MAT 6 INCHES (MINIMUM) BY DIGGING A TRENCH, PLACING THE MATTING ROLL END IN THE TRENCH, STAPLING THE MAT IN PLACE, REPLACING THE EXCAVATED MATERIAL, AND TAMPING TO SECURE THE MAT END IN THE KEY.
8. STAPLE/STAKE MAT IN A STAGGERED PATTERN ON 4 FOOT (MAXIMUM) CENTERS THROUGHOUT AND 2 FOOT (MAXIMUM) CENTERS ALONG SEAMS, JOINTS, AND ROLL ENDS.
9. ESTABLISH AND MAINTAIN VEGETATION SO THAT REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT ARE CONTINUOUSLY MET IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.

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

DETAIL B-1 STABILIZED CONSTRUCTION ENTRANCE

STANDARD SYMBOL: SCE



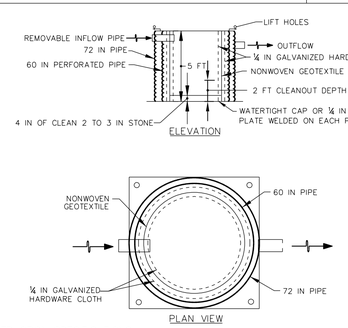
CONSTRUCTION SPECIFICATIONS

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

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL		
U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	201 1	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL F-3 PORTABLE SEDIMENT TANK

STANDARD SYMBOL: PST



CONSTRUCTION SPECIFICATIONS

1. PROVIDE 1 CUBIC FOOT OF STORAGE FOR EACH GALLON PER MINUTE OF PUMP CAPACITY. REQUIRED STORAGE VOLUME MAY BE ATTAINED BY PLACEMENT OF TANKS IN PARALLEL WITH INFLOW EVENLY DISTRIBUTED AMONG TANKS. OVERTOPPING OF TANKS IS NOT PERMITTED.
2. USE 60 INCH CORRUGATED METAL OR PLASTIC PIPE WITH 1 INCH DIAMETER PERFORATIONS, 6 INCHES ON CENTER FOR THE INNER PIPE. LINE PIPE WITH NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS, SANDWICHED BETWEEN, AND ATTACHED TO, ¼ INCH HARDWARE CLOTH.
3. OVERLAP GEOTEXTILE 8 INCHES MINIMUM AT VERTICAL SEAM AND AT THE BOTTOM PLATE.
4. ANCHOR GEOTEXTILE AT BOTTOM OF TANK WITH 4 INCHES OF 2 TO 3 INCH CLEAN STONE OR EQUIVALENT RECYCLED CONCRETE.
5. USE 72 INCH CORRUGATED METAL OR PLASTIC OUTER PIPE WITH PERMANENT OUTFLOW PIPE WITH INVERT LOWER THAN INFLOW PIPE
6. INFLOW PIPE MUST DISCHARGE INTO INNER PIPE AND BE REMOVABLE.
7. PLACE TANK ON LEVEL SURFACE AND DISCHARGE TO A STABLE AREA AT A NONEROSIVE RATE.
8. A PORTABLE SEDIMENT TANK REQUIRES FREQUENT MAINTENANCE. REMOVE ACCUMULATED SEDIMENT FROM INNER PIPE WHEN IT REACHES TWO FEET IN DEPTH. IF SYSTEM CLOGS, PULL OUT INNER PIPE, REMOVE ACCUMULATED SEDIMENT, AND REPLACE GEOTEXTILE. KEEP POINT OF DISCHARGE FREE OF EROSION.

