

1	11A	GENERAL PLAN AND DEVELOPED ELEVATION
1	11B	GENERAL PLAN AND DEVELOPED ELEVATION
2	7A	EROSION AND SEDIMENT CONTROL DETAILS II

SHEET INDEX

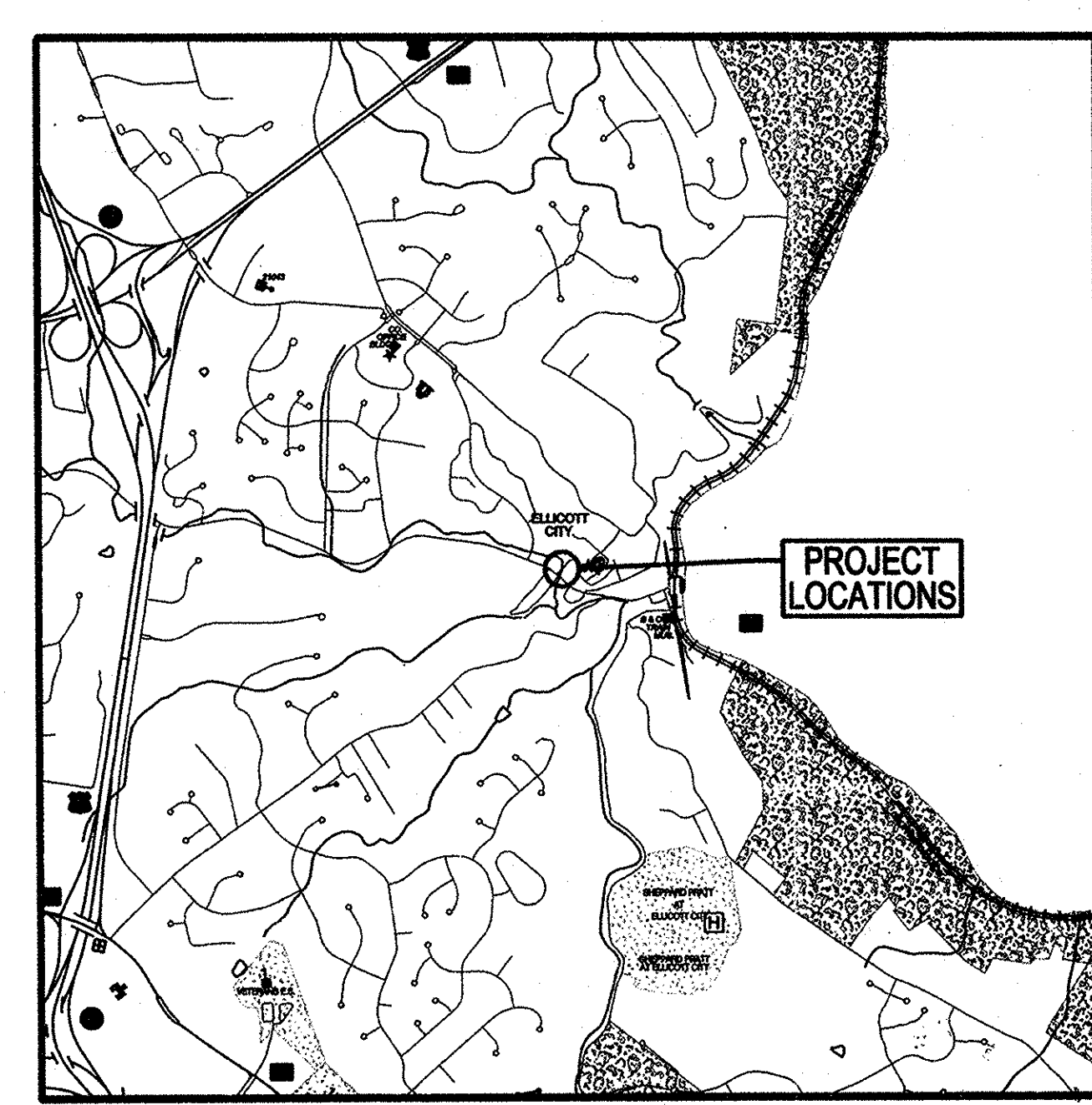
SHEET NO.	SHEET TITLE
1	TITLE SHEET
2	SITE PLAN
3	GRADING PLAN
4	EROSION & SEDIMENT CONTROL PLAN
5 - 6	EROSION & SEDIMENT CONTROL NOTES
7	EROSION & SEDIMENT CONTROL DETAILS
8 - 9	GENERAL PLAN AND DEVELOPED ELEVATION
10	SECTION
11	BORINGS AND DRIVE TESTS
12	GENERAL PLAN AND DEVELOPED ELEVATION
13	SECTIONS
14	BORINGS AND DRIVE TESTS
15	GENERAL PLAN AND DEVELOPED ELEVATION
16	SECTION
17	PLAN SECTIONS AND DETAILS
18	PLAN AND SECTIONS
19	GENERAL PLAN AND DEVELOPED ELEVATION
20	SECTIONS AND DETAILS
21	LANDSCAPE PLAN
22	LANDSCAPE NOTES AND DETAILS
11C	STANDARD DETAILS

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
⊙		⊙	EX. MANHOLE
○		○	EX. UTILITY POLE
---		---	EX. EASEMENT
---		---	PROPERTY LINE
---		---	EDGE OF WATER
---		---	100-YEAR FLOODPLAIN
---		---	L0D
---		---	LIMIT OF DISTURBANCE
---		---	PROPOSED STORM DRAIN
---		---	PROPOSED CURB & GUTTER
---		---	PROPOSED INLET
---		---	RIPRAP OUTFALL PROTECTION
---		---	FULL DEPTH PATCH

ELLICOTT CITY 8B, RETAINING WALLS 8A, 9A & 9B REPAIR / REPLACE

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
130	N/A	583,454.7300	1,369,009.8300	183.13
132	N/A	583,447.3945	1,368,976.2657	177.29
133	N/A	583,530.5748	1,369,012.1480	184.45
134	N/A	583,621.2677	1,368,889.0547	182.07
305	N/A	583,503.5968	1,369,082.2055	187.72

SITE ANALYSIS DATA CHART

- TOTAL PROJECT AREA: 0.29 ACRES.
- DISTURBED AREA: 0.29 ACRES (12,633 SF).
- PROPOSED USE FOR THE SITE: RETAINING WALL REPAIR
- APPLICABLE DPZ FILE REFERENCES: PB07-073, PB08-056, PB09-028A.
- AFFECTED LAND OWNERS: NORA ENTERPRISE, LLC.

- GENERAL INFORMATION**
- THE SUBJECT PROPERTIES ARE ZONED HC PER COMPREHENSIVE ZONING PLAN AND THE COMP-LITE ZONING AMENDMENTS.
 - THERE ARE NO BURIAL GROUNDS OR CEMETERY SITES LOCATED ON THE PROJECT SITE.
 - ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY CONTAINED HEREIN PLUS MSHA STANDARDS AND SPECIFICATIONS, IF APPLICABLE.
 - 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.
 - THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION WORK BEING DONE.
 - 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.
 - WATER IS PUBLIC.
 - SEWER IS PUBLIC.
 - EXISTING UTILITIES ARE BASED ON FIELD SURVEYS AND AVAILABLE RECORD DRAWINGS.
 - THE EXISTING TOPOGRAPHY IS TAKEN FROM FIELD RUN SURVEY WITH ONE FOOT CONTOUR INTERVALS PREPARED BY HOWARD COUNTY IN MAY 2016 AND JULY 2016.
 - ALL WORK SHALL CONFORM TO THE MDE BEST MANAGEMENT PRACTICES FOR WETLANDS AND WATERWAYS AS LISTED IN THE REQUIREMENTS OF THE MONTIDAL WETLANDS AND WATERWAYS PERMIT APPROVED ON XX/XX/XX (MDE TRACKING # 201661874).
 - NO TRAFFIC STUDY IS REQUIRED FOR THIS PROJECT.
 - 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.
 - 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.
 - THE PROPOSED PROJECT IS LOCATED BETWEEN PARKING LOTS E AND F IN HISTORIC ELLICOTT CITY.
 - HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS PROJECT MANAGER IS BRIAN CLEARY, P.E. (410) 313-6455.
 - 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)
 - THE STREAM IS NOT TIER II. THE STREAM IS IMPAIRED FOR TOXIC SUBSTANCES.

DESIGN NARRATIVE

THIS IS A RETAINING WALL PROJECT THAT WILL STABILIZE THE BANKS OF HUDSON BRANCH, LOCATED IN ELLICOTT CITY, MARYLAND. PROJECT IMPROVEMENTS WILL PROTECT NATURAL RESOURCES BY RESTORING OR REPLACING FAILED RETAINING WALLS, WHICH WILL AID IN PREVENTING FUTURE BANK DEGRADATION AND TRANSPORT OF SEDIMENT AND STONE DOWNSTREAM. APPROXIMATELY 195 LINEAR FEET OF RETAINING WALL WILL BE RESTORED OR REPLACED. BANK GRADING AND STABILIZATION IN THE VICINITY OF WALLS 8A, 9A AND 9B WILL ALSO BE PROVIDED WITH GEOCELL AND SOIL STABILIZATION MATTING.

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 BASEFLOW AROUND THE WORK AREA USING A PUMP-AROUND PRACTICE AND A PORTABLE SEDIMENT TANK. ACCESS WILL BE VIA A STABILIZED CONSTRUCTION ENTRANCE FROM COURT AVENUE.

- SPECIAL CONTRACTOR NOTES**
- APPROXIMATE 100-YEAR FLOODPLAIN ELEVATION IS 184.5.
 - IN-STREAM WORK IS PROHIBITED FROM MARCH 1 TO JUNE 15, INCLUSIVE. STREAM CLASSIFICATION: USE I.
 - CONTRACTOR SHALL CONTINUALLY MONITOR WEATHER FORECASTS DURING WORK ACTIVITIES AND SCHEDULE WORK DURING FAVORABLE CONDITIONS.
 - 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 DRILLPIE 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.
 - CONTRACTOR SHALL NOT STORE EQUIPMENT, MATERIALS AND/OR SUPPLIES BEYOND THE ORANGE FENCING SHOWN ON THE PLANS.
 - 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.
 - PRIOR TO BEGINNING ANY CONSTRUCTION ACTIVITIES, PHOTOGRAPHS OF THE PROPOSED WORK AREA AND ACCESS SHALL BE TAKEN.
 - 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.
 - ALL MATERIAL SHALL BE REMOVED AND DISPOSED OF OFFSITE UNLESS OTHERWISE NOTED.
 - THE CONTRACTOR SHALL PAY CLOSE ATTENTION TO PEDESTRIANS WALKING NEAR THE WORK SITE.
 - 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 COUNTY SOIL CONSERVATION DISTRICT.

James G. Kester P.E. # 20903 01/27/2017
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 COUNTY SOIL CONSERVATION DISTRICT.

James K. Terwin 1/17
SIGNATURE OF DEVELOPER (PRINT NAME BELOW SIGNATURE) DATE
James K. Terwin

DEPARTMENT OF PUBLIC WORKS, HOWARD COUNTY, MD

Langley 2/1/17
DIRECTOR OF PUBLIC WORKS DATE

Mark S. Terwin 1/31/17
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES DATE

Mark S. Terwin 1/30/17
CHIEF, STORMWATER MANAGEMENT DIVISION DATE

DEPARTMENT OF RECREATION AND PARKS, HOWARD COUNTY, MD

DIRECTOR OF RECREATION AND PARKS DATE

PERMIT INFORMATION CHART

SUBDIVISION NAME	SECTION/AREA	PARCEL#
		97, 99, 100
PLAY# OF L/F	GRID#	ZONING
-	2	HC
TAX MAP NO.	ELECT. DISTR.	CENSUS TRACT
25A	2	-
WATER CODE	SEWER CODE	
PUBLIC	PUBLIC	

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

Mark S. Terwin 2/1/17
HOWARD SCD DATE

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

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, 2017

Mark S. Terwin 15554 4/13/18
SIGNATURE PE NO. DATE

AS-BUILT CERTIFICATION

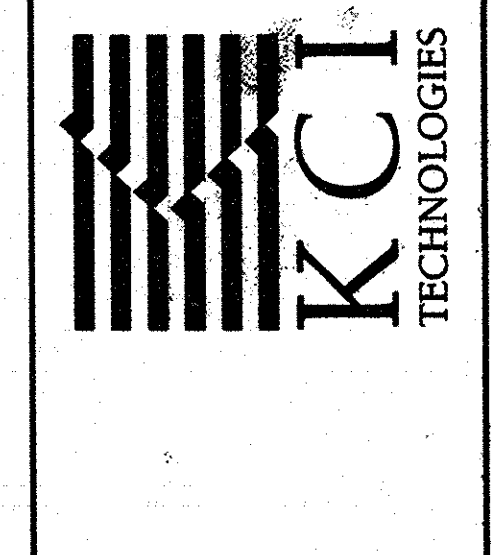
I HEREBY CERTIFY THAT THIS FACILITY SHOWN BY THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND MEETS THE APPROVED PLANS AND SPECIFICATIONS.