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

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. 20903 EXPIRATION DATE: 7/9/2019

DEPARTMENT OF PUBLIC WORKS, HOWARD COUNTY, MD

CHIEF, BUREAU OF ENVIRONMENTAL SERVICES — DATE 12/11/17

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

HOWARD SCD — DATE 12/11/17

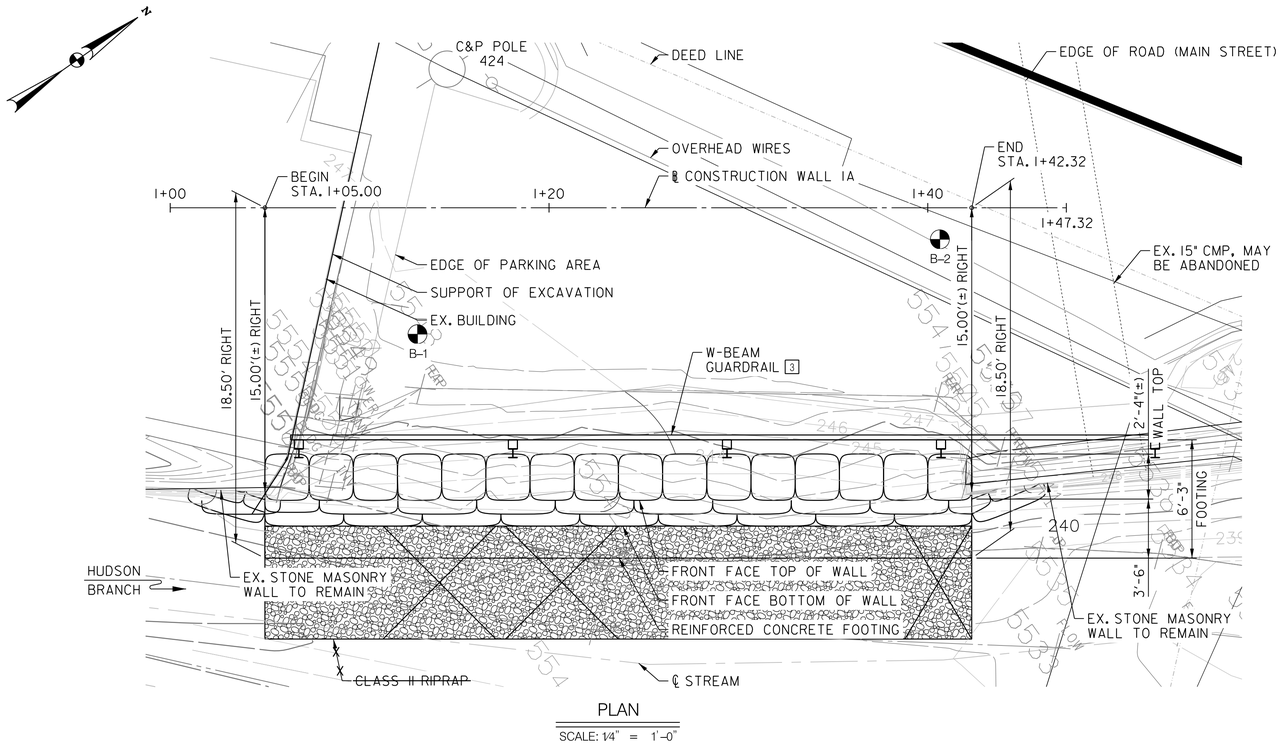
KCI TECHNOLOGIES
ENGINEERS PLANNERS SCIENTISTS CONSTRUCTION MANAGERS

REVISIONS			
NO.	DATE	DESCRIPTION	BY

DATE 11/2017
SCALE AS SHOWN
DESIGNED BY JGK
DRAWN BY MSK

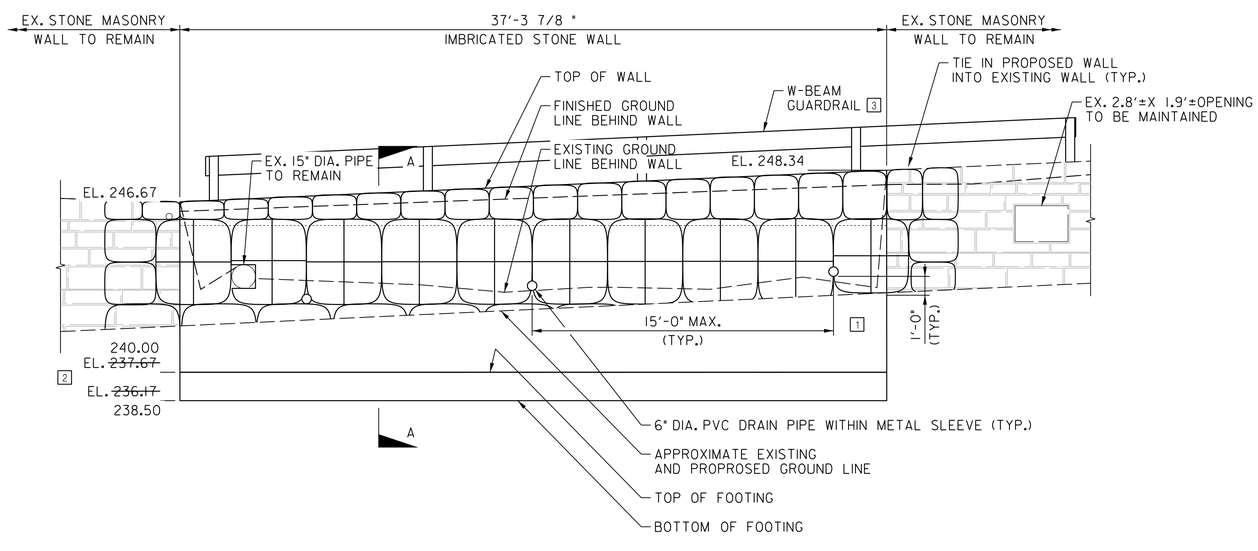
HOWARD COUNTY
ELLICOTT CITY
RETAINING WALL 1A REPAIR
EROSION & SEDIMENT CONTROL DETAILS

DRAWING NO.
SHEET 6 OF 9
KCI JOB NUMBER 17133314.109



PLAN

SCALE: 1/4" = 1'-0"



DATUM EL. 225.00

ELEVATION

SCALE: 1/4" = 1'-0"

GENERAL NOTES:

SPECIFICATIONS: HOWARD COUNTY VOLUME IV DESIGN MANUAL STANDARD SPECIFICATIONS AND DETAILS FOR CONSTRUCTION.

- SHA SPECIFICATIONS DATED MAY, 2017
- REVISIONS THEREOF AND ADDITIONS THERETO AND SPECIAL PROVISIONS FOR MATERIALS AND CONSTRUCTION.

DESIGN: AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS DATED 2014 FOR DESIGN INCLUDING 2015 INTERIMS.

CONCRETE: LOAD AND RESISTANCE FACTOR DESIGN METHOD THE DESIGN COMPRESSIVE STRENGTH SHALL BE: f'c = 3000 PSI FOR ELEMENTS USING MIX NO. 3 CONCRETE

REINFORCING STEEL: fy=60000 PSI

CONCRETE: ALL CONCRETE SHALL BE MIX. NO. 3 (3500 PSI).

REINFORCING STEEL: REINFORCING STEEL SHALL CONFORM TO ASTM A 615 GRADE 60.

ONLY GRADE 60 CAN BE USED ON THIS PROJECT

ALL SPLICES NOT SHOW SHALL BE LAPPED AS PER LAP CHART. MINIMUM COVER FOR ANY BAR SHALL BE 2" UNLESS OTHERWISE NOTED, WITH THE EXCEPTION OF BARS AT THE BOTTOM AND SIDES OF ALL FOOTINGS WHICH SHALL HAVE 3" MINIMUM COVER.

KEYS: ALL CONCRETE CONSTRUCTION KEYS ARE NOMINAL SIZE.

DESIGN PARAMETERS: EARTH PRESSURE CALCULATED BASED ON COULOMB THEORY. ANGLE OF INTERNAL FRICTION 33 DEGREES. ALLOWABLE BEARING PRESSURE 5000 PSF.