Mark S. Terwin 15554 4/13/18
SIGNATURE PE NO. DATE

NO.	REVISIONS DESCRIPTION	DATE
1	ALTERNATE STAGE I & WALL 8B ADDED	3-9-17
2	STREAM DIVERSION REVISIONS	5-10-17
	AS-BUILT	12-11-17

KCI FILE: MA 2013 \ 17133314-50

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

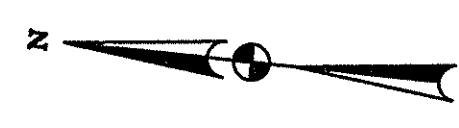
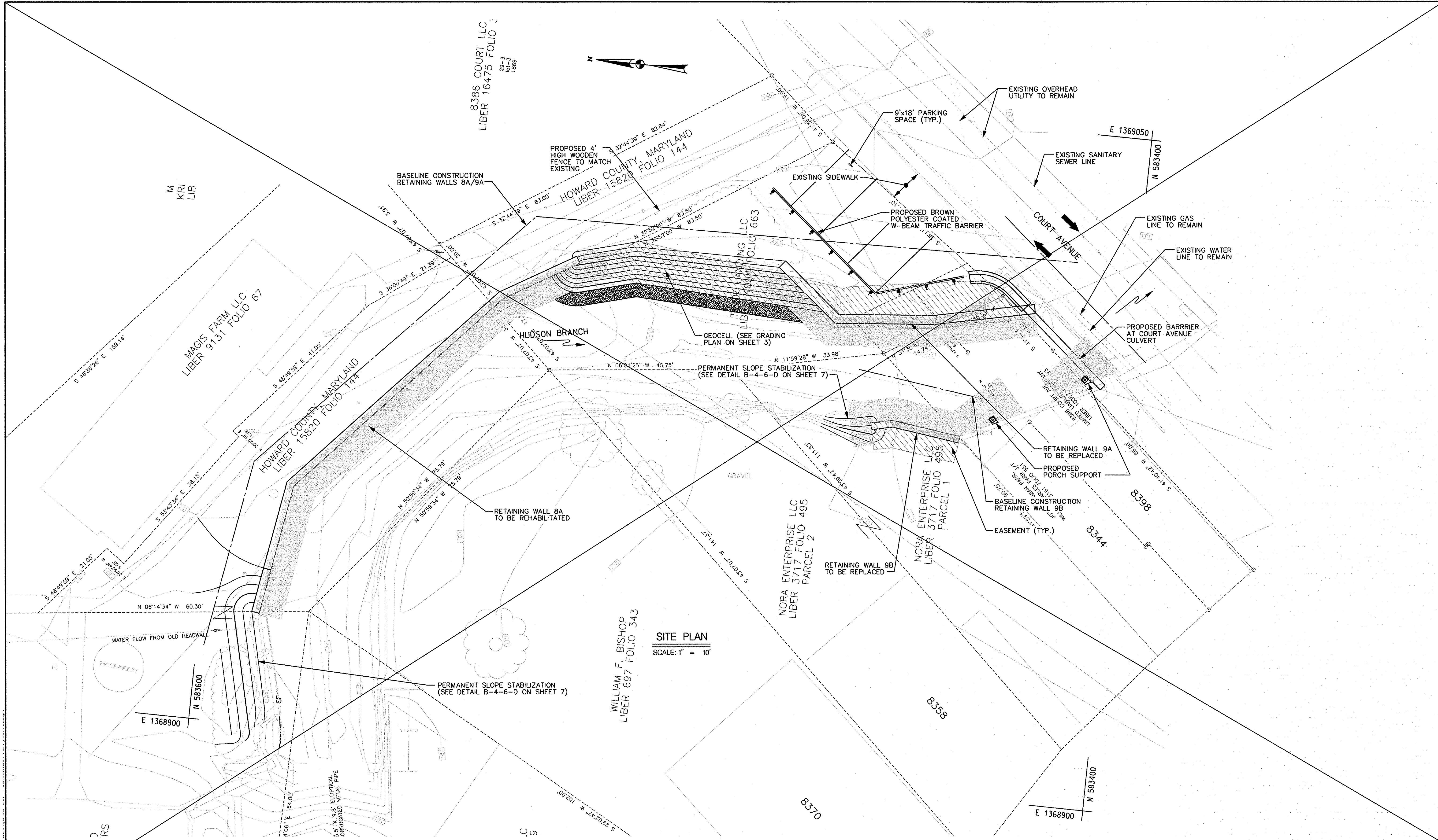


ELLICOTT CITY, MARYLAND
RETAINING WALLS 8A, 9A & 9B
REPAIR / REPLACE
CAPITAL PROJECT D-1165
HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
STORMWATER MANAGEMENT DIVISION
6751 COLUMBIA GATEWAY DRIVE
COLUMBIA, MD 21046
PARCELS 97, 99, 100 TAX MAP 25A
ZONING HC ELECTION DISTRICT 2 / GRIDBLOCK 2

TITLE SHEET

SCALE: AS SHOWN
DATE: JANUARY 2017
KCI JOB NO.: 17133314-96 & 97
CAPITAL PROJECT NO.: D-1165
PERMIT ISSUE:
CONSTRUCTION ISSUE:

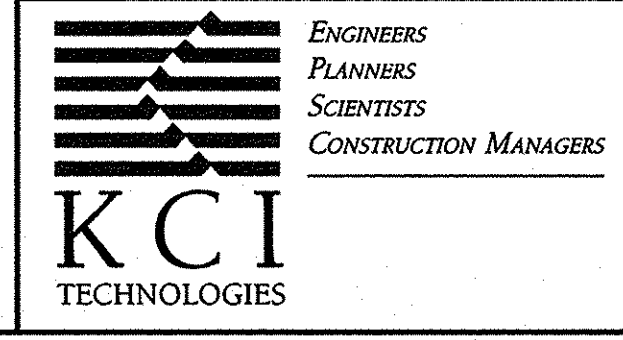
SHEET NO.: 1 OF 22



SITE PLAN
SCALE: 1" = 10'



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: 10/08/2017

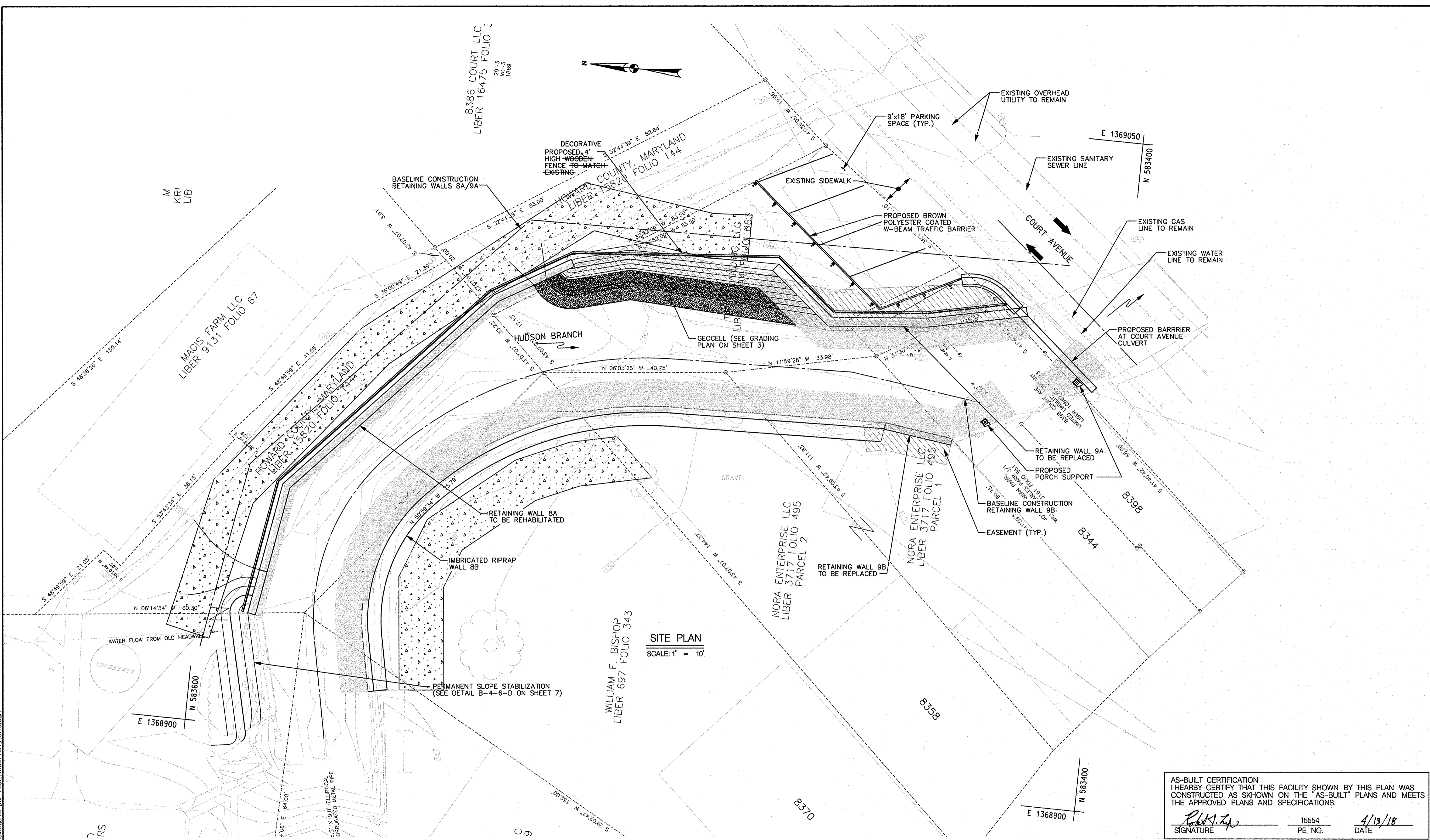


REVISIONS		DATE
NO.	DATE	DESCRIPTION
2	05/10/17	SHEET DELETED

DATE	12/2016
BY	DRC
SCALE	AS SHOWN
DESIGNED BY	
DRAWN BY	

**HOWARD COUNTY
ELLICOTT CITY RETAINING WALLS
8A, 9A, AND 9B
SITE PLAN**

DRAWING NO. SHEET 2 OF 22
KCI JOB NUMBER 171331496



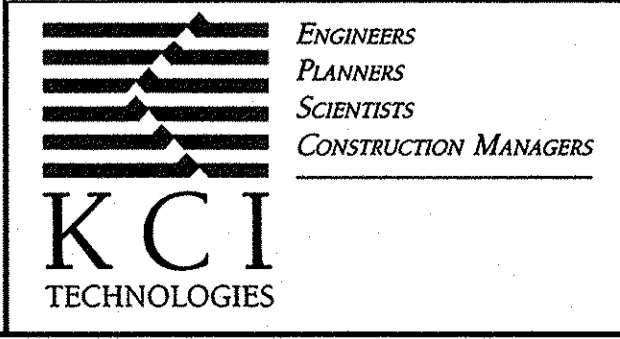
SITE PLAN
SCALE: 1" = 10'

AS-BUILT CERTIFICATION
I HEREBY 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: *[Signature]* PE NO. 15554 DATE 4/13/18