EXISTING STRUCTURE: ALL DIMENSIONS AFFECTED BY THE GEOMETRICS, AND/OR LOCATION OF THE EXISTING STRUCTURE(S) SHALL BE CHECKED IN THE FIELD BY THE CONTRACTOR, BEFORE ANY CONSTRUCTION IS DONE, AND BEFORE ANY MATERIAL IS ORDERED OR FABRICATED. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO SUPPLY THE ENGINEER WITH ALL FIELD DIMENSIONS REQUIRED TO CHECK DETAIL DRAWINGS. THE ± MARKS SHOWN WITH DIMENSIONS AND STATIONS DO NOT INDICATE ANY DEGREE OF PRECISION. THESE MARKS (±) INDICATE EXISTING DIMENSIONS AND STATIONS THAT MAY VARY AND DO REQUIRE FIELD VERIFICATION BY THE CONTRACTOR.

EXISTING STRUCTURE(S) SHOWN IN LONG DASHED LINES.

BASELINE CONSTRUCTION		
STA.	NORTHING	EASTING
1+00.00	583546.3671	1366726.7447
1+47.32	583585.0901	1366753.9405

NOTES:

1. FOR SECTION A-A, SEE SHEET NO. 8.
2. FOR BORING AND DRIVE TESTS, SEE SHEET NO. 9.
3. FOR CLARITY, CLASS II RIPRAP NOT SHOWN IN ELEVATION VIEW.
4. THE IMBRICATED STONES SHALL BE FEATHERED IN BETWEEN THE PROPOSED AND EXISTING WALLS.
5. EXISTING BUILDING NOT SHOWN IN ELEVATION VIEW.
6. ANY INFLOW PIPES SHALL BE PROTECTED AND MAINTAINED AND EXTENSIONS PROVIDED AS NECESSARY.

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. 15554 EXPIRATION DATE: 10062019