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: 10/06/2017

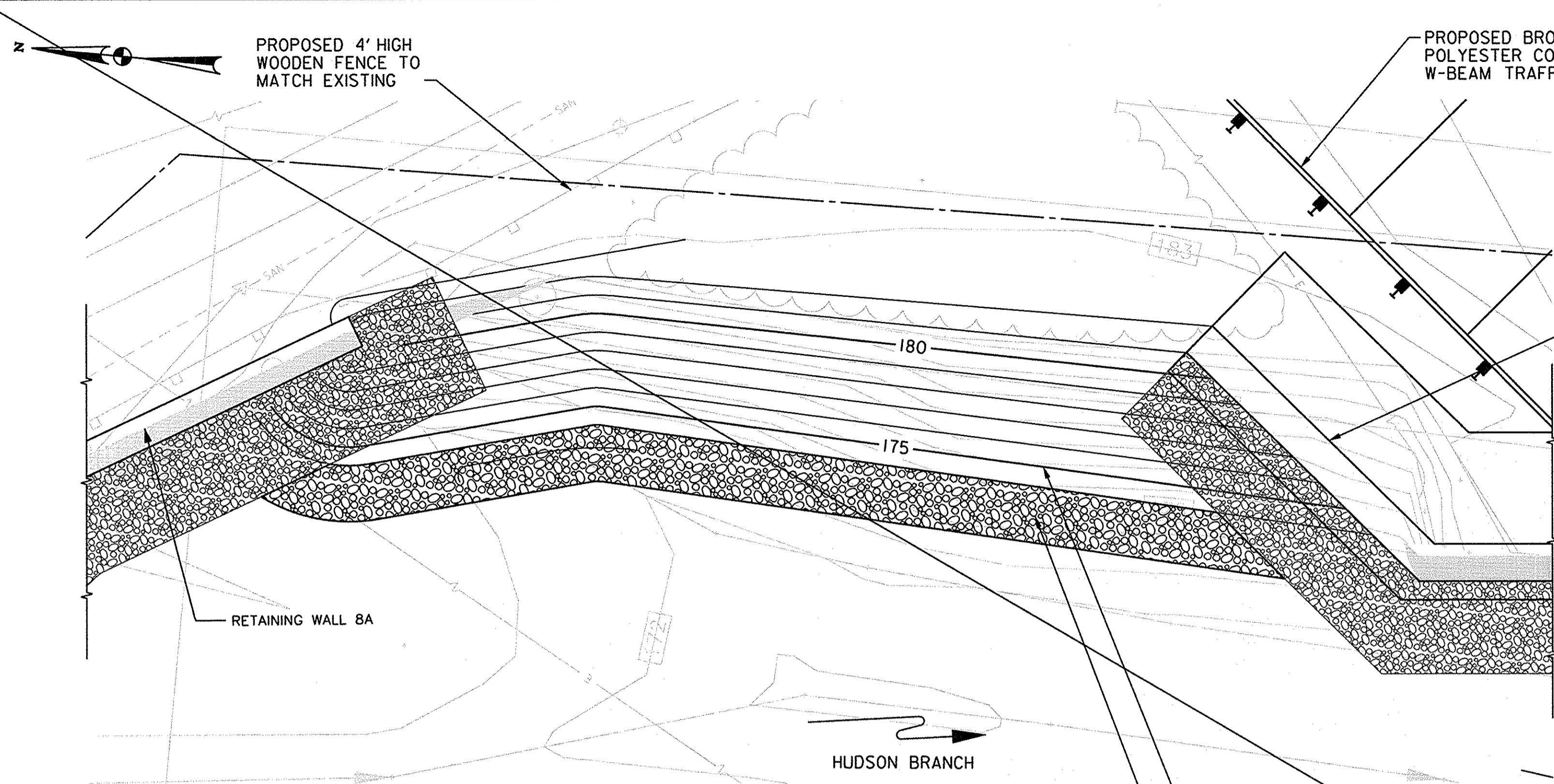


NO.		DATE	DESCRIPTION	BY	DATE
2	05/10/17	SHEET REPLACED	DRC	12/2016	
	12/11/17	AS-BUILT	DRC	SCALE AS SHOWN	
DESIGNED BY				DRAWN BY	

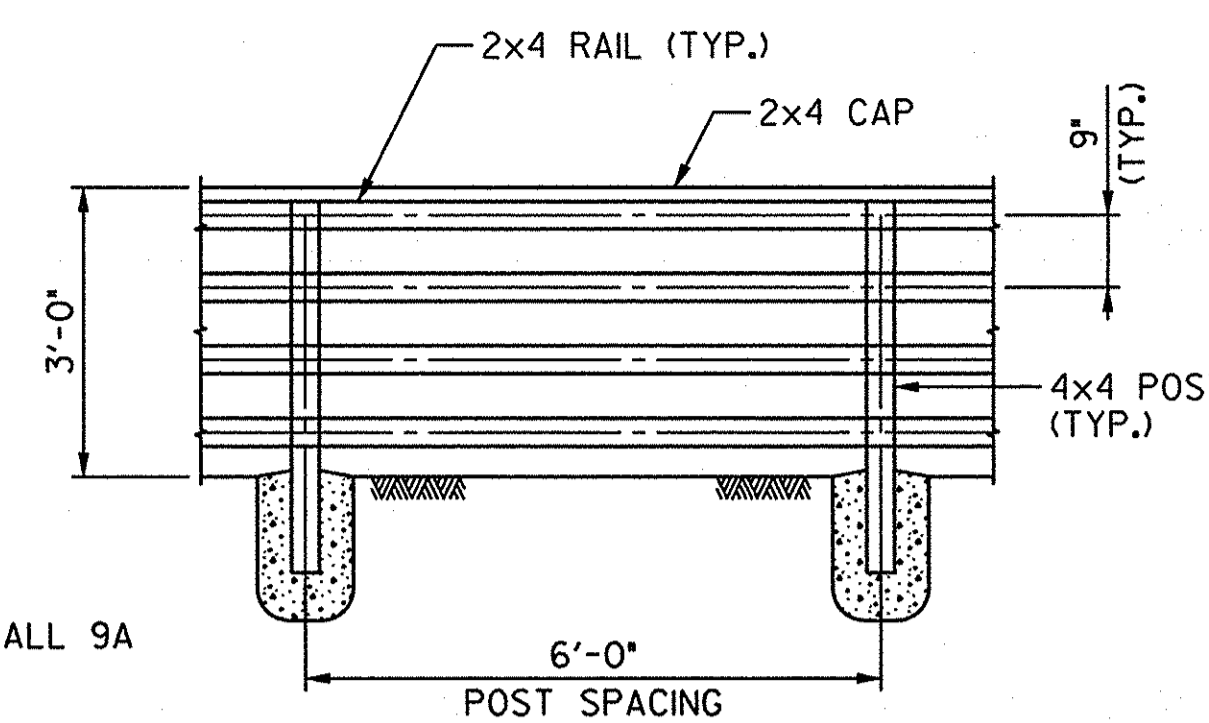
**HOWARD COUNTY
ELLICOTT CITY RETAINING WALLS
8A, 8B, 9A, AND 9B
SITE PLAN**

DRAWING NO. SHEET 2A OF 22
KCT JOB NUMBER 1713331496

PLOTTED: Wednesday, April 11, 2018 AT 04:52 PM
 FILE: \\MS2013\1713331496\Drawings\10-cpp-POOL-EllicottCity_Site.dgn



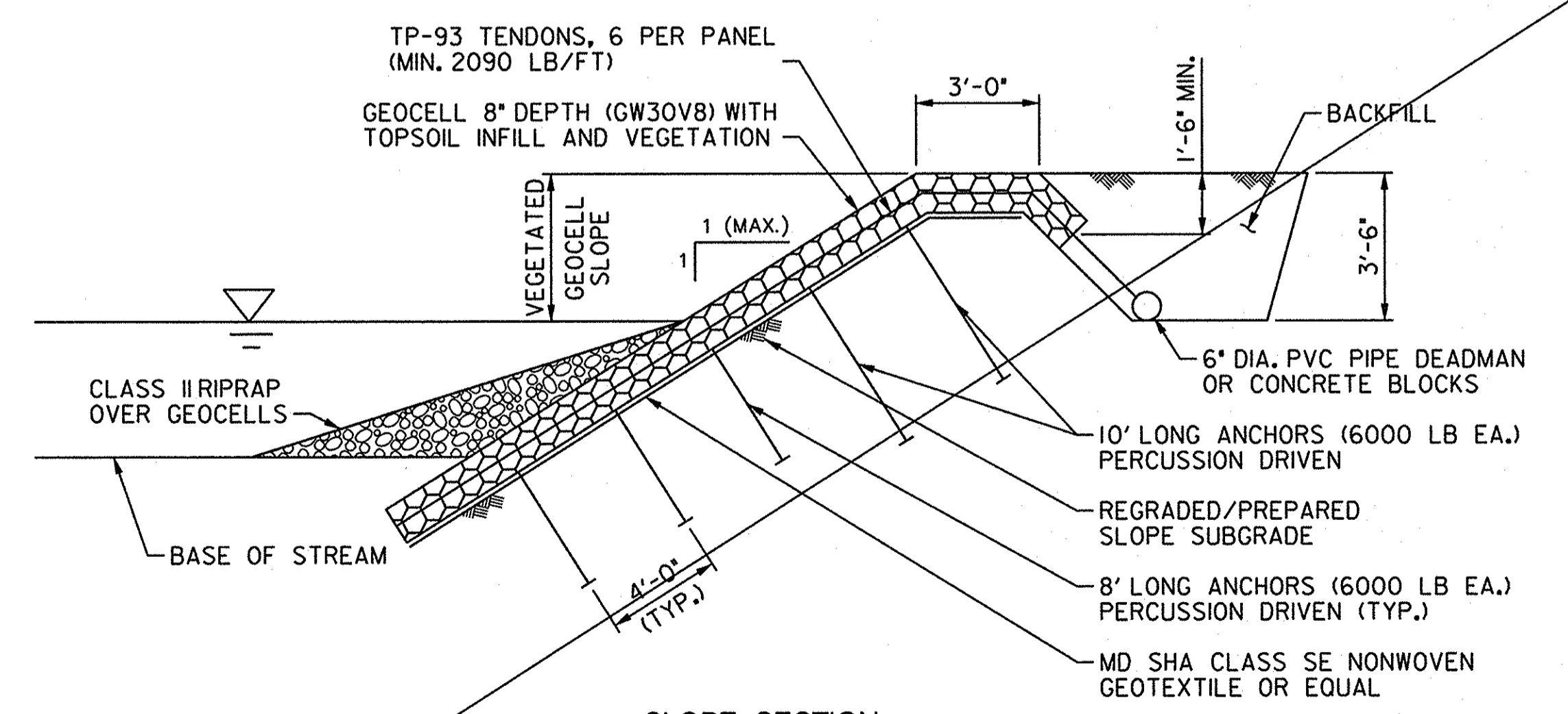
GRADING PLAN
SCALE: 1" = 5'



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

- NOTES:**
1. ALL NAILS AND CONNECTIONS SHALL BE GALVANIZED.
 2. RAILS ATTACHED TO POST WITH A MINIMUM OF FOUR (4) 10D NAILS.
 3. WOOD POST, NO. 2 GRADE WOOD OR BETTER.
 4. CONCRETE FOOTING AT EACH POST MINIMUM DIAMETER OF 10" WITH A MINIMUM DEPTH OF 24" FROM FINISHED GRADE. MINIMUM POST EMBEDMENT IS 24".
 5. WOODEN FENCE WILL BE MEASURED AND PAID FOR AT THE CONTRACT UNIT PRICE PER LINEAR FOOT. THE PAYMENT WILL BE FULL COMPENSATION FOR EXCAVATION, CONCRETE, TIMBER, CONNECTORS AND ALL MATERIAL, LABOR, EQUIPMENT, TOOLS AND INCIDENTALS NECESSARY TO COMPLETE THE WORK.