12/7/17

DEPARTMENT OF PUBLIC WORKS, HOWARD COUNTY, MD

CHIEF, BUREAU OF ENVIRONMENTAL SERVICES — DATE 12/11/17

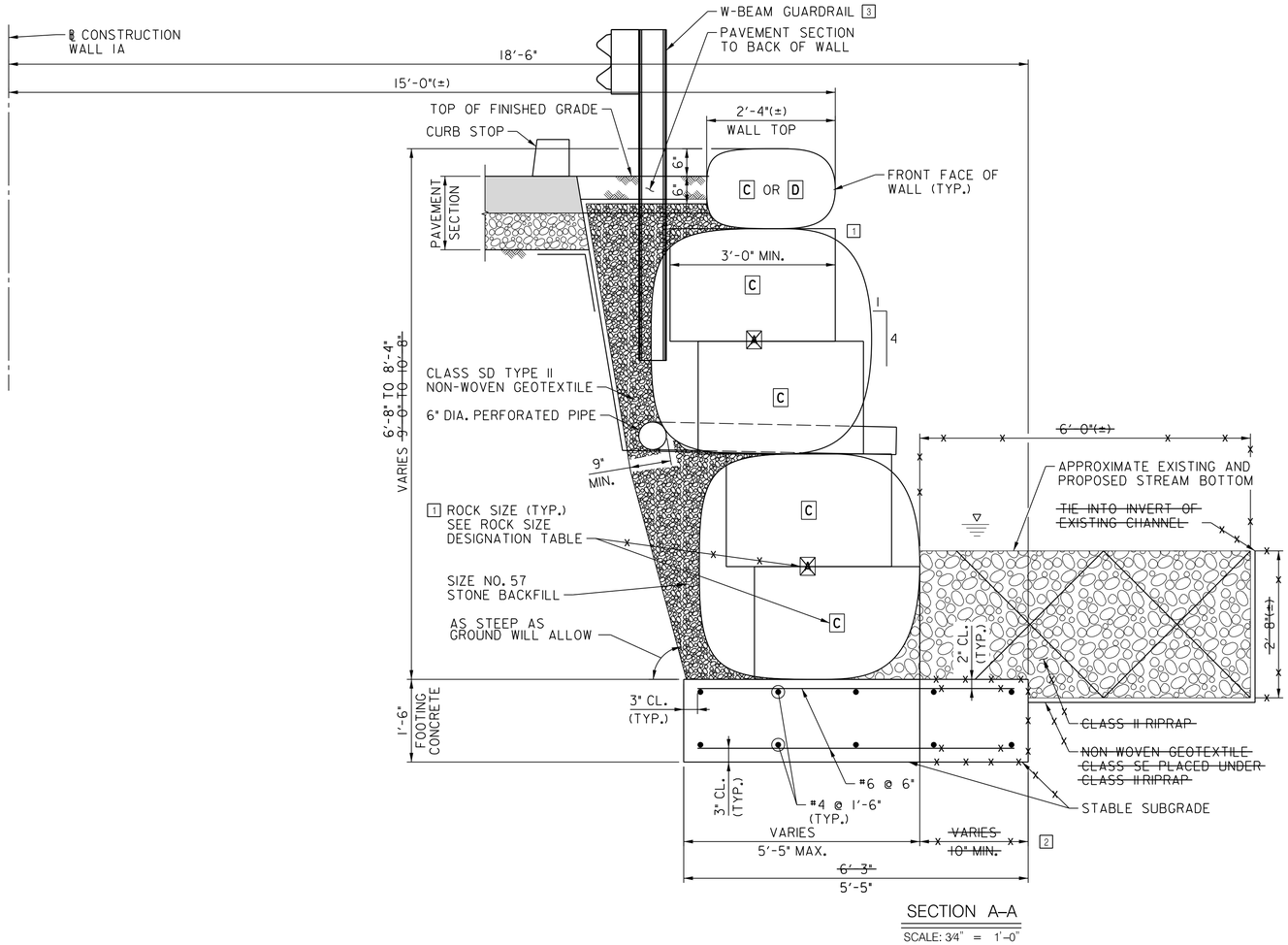
KCI TECHNOLOGIES — ENGINEERS, PLANNERS, SCIENTISTS, CONSTRUCTION MANAGERS

REVISIONS			
NO.	DATE	DESCRIPTION	BY
1	1/9/2018	REVISED STONE SIZE	RDL
2	1/18/2018	REVISED BOF EL.	RDL
3	1/23/2018	ADDED W-BEAM GUARDRAIL AS-BUILT	RDL

DATE 11/2017
SCALE AS SHOWN
DESIGNED BY RDL
DRAWN BY DRC

HOWARD COUNTY
ELLICOTT CITY
RETAINING WALL 1A REPAIR
GENERAL PLAN AND ELEVATION

DRAWING NO.
SHEET 7 OF 9
KCI JOB NUMBER 17133314.109



SECTION A–A

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

NOTE:

1. SOURCE OF STONE SHALL BE AS APPROVED BY THE ENGINEER.
2. PROPOSED PAVEMENT SECTION TO MATCH EXISTING.

ROCK SIZE DESIGNATION		
ROCK SIZE	ROCK WEIGHT (POUNDS)	AVERAGE DIMENSION (FEET)
D	200 TO 660	1'-6" TO 2'-4"
C	660 TO 2000	2'-4" TO 3'-0"
B	2000 TO 4000	3'-0" TO 4'-0"
A	4000 TO 6000	4'-0" TO 4'-6"

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12/7/17

DEPARTMENT OF PUBLIC WORKS, HOWARD COUNTY, MD

CHIEF, BUREAU OF ENVIRONMENTAL SERVICES — DATE 12/11/17

KCI TECHNOLOGIES

Engineers Planners Scientists Construction Managers

REVISIONS			
NO.	DATE	DESCRIPTION	BY
1	1/9/2018	REVISED STONE SIZE	RDL
2	1/18/2018	REVISED FOOTING SIZE	RDL
3	1/23/2018	ADDED W-BEAM GUARDRAIL	RDL
		AS-BUILT	