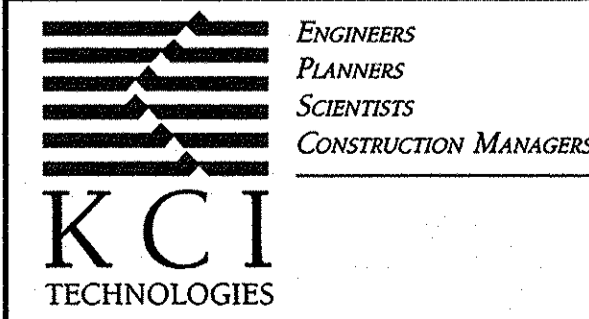
- SOIL STABILIZATION SYSTEM**
- 1.1 ACCEPTABLE MANUFACTURER
 - A. PRESTO GEOSYSTEMS, PO BOX 2399, APPLETON, WISCONSIN 54912-2399. *TOLL FREE (800) 548-3424. PHONE (920) 738 1328. FAX (920) 738-1222. E MAIL INFO@PRESTOCEO.COM. WEBSITE WWW.PRESTOCEO.COM.
 - 1.2 GEOWEB CELLULAR CONFINEMENT SYSTEM
 - A. BASE MATERIALS
 1. POLYETHYLENE STABILIZED WITH CARBON BLACK
 - A) DENSITY SHALL BE 58.4 TO 60.2 POUND/FT³ (0.935 TO 0.965 G/CM³) IN ACCORDANCE WITH ASTM D 1505.
 - B) ENVIRONMENTAL STRESS CRACK RESISTANCE (ESCR) SHALL BE 5000 HOURS IN ACCORDANCE WITH ASTM D 1693.
 - C) ULTRA-VIOLET LIGHT STABILIZATION WITH CARBON BLACK.
 - D) CARBON BLACK CONTENT SHALL BE 1.5 TO 2 PERCENT BY WEIGHT, THROUGH ADDITION OF A CARRIER WITH CERTIFIED CARBON BLACK CONTENT.
 - E) CARBON BLACK SHALL BE HOMOGENEOUSLY DISTRIBUTED THROUGHOUT MATERIAL.
 - B. CELL PROPERTIES
 1. INDIVIDUAL CELLS SHALL BE UNIFORM IN SHAPE AND SIZE WHEN EXPANDED.
 2. INDIVIDUAL CELL DIMENSIONS (NOMINAL) SHALL BE PLUS OR MINUS 10%.
 3. GW30V-CELL
 - A) LENGTH SHALL BE 11.3 INCHES (287 MM).
 - B) WIDTH SHALL BE 12.6 INCHES (320 MM).
 - C) NOMINAL AREA SHALL BE 71.3 IN² (460 CM²) PLUS OR MINUS 1%.
 4. NOMINAL CELL DEPTH SHALL BE 8 INCHES (200 MM).
 - C. STRIP PROPERTIES AND ASSEMBLY
 1. PERFORATED TEXTURED STRIP/CELL
 - A) STRIP SHEET THICKNESS SHALL BE 50 MILS (1.27 MM), MINUS 5 PERCENT, PLUS 10 PERCENT IN ACCORDANCE WITH ASTM D 5199. DETERMINE THICKNESS FLAT, BEFORE SURFACE DISRUPTION.
 - B) POLYETHYLENE STRIPS SHALL BE TEXTURED SURFACE WITH A MULTITUDE OF RHOMBODIAL (DIAMOND SHAPE) INDENTATIONS.
 - C) TEXTURED SHEET THICKNESS SHALL BE 60 MILS, PLUS OR MINUS 6 MILS (1.52 MM PLUS OR MINUS 0.15 MM).
 - D) INDENTATION SURFACE DENSITY SHALL BE 140 TO 200 PER IN² (22 TO 31 PER CM²).
 - E) PERFORATED WITH HORIZONTAL ROWS OF 0.4 INCH (10 MM) DIAMETER HOLES.
 - F) PERFORATIONS WITHIN EACH ROW SHALL BE 0.75 INCHES (19 MM) ON-CENTER.
 - G) HORIZONTAL ROWS SHALL BE STAGGERED AND SEPARATED 0.50 INCHES (12 MM) RELATIVE TO HOLE CENTERS.
 - H) EDGE OF STRIP TO NEAREST EDGE OF PERFORATION SHALL BE A MINIMUM OF 0.3 INCHES (8 MM).
 - I) CENTERLINE OF SPOT WELD TO NEAREST EDGE OF PERFORATION SHALL BE A MINIMUM OF 0.7 INCHES (18 MM).
 - J) A SLOT WITH A DIMENSION OF 3/8 INCH X 1-3/8 INCH (10 MM X 35 MM) IS STANDARD IN THE CENTER OF THE NON-PERFORATED AREAS AND AT THE CENTER OF EACH WELD.
 2. ASSEMBLY OF CELL SECTIONS
 - A) FABRICATE USING STRIPS OF SHEET POLYETHYLENE EACH WITH A LENGTH OF 142 INCHES (3.61 M) AND A WIDTH EQUAL TO CELL DEPTH.
 - B) CONNECT STRIPS USING FULL DEPTH ULTRASONIC SPOT-WELDS ALIGNED PERPENDICULAR TO LONGITUDINAL AXIS OF STRIP.
 - C) ULTRASONIC WELD MELT-POOL WIDTH SHALL BE 1.0 INCH (25 MM) MAXIMUM.
 - D) WELD SPACING FOR GW30V-CELL SECTIONS SHALL BE 17.5 INCHES PLUS OR MINUS 0.10 INCH (445 MM PLUS OR MINUS 2.5 MM).
 3. CELL SEAM STRENGTH TESTS
 1. MINIMUM SEAM STRENGTHS ARE REQUIRED BY DESIGN AND SHALL BE REPORTED IN TEST RESULTS. MATERIALS SUBMITTED WITH AVERAGE OR TYPICAL VALUES WILL NOT BE ACCEPTED. WRITTEN CERTIFICATION OF MINIMUM STRENGTHS MUST BE SUPPLIED TO THE ENGINEER AT THE TIME OF SUBMITTALS.
 2. SHORT-TERM SEAM PEEL-STRENGTH TEST
 - A) CELL SEAM STRENGTH SHALL BE UNIFORM OVER FULL DEPTH OF CELL.
 - B) MINIMUM SEAM PEEL STRENGTH SHALL BE 640 LBF (2,840 N) FOR 8 INCH (200 MM) DEPTH.
 3. LONG-TERM SEAM PEEL-STRENGTH TEST
 - A) CONDITIONS: MINIMUM OF 7 DAYS IN A TEMPERATURE-CONTROLLED ENVIRONMENT THAT UNDERGOES CHANGE ON A 1 HOUR CYCLE FROM ROOM TEMPERATURE TO 130 DEGREES F (54 DEGREES C).
 - B) ROOM TEMPERATURE SHALL BE IN ACCORDANCE WITH ASTM E41.
 - C) TEST SAMPLES SHALL CONSIST OF TWO, 4 INCH (100 MM) WIDE STRIPS WELDED TOGETHER.
 - D) TEST SAMPLE CONSISTING OF 2 CARBON BLACK STABILIZED STRIPS SHALL SUPPORT A 160 POUND (72.5 KG) LOAD FOR TEST PERIOD.
 - 1.3 TENDON ANCHORAGE
 - A. TENDON TYPE
 1. WOVEN POLYESTER - TP-93
 - A) MATERIAL SHALL BE BRIGHT, HIGH-TENACITY, INDUSTRIAL-CONTINUOUS-FILAMENT, POLYESTER YARN WOVEN INTO A BRAIDED STRAP.
 - B) ELONGATION SHALL BE 9 TO 15 PERCENT AT BREAK.
 - C) MINIMUM BREAK STRENGTH SHALL BE 2090 LBF (9.30 KN) FOR TP-93.
 - B. TYPES OF TENDON ANCHORAGE
 1. TENDONS, ATRA TENDON CLIPS AND DEADMAN PIPE ANCHORAGE.
 - 1.4 INSTALLATION OF THE SLOPE PROTECTION SYSTEM
 - A. PREPARE SUB GRADE AND INSTALL PROTECTION SYSTEM IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.



SLOPE SECTION
NOT TO SCALE



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: 10/08/2017

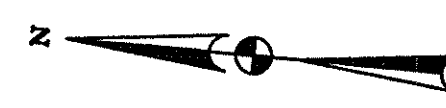


NO.		DATE	DESCRIPTION	BY	DATE
2		05/10/17	SHEET DELETED	DRC	12/2016

**HOWARD COUNTY
ELLCOTT CITY RETAINING WALLS
8A, 9A, AND 9B
GRADING PLAN**

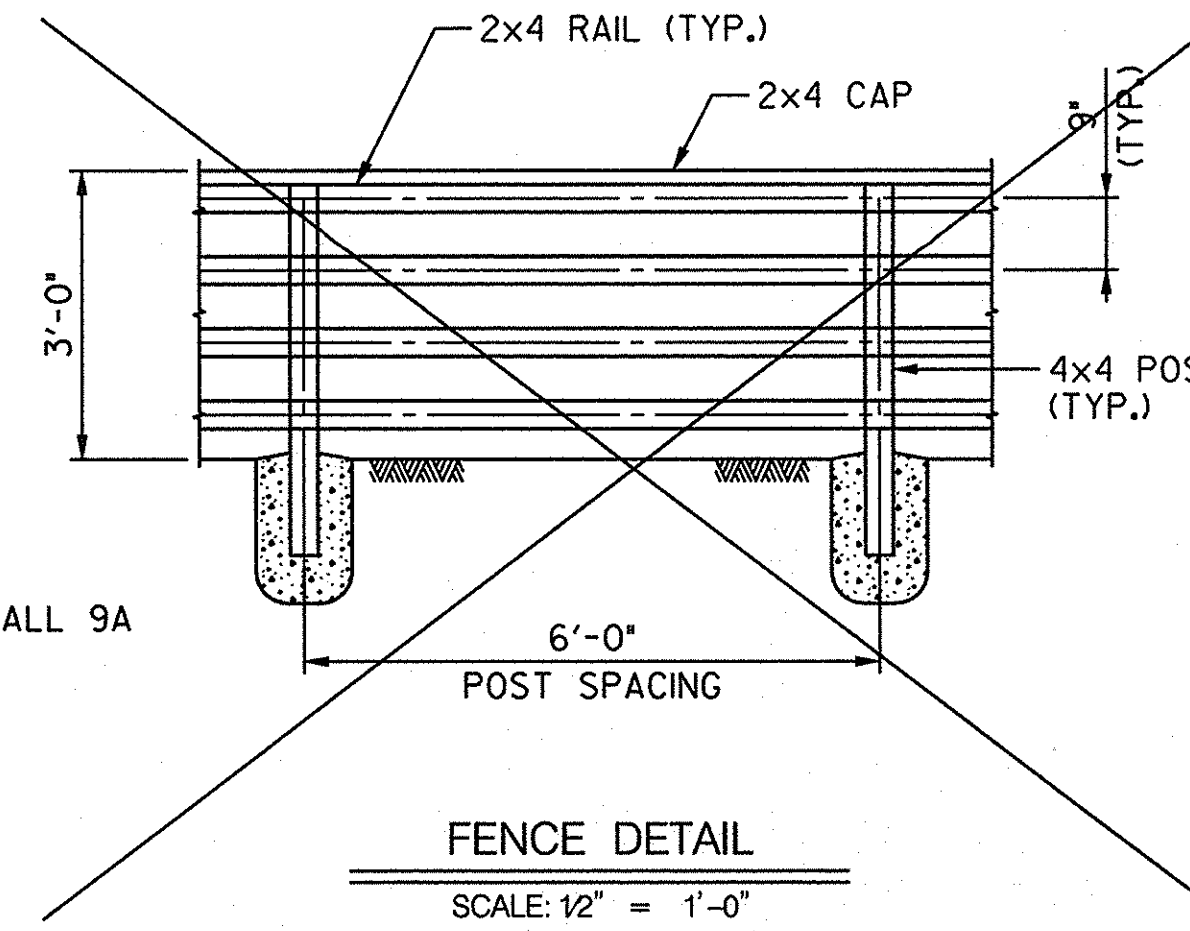
DESIGNED BY: RDL
DRAWN BY: DRC

DRAWING NO. SHEET 3 OF 22
KCT JOB NUMBER 171331496



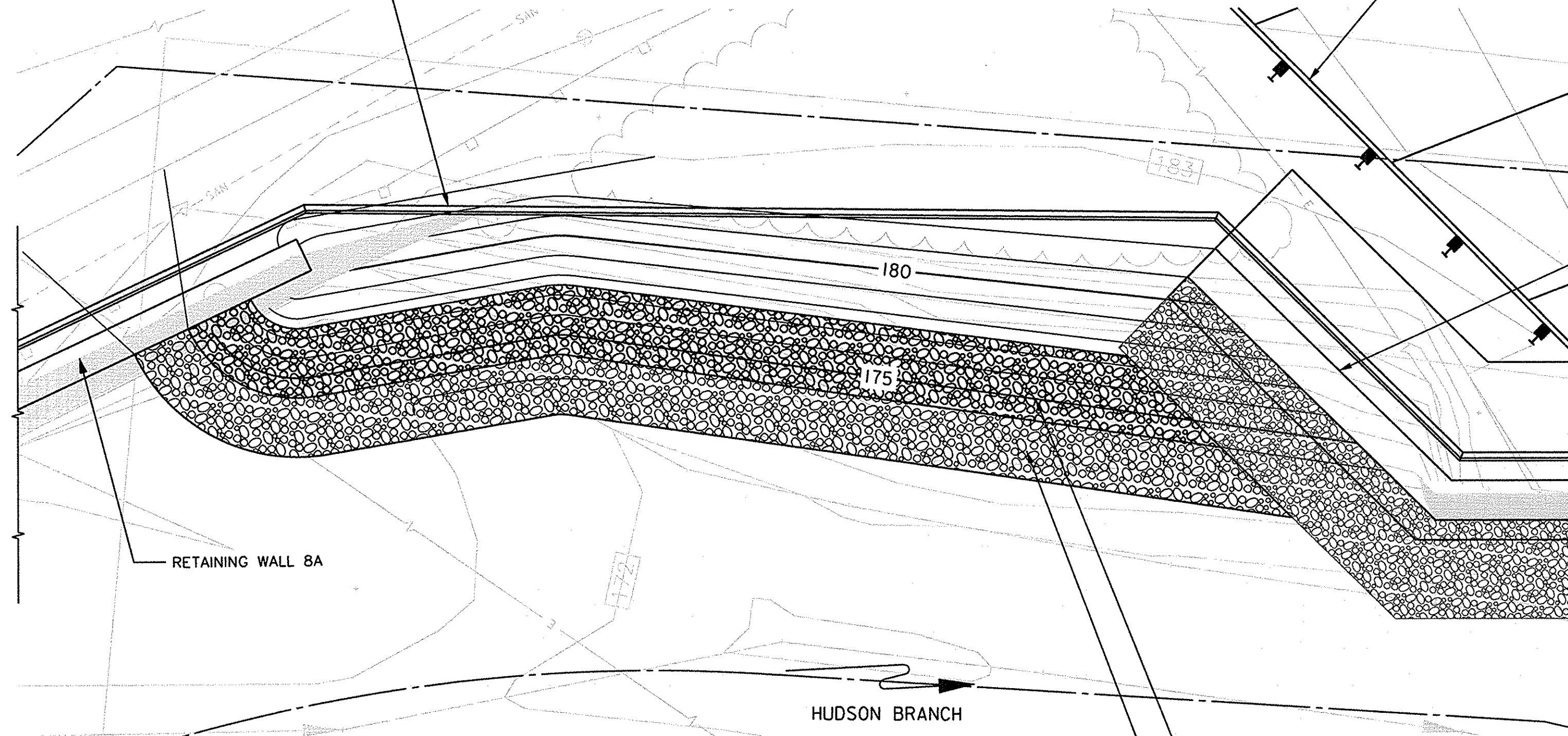
PROPOSED 4' HIGH DECORATIVE WOODEN FENCE TO MATCH EXISTING

PROPOSED BROWN POLYESTER COATED W-BEAM TRAFFIC BARRIER



NOTES:

1. ALL NAILS AND CONNECTIONS SHALL BE GALVANIZED.
2. RAILS ATTACHED TO POST WITH A MINIMUM OF FOUR (4) 10D NAILS.
3. WOOD POST, NO. 2 GRADE WOOD OR BETTER.
4. CONCRETE FOOTING AT EACH POST MINIMUM DIAMETER OF 10" WITH A MINIMUM DEPTH OF 24" FROM FINISHED GRADE. MINIMUM POST EMBEDMENT IS 24".
5. WOODEN FENCE WILL BE MEASURED AND PAID FOR AT THE CONTRACT UNIT PRICE PER LINEAR FOOT. THE PAYMENT WILL BE FULL COMPENSATION FOR EXCAVATION, CONCRETE, TIMBER, CONNECTORS AND ALL MATERIAL, LABOR, EQUIPMENT, TOOLS AND INCIDENTALS NECESSARY TO COMPLETE THE WORK.