DATE 11/2017
SCALE AS SHOWN
DESIGNED BY RDL
DRAWN BY DRC

HOWARD COUNTY
ELLICOTT CITY
RETAINING WALL 1A REPAIR
SECTION

DRAWING NO.
SHEET 8 OF 9
KCI JOB NUMBER 17133314.109

PLOTTED: Friday, March 23, 2018 AT 01:43 PM
FILE: C:\Projects\17133314.09\Drawings\pBR-DE00_EllicottCity_1A.dgn

LOG OF BOREHOLE B-1

Project No. 2013045.109 — Sheet 1 of 1

CLIENT: KCI Technologies Inc
PROJECT: Retaining Walls 1A
ARCHITECT/ENGINEER:
SITE: Ellicott City, Howard County, Maryland
SURFACE ELEV.:

Depth (FT)	Description	Blows/6" N-Value RQD	Number	Type	IN. Recovered / IN. Driven	Moisture (%)	Dry Density (PCF)	Qu (TSF)	% Passing #200 Sieve	Remarks/Additional Data
0.6	7" Asphalt									
5.5	Loose brown and gray CLAYEY SAND (SC) with mica (Possible Fill)	2-2-2 N=4	1	SS	14/18 78%	18				LL = 31 PL = 20 PI = 11
		2-2-3 N=5	2	SS	15/18 83%	20			45	
25.0	Very dense brown, greenish gray and gray SILTY SAND (SM) with rock fragments (Decomposed Rock)	8-42-51/3"	3	SS	14/9 156%	3				
		19-51/6"	4	SS	12/12 100%	8			14	
		51/0"	5	SS	0/0.1 0%					
		51/1"	6	SS	0/1 0%					
		11-21-51/3"	7	SS	8/9 89%	14				
30.0	Auger and spoon refusal @ 25 ft. Hard, light gray to gray, slightly weathered, modeletly closed and gently dipping bandded GRANITE (Igneous Rock)	RQD= 77%	1	RC	54/60 90%					

End of Boring @ 30 ft

Borehole was backfilled upon completion

WATER LEVEL OBSERVATIONS: WL ▼ 7 @ 0 Hrs

AB Consultants, Inc.
9450 Annapolis Road
Lanham, MD 20706
Phone: 301-306-3091
Fax: 301-306-3092

STARTED: 12/21/16 FINISHED: 12/22/16
DRILL CO.: ABC DRILL RIG: Truck, B-61
DRILLER: PS ASS'T DRILLER:
LOGGED BY: APPROVED:

BORING LOG AB09 2013045.109 RETAINING WALL 1A.GPJ AB CONS.GDT 1/3/17

LOG OF BOREHOLE B-2

Project No. 2013045.109 — Sheet 1 of 1

CLIENT: KCI Technologies Inc
PROJECT: Retaining Walls 1A
ARCHITECT/ENGINEER:
SITE: Ellicott City, Howard County, Maryland
SURFACE ELEV.:

Depth (FT)	Description	Blows/6" N-Value RQD	Number	Type	IN. Recovered / IN. Driven	Moisture (%)	Dry Density (PCF)	Qu (TSF)	% Passing #200 Sieve	Remarks/Additional Data
0.5	6" Asphalt									
5.5	Medium dense brown and gray SILTY SAND (SM) with mica and rock fragements	8-12-5 N=17	1	SS	12/18 67%	8			28	
		7-7-8 N=15	2	SS	12/18 67%	6				
31.5	Very dense brown, greenish gray and gray SILTY SAND (SM) with rock fragments (Decomposed Rock)	6-37-47 N=84	3	SS	14/18 78%	8				
		51/6"	4	SS	5/6 83%	6			29	
		51/1"	5	SS	1/1 100%	1				
		51/1"	6	SS	1/1 100%	0				
		51/1"	7	SS	1/1 100%	3				
		51/2"	8	SS	2/2 100%	8				
36.5	Auger and spoon refusal @ 31.5 ft. Hard, light gray to gray, slightly weathered, modeletly closed and gently dipping bandded GRANITE (Igneous Rock)	RQD= 72%	1	RC	45/60 75%					