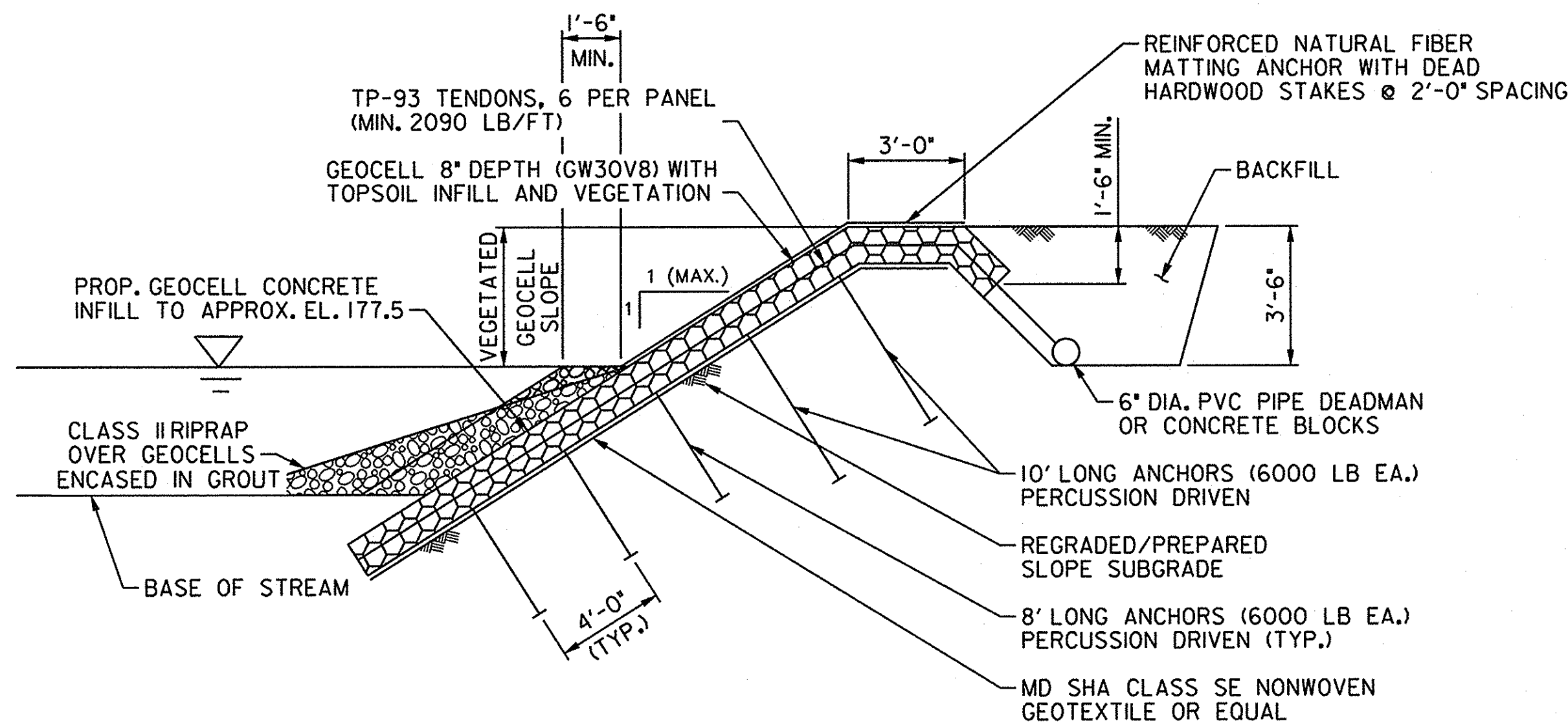


SOIL STABILIZATION SYSTEM

- 1.1 ACCEPTABLE MANUFACTURER
 - A. PRESTO GEOSYSTEMS, PO BOX 2399, APPLETON, WISCONSIN 54912-2399. TOLL FREE (800) 548-3424. PHONE (920) 738 1328. FAX (920) 738-1222. E MAIL INFO@PRESTOCEO.COM. WEBSITE: WWW.PRESTOCEO.COM.
- 1.2 GEOWEB CELLULAR CONFINEMENT SYSTEM
 - A. BASE MATERIALS
 1. POLYETHYLENE STABILIZED WITH CARBON BLACK
 - A) DENSITY SHALL BE 58.4 TO 60.2 POUND/FT³ (0.935 TO 0.965 G/CM³) IN ACCORDANCE WITH ASTM D 1505.
 - B) ENVIRONMENTAL STRESS CRACK RESISTANCE (ESCR) SHALL BE 5000 HOURS IN ACCORDANCE WITH ASTM D 1693.
 - C) ULTRA-VIOLET LIGHT STABILIZATION WITH CARBON BLACK.
 - D) CARBON BLACK CONTENT SHALL BE 1.5 TO 2 PERCENT BY WEIGHT, THROUGH ADDITION OF A CARRIER WITH CERTIFIED CARBON BLACK CONTENT.
 - E) CARBON BLACK SHALL BE HOMOGENEOUSLY DISTRIBUTED THROUGHOUT MATERIAL.
 - B. CELL PROPERTIES
 1. INDIVIDUAL CELLS SHALL BE UNIFORM IN SHAPE AND SIZE WHEN EXPANDED.
 2. INDIVIDUAL CELL DIMENSIONS (NOMINAL) SHALL BE PLUS OR MINUS 10%.
 3. GW30V-CELL
 - A) LENGTH SHALL BE 11.3 INCHES (287 MM).
 - B) WIDTH SHALL BE 12.6 INCHES (320 MM).
 - C) NOMINAL AREA SHALL BE 71.3 IN² (460 CM²) PLUS OR MINUS 1%.
 4. NOMINAL CELL DEPTH SHALL BE 8 INCHES (200 MM).
 - C. STRIP PROPERTIES AND ASSEMBLY
 1. PERFORATED TEXTURED STRIP/CELL
 - A) STRIP SHEET THICKNESS SHALL BE 50 MILS (1.27 MM), MINUS 5 PERCENT, PLUS 10 PERCENT IN ACCORDANCE WITH ASTM D 5199. DETERMINE THICKNESS FLAT, BEFORE SURFACE DISRUPTION.
 - B) POLYETHYLENE STRIPS SHALL BE TEXTURED SURFACE WITH A MULTITUDE OF RHOMBODIAL (DIAMOND SHAPE) INDENTATIONS.
 - C) TEXTURED SHEET THICKNESS SHALL BE 60 MILS, PLUS OR MINUS 6 MILS (1.52 MM PLUS OR MINUS 0.15 MM).
 - D) INDENTATION SURFACE DENSITY SHALL BE 140 TO 200 PER IN² (22 TO 31 PER CM²).
 - E) PERFORATED WITH HORIZONTAL ROWS OF 0.4 INCH (10 MM) DIAMETER HOLES.
 - F) PERFORATIONS WITHIN EACH ROW SHALL BE 0.75 INCHES (19 MM) ON-CENTER.
 - G) HORIZONTAL ROWS SHALL BE STAGGERED AND SEPARATED 0.50 INCHES (12 MM) RELATIVE TO HOLE CENTERS.
 - H) EDGE OF STRIP TO NEAREST EDGE OF PERFORATION SHALL BE A MINIMUM OF 0.3 INCHES (8 MM).
 - I) CENTERLINE OF SPOT WELD TO NEAREST EDGE OF PERFORATION SHALL BE A MINIMUM OF 0.7 INCHES (18 MM).
 - J) A SLOT WITH A DIMENSION OF 3/8 INCH X 1-3/8 INCH (10 MM X 35 MM) IS STANDARD IN THE CENTER OF THE NON-PERFORATED AREAS AND AT THE CENTER OF EACH WELD.
2. ASSEMBLY OF CELL SECTIONS
 - A) FABRICATE USING STRIPS OF SHEET POLYETHYLENE EACH WITH A LENGTH OF 142 INCHES (3.61 M) AND A WIDTH EQUAL TO CELL DEPTH.
 - B) CONNECT STRIPS USING FULL DEPTH ULTRASONIC SPOT-WELDS ALIGNED PERPENDICULAR TO LONGITUDINAL AXIS OF STRIP.
 - C) ULTRASONIC WELD MELT-POOL WIDTH SHALL BE 1.0 INCH (25 MM) MAXIMUM.
 - D) WELD SPACING FOR GW30V-CELL SECTIONS SHALL BE 17.5 INCHES PLUS OR MINUS 0.10 INCH (445 MM PLUS OR MINUS 2.5 MM).
- D. CELL SEAM STRENGTH TESTS
 1. MINIMUM SEAM STRENGTHS ARE REQUIRED BY DESIGN AND SHALL BE REPORTED IN TEST RESULTS. MATERIALS SUBMITTED WITH AVERAGE OR TYPICAL VALUES WILL NOT BE ACCEPTED. WRITTEN CERTIFICATION OF MINIMUM STRENGTHS MUST BE SUPPLIED TO THE ENGINEER AT THE TIME OF SUBMITTALS.
 2. SHORT-TERM SEAM PEEL-STRENGTH TEST
 - A) CELL SEAM STRENGTH SHALL BE UNIFORM OVER FULL DEPTH OF CELL.
 - B) MINIMUM SEAM PEEL STRENGTH SHALL BE 640 LBF (2,840 N) FOR 8 INCH (200 MM) DEPTH.
 3. LONG-TERM SEAM PEEL-STRENGTH TEST
 - A) CONDITIONS: MINIMUM OF 7 DAYS IN A TEMPERATURE-CONTROLLED ENVIRONMENT THAT UNDERGOES CHANGE ON A 1 HOUR CYCLE FROM ROOM TEMPERATURE TO 130 DEGREES F (54 DEGREES C).
 - B) ROOM TEMPERATURE SHALL BE IN ACCORDANCE WITH ASTM E41.
 - C) TEST SAMPLES SHALL CONSIST OF TWO, 4 INCH (100 MM) WIDE STRIPS WELDED TOGETHER.
 - D) TEST SAMPLE CONSISTING OF 2 CARBON BLACK STABILIZED STRIPS SHALL SUPPORT A 160 POUND (72.5 KG) LOAD FOR TEST PERIOD.
- 1.3 TENDON ANCHORAGE
 - A. TENDON TYPE
 1. WOVEN POLYESTER - TP-93
 - A) MATERIAL SHALL BE BRIGHT, HIGH-TENACITY, INDUSTRIAL-CONTINUOUS-FILAMENT, POLYESTER YARN WOVEN INTO A BRAIDED STRAP.
 - B) ELONGATION SHALL BE 9 TO 15 PERCENT AT BREAK.
 - C) MINIMUM BREAK STRENGTH SHALL BE 2090 LBF (9.30 KN) FOR TP-93.
 - B. TYPES OF TENDON ANCHORAGE
 1. TENDONS, ATRA TENDON CLIPS AND DEADMAN PIPE ANCHORAGE.
 - 1.4 INSTALLATION OF THE SLOPE PROTECTION SYSTEM
 - A. PREPARE SUB GRADE AND INSTALL PROTECTION SYSTEM IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

SLOPE SHALL BE STABILIZED WITH GEOCELL 8" DEPTH WITH TOPSOIL INFILL

SLOPE SHALL BE STABILIZED WITH GEOCELL 8" DEPTH WITH ~~STONE~~ AGGREGATE INFILL (MAX. 1.5" STONE SIZE) CONCRETE INFILL BELOW EL. 177.5 AND TOPSOIL INFILL AND VEGETATION ABOVE EL. 177.5



USE CONCRETE GROUT MIX WITH STRENGTH OF 2,000 TO 2,500 PSI.

AS-BUILT CERTIFICATION
I HEREBY 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: *David G. Royal* PE NO. 15554 DATE 4/13/18

PLOTTED: Wednesday, April 11, 2018 AT 04:52 PM BY: david.royal@kci.com FILE: M:\2013\17133314\96-Drawings\8B-Grading-GP06-EllicottCity-Grading.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. 15554 EXPIRATION DATE: 10/06/2017



REVISIONS		DATE
NO.	DATE	DESCRIPTION
2	05/10/17	SHEET REPLACED
	12/11/17	AS-BUILT

HOWARD COUNTY
ELICOTT CITY RETAINING WALLS
8A, 8B, 9A, AND 9B
GRADING PLAN

SCALE AS SHOWN
DESIGNED BY RDL
DRAWN BY DRC

DRAWING NO. SHEET 3A OF 22
KCI JOB NUMBER 1713331496

SEQUENCE OF CONSTRUCTION:

- 3 DAYS 1. OBTAIN GRADING PERMIT. THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 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 201661874.
- 2. NO WORK SHALL OCCUR IN HUDSON BRANCH DURING THE STREAM CLOSURE PERIOD FROM MARCH 1 TO JUNE 15.
- 3. MARK LOD PRIOR TO PRE-CONSTRUCTION MEETING.
- 1 DAY 4. PLACE STABILIZED CONSTRUCTION ENTRANCE AND ORANGE CONSTRUCTION FENCE ALONG LOD AS SHOWN PRIOR TO COMMENCEMENT OF WORK.
- 1 DAY 5. PLACE PUMP-AROUND PER DETAIL 1.2 AS SHOWN ON THE PLAN.
- 14 WEEKS 6. REMOVE APPROPRIATE SIZE STONES FROM STREAM FOR RETAINING WALL 8A REHABILITATION.
- 7. CONSTRUCT RETAINING WALLS, GEOCELL BETWEEN WALL 8A AND WALL 9A AND CLASS II RIPRAP AS SHOWN ON PLANS AND STABILIZE ALL DISTURBED AREAS TO FINAL GRADE. PUMP-AROUNDS 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 8. PERMANENTLY STABILIZE WORK AREA INCLUDING PERMANENT SLOPE STABILIZATION AS REQUIRED, ACCORDING TO DETAIL B-4-6-D ON SHEET 7 (FOR BANK GRADING UPSTREAM OF WALLS 8A AND 9B). REMAINING DISTURBED AREAS WITHIN LOD ARE TO BE STABILIZED WITH SEED AND MULCH.
- 2 DAYS 9. 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 10. CONDUCT FINAL "AS-BUILT" SURVEY OF RETAINING WALLS AND SUBMIT "AS-BUILT" PLANS TO THE DEPARTMENT OF PUBLIC WORKS, STORMWATER MANAGEMENT DIVISION WITHIN 30 DAYS OF COMPLETION OF CONSTRUCTION.

SEQUENCE OF CONSTRUCTION-ALTERNATE STAGE 1:

- 1 DAY 1. PLACE DIVERSION PER DETAIL 1.4 AS SHOWN ON THE PLAN.
- 60 DAYS 2. CONSTRUCT RETAINING WALLS 9A AND 9B AND PORTIONS OF GEOCELL, CHANNEL RIPRAP, AND IMBRICATED RIPRAP WALL 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.
- 1 DAY 3. REMOVE DIVERSION AND STABILIZE ANY AREAS DISTURBED BY THIS PROCESS. LEAVE UPSTREAM SANDBAG DAM IN PLACE AND PROCEED TO STAGE 2.

LEGEND

- 430 --- EX. CONTOUR
- 430 --- PROPOSED CONTOURS
- SAN --- EX. STORM DRAIN
- S --- EX. SANITARY SEWER
- W --- EX. WATER LINE
- C --- EX. GAS LINE
- E --- EX. OVERHEAD ELECTRIC
- W --- EX. WOODS LINE
- EX. TREE
- --- PROPERTY LINE
- LOD --- EDGE OF WATER
- LOD --- LIMIT OF DISTURBANCE
- --- STABILIZED CONSTRUCTION ENTRANCE
- OCF --- ORANGE CONSTRUCTION FENCE
- SF --- SILT FENCE
- ⊠ PST PORTABLE SEDIMENT TANK
- ⊙ P PUMP
- --- SANDBAG DAM
- --- PUMP HOSE
- --- CLASS II RIPRAP
- C HYDROLOGIC SOIL GROUP
- --- STEEP SLOPES
- --- GEOCELL OR PERMANENT SOIL STABILIZATION MATTING FOR SLOPE
- ⊠ 36" FLEXIBLE PIPE

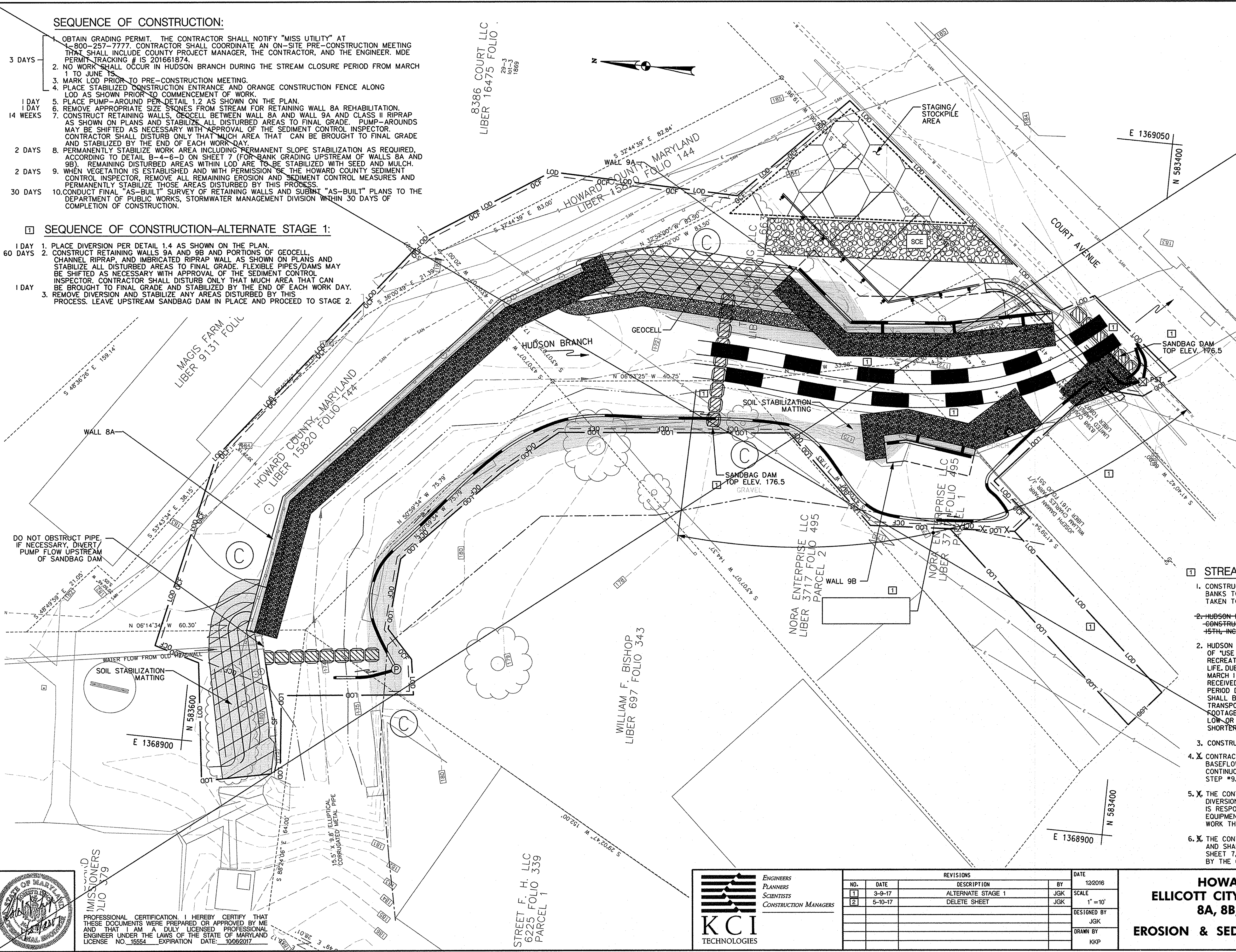
SOILS DATA TABLE

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

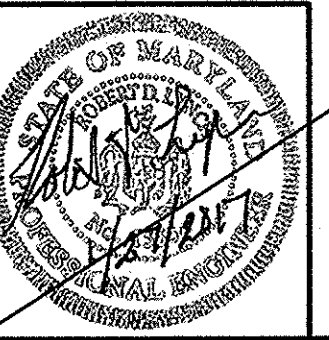
NOTE: SOIL ERODIBILITY FACTOR OF 0.37 APPLIES THROUGHOUT THE LOD.

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 IS A USE I WATERWAY. THEREFORE, IN-STREAM CONSTRUCTION SHALL NOT OCCUR BETWEEN MARCH 1ST AND JUNE 15TH, INCLUSIVE OF ANY YEAR.
3. 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.
4. CONSTRUCTOR SHALL SIZE PUMP(S) FOR 2X BASEFLOW DISCHARGE. BASEFLOW IS ESTIMATED TO BE 7 CFS. PUMP(S) SHALL RUN CONTINUOUSLY (24 HRS/DAY) THROUGH SEQUENCE OF CONSTRUCTION STEP #9. PST IS 72-INCH DIAMETER.
5. 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.
6. THE CONTRACTOR SHALL CLOSELY MONITOR NWS WEATHER FORECASTS AND SHALL TEMPORARILY STABILIZE THE CHANNEL PER DETAIL 1.6 ON SHEET 7, SHOULD FLOW OVERTOP THE SANDBAG DAM, OR AS DIRECTED BY THE CID INSPECTOR.



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KCI TECHNOLOGIES
 ENGINEERS
 PLANNERS
 SCIENTISTS
 CONSTRUCTION MANAGERS

REVISIONS		DATE
NO.	DATE	DESCRIPTION
1	3-9-17	ALTERNATE STAGE 1
2	5-10-17	DELETE SHEET

HOWARD COUNTY
ELICOTT CITY RETAINING WALLS
8A, 8B, 9A, AND 9B
EROSION & SEDIMENT CONTROL PLAN

DRAWING NO. SHEET 4 OF 22
 KCI JOB NUMBER 1713331496

SEQUENCE OF CONSTRUCTION - STAGE 2:

- 1 DAY 1. PLACE STAGE 2 DIVERSION PER DETAIL 1.4 AS SHOWN ON THE PLAN.
- 60 DAYS 2. CONSTRUCT RETAINING WALLS 9A AND 9B AND STAGE 2 PORTIONS OF GEOCELL, CHANNEL RIPRAP, AND IMBRICATED RIPRAP WALL 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.
- 1 DAY 3. REMOVE STAGE 2 DIVERSION AND STABILIZE ANY AREAS DISTURBED BY THIS PROCESS. LEAVE UPSTREAM SANDBAG DAM IN PLACE AND PROCEED TO STAGE 3 ON THIS SHEET.

SEQUENCE OF CONSTRUCTION - STAGE 3:

- 1 DAY 1. PLACE STAGE 3 DIVERSION PER DETAIL 1.4 AS SHOWN ON THE PLAN.
- 30 DAYS 2. CONSTRUCT REMAINING SECTION OF GEOCELL AND PORTIONS OF RETAINING WALL 8A, CHANNEL RIPRAP, AND IMBRICATED RIPRAP WALL THAT ARE WITHIN STAGE 3 LIMITS, 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.
- 1 DAY 3. REMOVE STAGE 3 DIVERSION AND STABILIZE ANY AREAS DISTURBED BY THIS PROCESS. LEAVE UPSTREAM SANDBAG DAM IN PLACE AND PROCEED TO STAGE 4 ON THIS SHEET.

LEGEND

- 430 --- EX. CONTOUR
- 430 --- 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
- STABILIZED CONSTRUCTION ENTRANCE
- OCF --- ORANGE CONSTRUCTION FENCE
- SANDBAG DAM
- 36" FLEXIBLE PIPE
- CLASS II RIPRAP
- HYDROLOGIC SOIL GROUP
- STEEP SLOPES
- GEOCELL OR PERMANENT SOIL STABILIZATION MATTING FOR SLOPE