End of Boring @ 36.5 ft

Borehole was backfilled after upon completion

WATER LEVEL OBSERVATIONS: WL ▼ 11 @ 0 Hrs

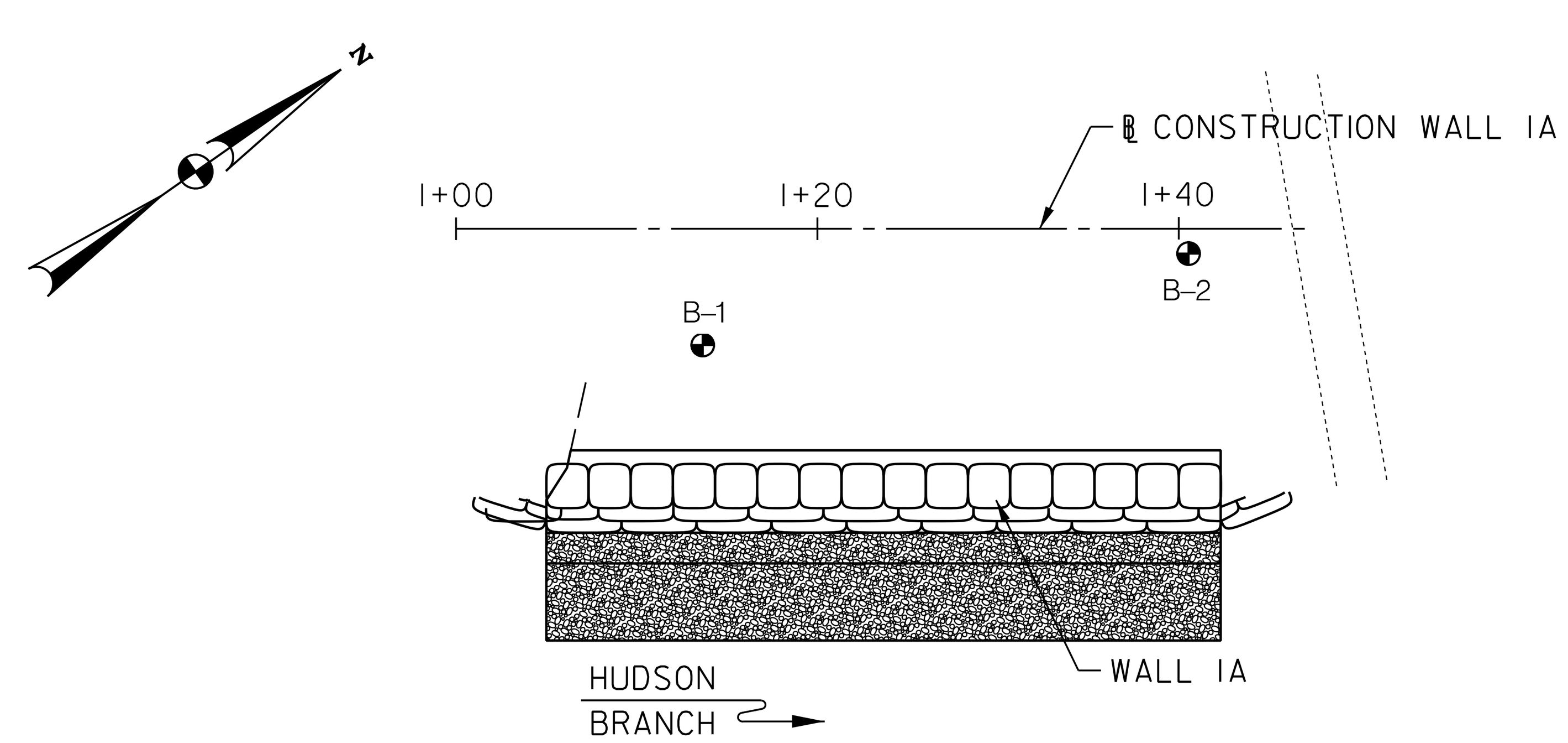
AB Consultants, Inc.
9450 Annapolis Road
Lanham, MD 20706
Phone: 301-306-3091
Fax: 301-306-3092

STARTED: 12/19/16 FINISHED: 12/21/16
DRILL CO.: ABC DRILL RIG: Truck, B-61
DRILLER: PS ASS'T DRILLER:
LOGGED BY: APPROVED:

BORING LOG AB09 2013045.109 RETAINING WALL 1A.GPJ AB CONS.GDT 1/3/17

BORINGS AND DRIVE TESTS

NO SCALE



BORINGS AND DRIVE TESTS LOCATION PLAN

NO SCALE

NOTES:

1. THE BORINGS AND DRIVE TESTS WERE TAKEN IN JANUARY, 2016 BY AB CONSULTANTS, INC.
2. N = BLOWS ON A 2 INCH OD SAMPLING SPOON BY 140 LB. DRIVE-WEIGHT FALLING 30 INCHES INDICATING SUCCESSIVE 6 INCH INCREMENTS OF PENETRATION IN LIEU OF BLOWS PER FOOT. PENETRATIONS GREATER THAN 6 INCHES OR LESS THAN 6 INCHES ARE INDICATED BY WOH, WOR, OR THE DEPTH OF THE PENETRATION OVER 50 (OR NUMBER OF BLOWS IF OTHER THAN 50) OVER THE NEAREST INCH.

   WOR = STATIC WEIGHT OF DRILL ROD AND SAMPLING SPOON.

   WOH = STATIC WEIGHT OF SAMPLING SPOON DRIVE-WEIGHT ASSEMBLY, DRIVE-WEIGHT, ANVIL (WHEN AN AUTOMATIC HAMMER IS USED), DRILL ROD(S) AND SAMPLING SPOONS.
3. C = DEPTH OF HOLLOW-STEM CONTINUOUS FLIGHT AUGER WITH A 3 1/4 INCH ID.
4. W.L. = WATER LEVEL READING. THE FIGURE IN PARENTHESIS INDICATES THE READING IN HOURS AFTER COMPLETION OF BORING.
5. BORINGS AND SAMPLINGS CONFORM TO AASHTO DESIGNATIONS T-206 AND T-306.
6. THE SOIL SYMBOLS REFLECT ONLY THE MAJOR SOIL CONSTITUENT. FOR MORE COMPLETE SOIL CHARACTERISTIC REFER TO THE SOIL DESCRIPTIVE TEXT.
7. THE FIELD BORING LOGS RECORD SAMPLE SPOON RECOVERY. THE LOGS ARE AVAILABLE UPON REQUEST. THE MATERIAL RECOVERED FROM THE SITE INVESTIGATION IS AVAILABLE FOR REVIEW. CONTACT THE GEOTECHNICAL EXPLORATIONS DIVISION AT 1-800-637-1290.
8. THE SOIL HAS BEEN VISUALLY CLASSIFIED BY THE DRILLER.

STATE OF MARYLAND — ROBERT D. LYNCH — No. 15554 — PROFESSIONAL ENGINEER
12/7/17

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. 15554 EXPIRATION DATE: 10/06/2019

DEPARTMENT OF PUBLIC WORKS, HOWARD COUNTY, MD
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES — DATE 12/11/17

KCI TECHNOLOGIES — ENGINEERS, PLANNERS, SCIENTISTS, CONSTRUCTION MANAGERS

REVISIONS			
NO.	DATE	DESCRIPTION	BY

DATE: 11/2017
SCALE: AS SHOWN
DESIGNED BY: RDL
DRAWN BY: DRC

HOWARD COUNTY
ELLICOTT CITY
RETAINING WALL 1A REPAIR
BORING AND DRIVE TESTS

DRAWING NO.
SHEET 9 OF 9
KCI JOB NUMBER 17133314.109