SOILS DATA TABLE

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

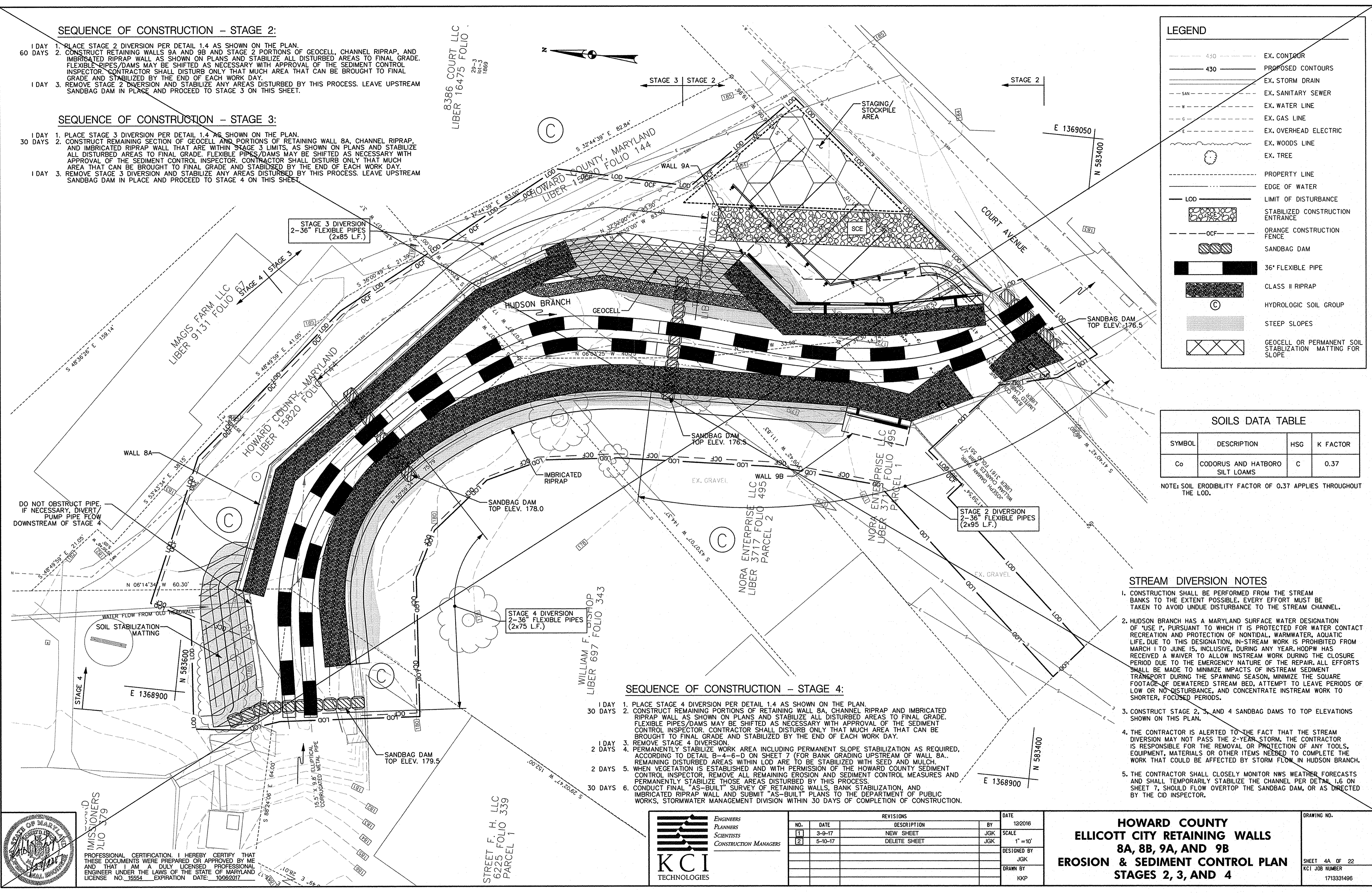
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STREAM DIVERSION NOTES

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 1" 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 STAGE 2, 3, AND 4 SANDBAG DAMS TO TOP ELEVATIONS 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 7, SHOULD FLOW OVERTOP THE SANDBAG DAM, OR AS DIRECTED BY THE CID INSPECTOR.

SEQUENCE OF CONSTRUCTION - STAGE 4:

- 1 DAY 1. PLACE STAGE 4 DIVERSION PER DETAIL 1.4 AS SHOWN ON THE PLAN.
- 30 DAYS 2. CONSTRUCT REMAINING PORTIONS OF RETAINING WALL 8A, CHANNEL RIPRAP AND IMBRICATED RIPRAP WALL 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.
- 1 DAY 3. REMOVE STAGE 4 DIVERSION.
- 2 DAYS 4. PERMANENTLY STABILIZE WORK AREA INCLUDING PERMANENT SLOPE STABILIZATION AS REQUIRED, ACCORDING TO DETAIL B-4-6-D ON SHEET 7 (FOR BANK GRADING UPSTREAM OF WALL 8A.. REMAINING DISTURBED AREAS WITHIN LOD ARE TO BE STABILIZED WITH SEED AND MULCH.
- 2 DAYS 5. 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 6. 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.



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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: 10/08/2017

KCI TECHNOLOGIES
 ENGINEERS
 PLANNERS
 SCIENTISTS
 CONSTRUCTION MANAGERS

REVISIONS		DATE
NO.	DATE	DESCRIPTION
1	3-9-17	NEW SHEET
2	5-10-17	DELETE SHEET

HOWARD COUNTY
ELlicOTT CITY RETAINING WALLS
8A, 8B, 9A, AND 9B
EROSION & SEDIMENT CONTROL PLAN
STAGES 2, 3, AND 4

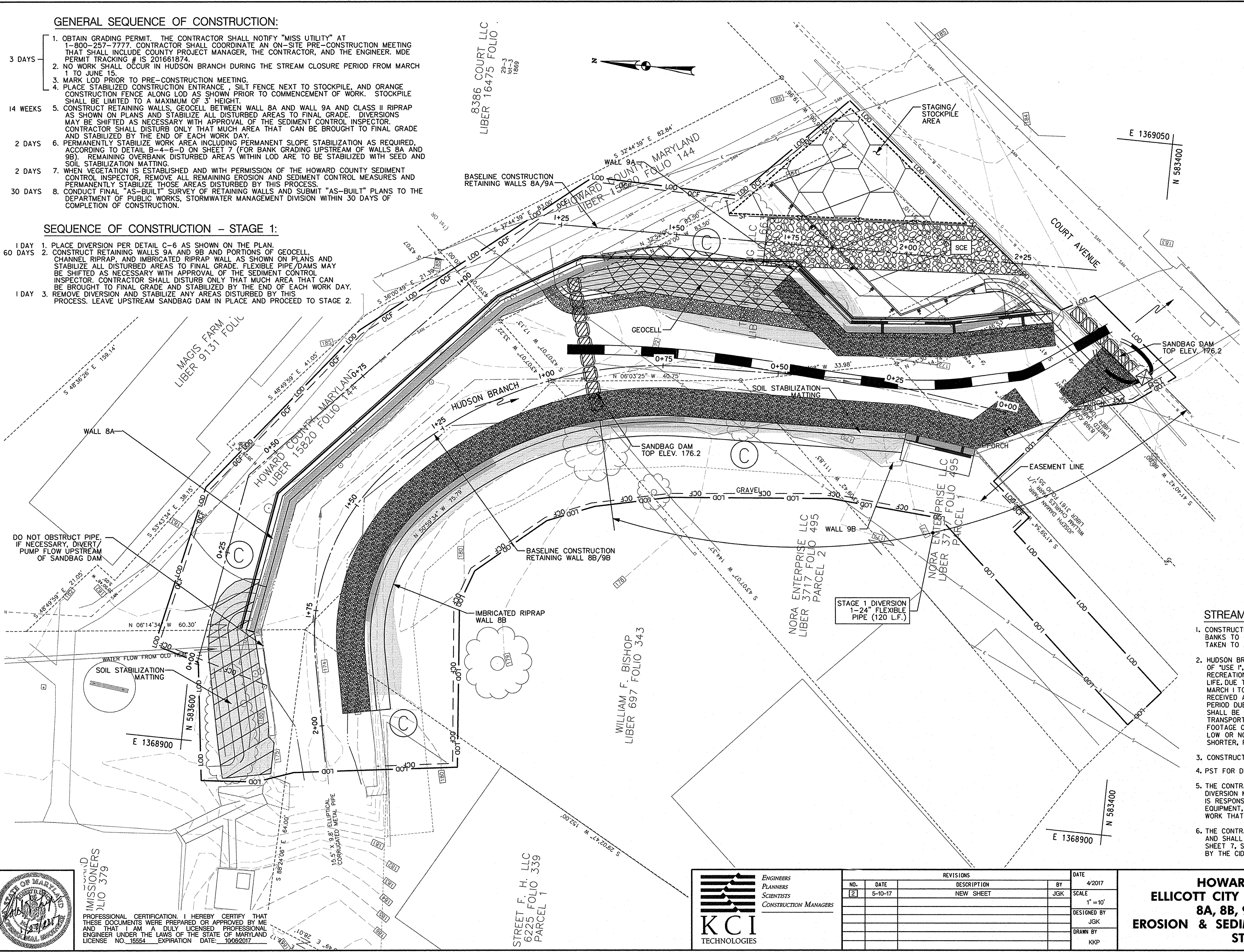
SHEET 4A OF 22
 KCI JOB NUMBER 1713331496

GENERAL SEQUENCE OF CONSTRUCTION:

- 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 201661874.
- 2. NO WORK SHALL OCCUR IN HUDSON BRANCH DURING THE STREAM CLOSURE PERIOD FROM MARCH 1 TO JUNE 15.
- 3. MARK LOD PRIOR TO PRE-CONSTRUCTION MEETING.
- 4. PLACE STABILIZED CONSTRUCTION ENTRANCE, SILT FENCE NEXT TO STOCKPILE, AND ORANGE CONSTRUCTION FENCE ALONG LOD AS SHOWN PRIOR TO COMMENCEMENT OF WORK. STOCKPILE SHALL BE LIMITED TO A MAXIMUM OF 3' HEIGHT.
- 14 WEEKS 5. CONSTRUCT RETAINING WALLS, GEOCELL BETWEEN WALL 8A AND WALL 9A AND CLASS II RIPRAP AS SHOWN ON PLANS AND STABILIZE ALL DISTURBED AREAS TO FINAL GRADE. DIVERSIONS 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. PERMANENTLY STABILIZE WORK AREA INCLUDING PERMANENT SLOPE STABILIZATION AS REQUIRED, ACCORDING TO DETAIL B-4-6-D ON SHEET 7 (FOR BANK GRADING UPSTREAM OF WALLS 8A AND 9B). REMAINING OVERBANK DISTURBED AREAS WITHIN LOD ARE TO BE STABILIZED WITH SEED AND SOIL STABILIZATION MATTING.
- 2 DAYS 7. 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 8. CONDUCT FINAL "AS-BUILT" SURVEY OF RETAINING WALLS AND SUBMIT "AS-BUILT" PLANS TO THE DEPARTMENT OF PUBLIC WORKS, STORMWATER MANAGEMENT DIVISION WITHIN 30 DAYS OF COMPLETION OF CONSTRUCTION.

SEQUENCE OF CONSTRUCTION - STAGE 1:

- 1 DAY 1. PLACE DIVERSION PER DETAIL C-6 AS SHOWN ON THE PLAN.
- 60 DAYS 2. CONSTRUCT RETAINING WALLS 9A AND 9B AND PORTIONS OF GEOCELL, CHANNEL RIPRAP, AND IMBRICATED RIPRAP WALL AS SHOWN ON PLANS AND STABILIZE ALL DISTURBED AREAS TO FINAL GRADE. FLEXIBLE PIPE/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.
- 1 DAY 3. REMOVE DIVERSION AND STABILIZE ANY AREAS DISTURBED BY THIS PROCESS. LEAVE UPSTREAM SANDBAG DAM IN PLACE AND PROCEED TO STAGE 2.



LEGEND

- 430 --- EX. CONTOUR
- 430 --- PROPOSED CONTOURS
- SAN --- EX. STORM DRAIN
- W --- EX. SANITARY SEWER
- W --- EX. WATER LINE
- G --- EX. GAS LINE
- E --- EX. OVERHEAD ELECTRIC
- W --- EX. WOODS LINE
- T --- EX. TREE
- --- PROPERTY LINE
- LOD --- EDGE OF WATER
- LOD --- LIMIT OF DISTURBANCE
- OCF --- STABILIZED CONSTRUCTION ENTRANCE
- OCF --- ORANGE CONSTRUCTION FENCE
- SF --- SILT FENCE
- PST --- PORTABLE SEDIMENT TANK
- P --- PUMP
- --- SANDBAG DAM
- --- PUMP HOSE
- --- CLASS II RIPRAP
- C --- HYDROLOGIC SOIL GROUP
- --- STEEP SLOPES
- --- GEOCELL
- --- PERMANENT SOIL STABILIZATION MATTING FOR SLOPE
- --- 24" FLEXIBLE PIPE

SOILS DATA TABLE

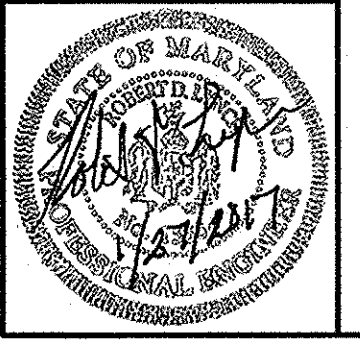
SYMBOL	DESCRIPTION	HSG	K FACTOR
C ₆	CODORUS AND HATBORO SILT LOAMS	C	0.37

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 SPANNING 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 DAMS TO TOP ELEVATIONS SHOWN ON THIS PLAN.
4. PST FOR DEWATERING IS 72-INCH DIAMETER.
5. 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.
6. THE CONTRACTOR SHALL CLOSELY MONITOR NWS WEATHER FORECASTS AND SHALL TEMPORARILY STABILIZE THE CHANNEL PER DETAIL I.6 ON SHEET 7, SHOULD FLOW OVERTOP THE SANDBAG DAM, OR AS DIRECTED BY THE CID INSPECTOR.

PLOTTED: Wednesday, April 11, 2018 AT 01:52 PM
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KCI TECHNOLOGIES
 ENGINEERS
 PLANNERS
 SCIENTISTS
 CONSTRUCTION MANAGERS

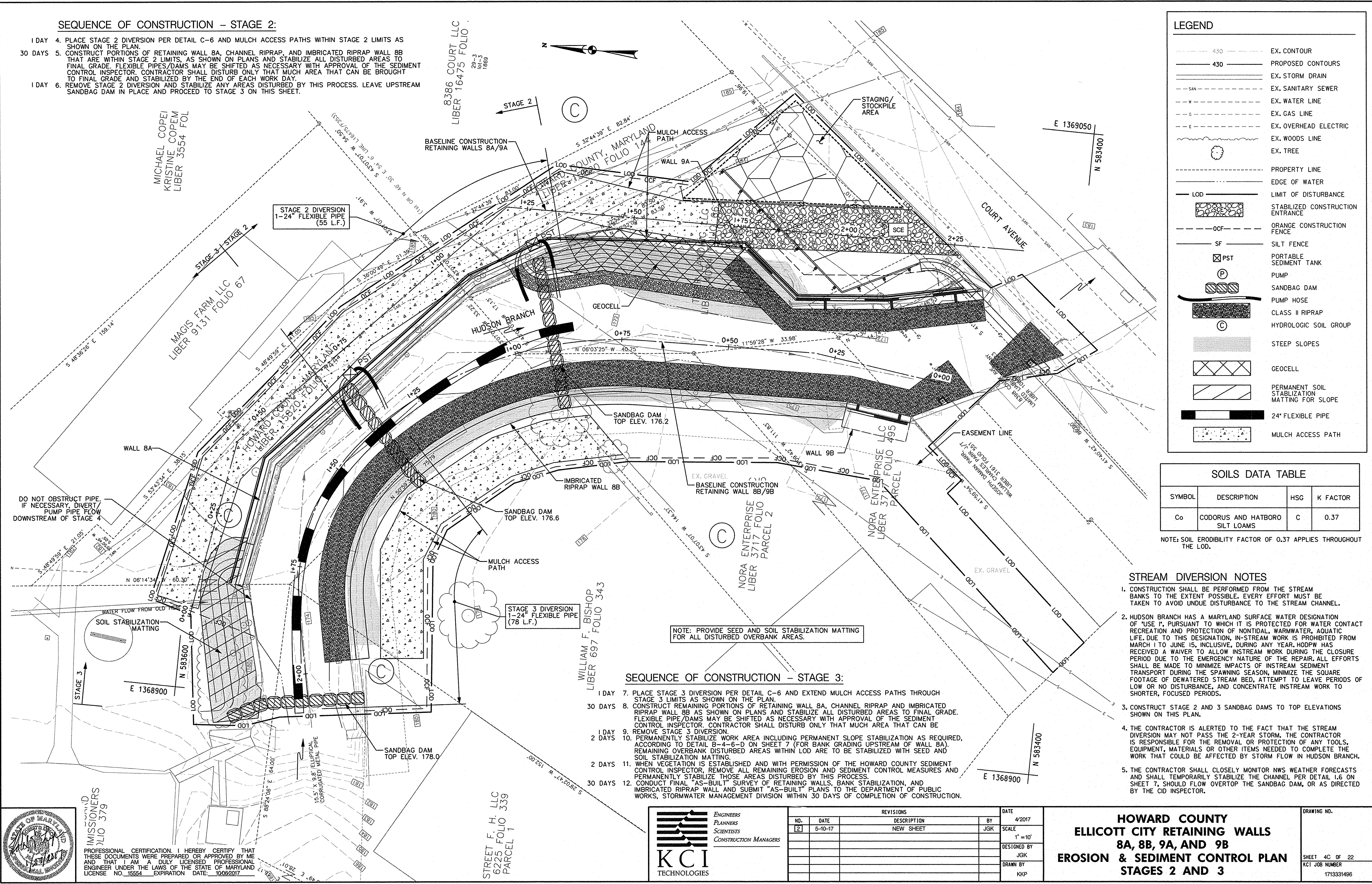
REVISIONS		DATE
NO.	DESCRIPTION	DATE
2	NEW SHEET	5-10-17

HOWARD COUNTY
ELLCOTT CITY RETAINING WALLS
8A, 8B, 9A, AND 9B
EROSION & SEDIMENT CONTROL PLAN
STAGE 1

SHEET 4B OF 22
 KCI JOB NUMBER 1713331496

SEQUENCE OF CONSTRUCTION - STAGE 2:

- 1 DAY 4. PLACE STAGE 2 DIVERSION PER DETAIL C-6 AND MULCH ACCESS PATHS WITHIN STAGE 2 LIMITS AS SHOWN ON THE PLAN.
- 30 DAYS 5. CONSTRUCT PORTIONS OF RETAINING WALL 8A, CHANNEL RIPRAP, AND IMBRICATED RIPRAP WALL 8B THAT ARE WITHIN STAGE 2 LIMITS, 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.
- 1 DAY 6. REMOVE STAGE 2 DIVERSION AND STABILIZE ANY AREAS DISTURBED BY THIS PROCESS. LEAVE UPSTREAM SANDBAG DAM IN PLACE AND PROCEED TO STAGE 3 ON THIS SHEET.



LEGEND

- 430 --- EX. CONTOUR
- 430 --- PROPOSED CONTOURS
- SAN --- EX. STORM DRAIN
- W --- EX. SANITARY SEWER
- G --- EX. WATER LINE
- E --- EX. GAS LINE
- E --- EX. OVERHEAD ELECTRIC
- W --- EX. WOODS LINE
- --- EX. TREE
- --- PROPERTY LINE
- --- EDGE OF WATER
- --- LIMIT OF DISTURBANCE
- --- STABILIZED CONSTRUCTION ENTRANCE
- --- OCF --- ORANGE CONSTRUCTION FENCE
- --- SF --- SILT FENCE
- ⊠ PST --- PORTABLE SEDIMENT TANK
- ⊙ --- PUMP
- --- SANDBAG DAM
- --- PUMP HOSE
- --- CLASS II RIPRAP
- ⊙ --- HYDROLOGIC SOIL GROUP
- --- STEEP SLOPES
- --- GEOCELL
- --- PERMANENT SOIL STABILIZATION MATTING FOR SLOPE
- --- 24" FLEXIBLE PIPE
- --- MULCH ACCESS PATH

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

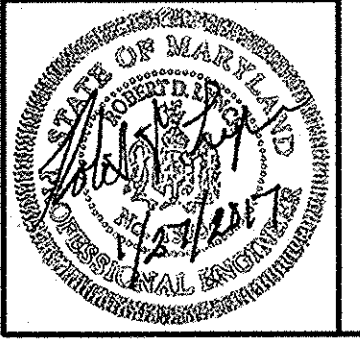
1. CONSTRUCTION SHALL BE PERFORMED FROM THE STREAM BANKS TO THE EXTENT POSSIBLE. EVERY EFFORT MUST BE TAKEN TO AVOID UNDUE DISTURBANCE TO THE STREAM CHANNEL.
2. HUDSON BRANCH HAS A MARYLAND SURFACE WATER DESIGNATION OF "USE 1", PURSUANT TO WHICH IT IS PROTECTED FOR WATER CONTACT RECREATION AND PROTECTION 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 STAGE 2 AND 3 SANDBAG DAMS TO TOP ELEVATIONS 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 I.6 ON SHEET 7, SHOULD FLOW OVERTOP THE SANDBAG DAM, OR AS DIRECTED BY THE CID INSPECTOR.

SEQUENCE OF CONSTRUCTION - STAGE 3:

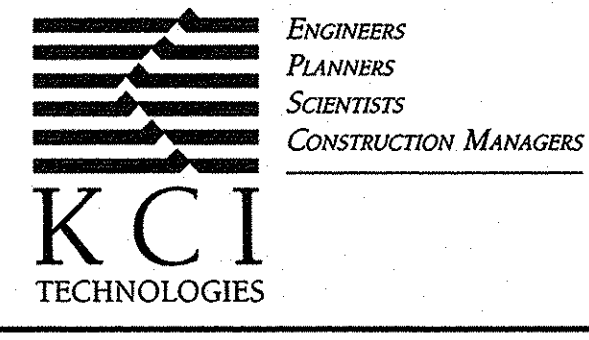
- 1 DAY 7. PLACE STAGE 3 DIVERSION PER DETAIL C-6 AND EXTEND MULCH ACCESS PATHS THROUGH STAGE 3 LIMITS AS SHOWN ON THE PLAN.
- 30 DAYS 8. CONSTRUCT REMAINING PORTIONS OF RETAINING WALL 8A, CHANNEL RIPRAP AND IMBRICATED RIPRAP WALL 8B AS SHOWN ON PLANS AND STABILIZE ALL DISTURBED AREAS TO FINAL GRADE. FLEXIBLE PIPE/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.
- 1 DAY 9. REMOVE STAGE 3 DIVERSION.
- 2 DAYS 10. PERMANENTLY STABILIZE WORK AREA INCLUDING PERMANENT SLOPE STABILIZATION AS REQUIRED, ACCORDING TO DETAIL B-4-6-D ON SHEET 7 (FOR BANK GRADING UPSTREAM OF WALL 8A). REMAINING OVERBANK DISTURBED AREAS WITHIN LOD ARE TO BE STABILIZED WITH SEED AND SOIL STABILIZATION MATTING.
- 2 DAYS 11. 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 12. 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.

NOTE: PROVIDE SEED AND SOIL STABILIZATION MATTING FOR ALL DISTURBED OVERBANK AREAS.

PLOTTED: Wednesday, April 11, 2018 AT 01:52 PM
 BY: daniel.dillon@kci.com
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REVISIONS		DATE
NO.	DATE	DESCRIPTION
2	5-10-17	NEW SHEET

HOWARD COUNTY
ELLCOTT CITY RETAINING WALLS
8A, 8B, 9A, AND 9B
EROSION & SEDIMENT CONTROL PLAN
STAGES 2 AND 3

SHEET 4C OF 22
 KCI JOB NUMBER 1713331496

**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 3 horizontal to 1 vertical (3:1); and seven (7) calendar days as to all other disturbed areas on the project site except for those areas under active grading.
- All disturbed areas must be stabilized within the time period specified above in accordance with the 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL for topsoil (Sec. B-4-2), permanent seeding (Sec. B-4-5), temporary seeding (Sec. B-4-4) and mulching (Sec. B-4-3). Temporary stabilization with mulch alone can only be applied between the fall and spring seeding dates if the ground is frozen. Incremental stabilization (Sec. B-4-1) specifications shall be enforced in areas with >15' of cut and/or fill. Stockpiles (Sec. B-4-8) 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:	0.34	Acres
Area Disturbed:	0.34	Acres
Area to be roofed or paved:	0.0	Acres
Area to be vegetatively stabilized:	0.22	Acres
Total Cut:	408	Cu. Yds.
Total Fill:	245	Cu. Yds.

 Offsite waste/borrow area location: SITE WITH ACTIVE GRADING PERMIT
- 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 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).

- 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 allowed 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 CID, 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-contour, and be imbricated at 25' minimum intervals, with lower ends curled uphill by 2' in elevation.
- Stream channels must not be disturbed during the following restricted time periods (inclusive):
 - Use I and IP March 1 - June 15
 - Use III and IIIP 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.

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

- Incremental Stabilization - Cut Slopes
 - 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.
 - Construction sequence example (Refer to Figure B.1):
 - Construct and stabilize all temporary swales or dikes that will be used to convey runoff around the excavation.
 - Perform Phase 1 excavation, prepare seedbed, and stabilize.
 - Perform Phase 2 excavation, prepare seedbed, and stabilize. Overseed Phase 1 areas as necessary.
 - 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.

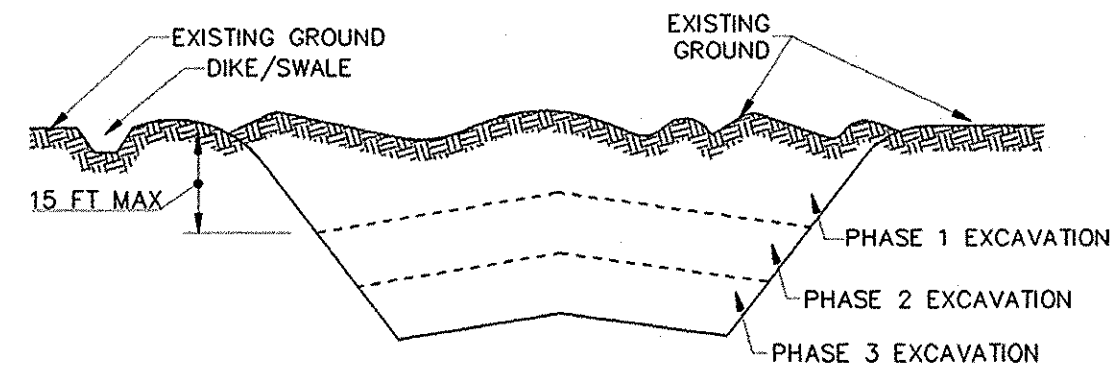


Figure B.1: Incremental Stabilization - Cut

B.10

- Incremental Stabilization - Fill Slopes
 - 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.
 - Stabilize slopes immediately when the vertical height of a lift reaches 15 feet, or when the grading operation ceases as prescribed in the plans.
 - 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.
 - Construction sequence example (Refer to Figure B.2):
 - 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.
 - 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.
 - Place Phase 1 fill, prepare seedbed, and stabilize.
 - Place Phase 2 fill, prepare seedbed, and stabilize.
 - 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.

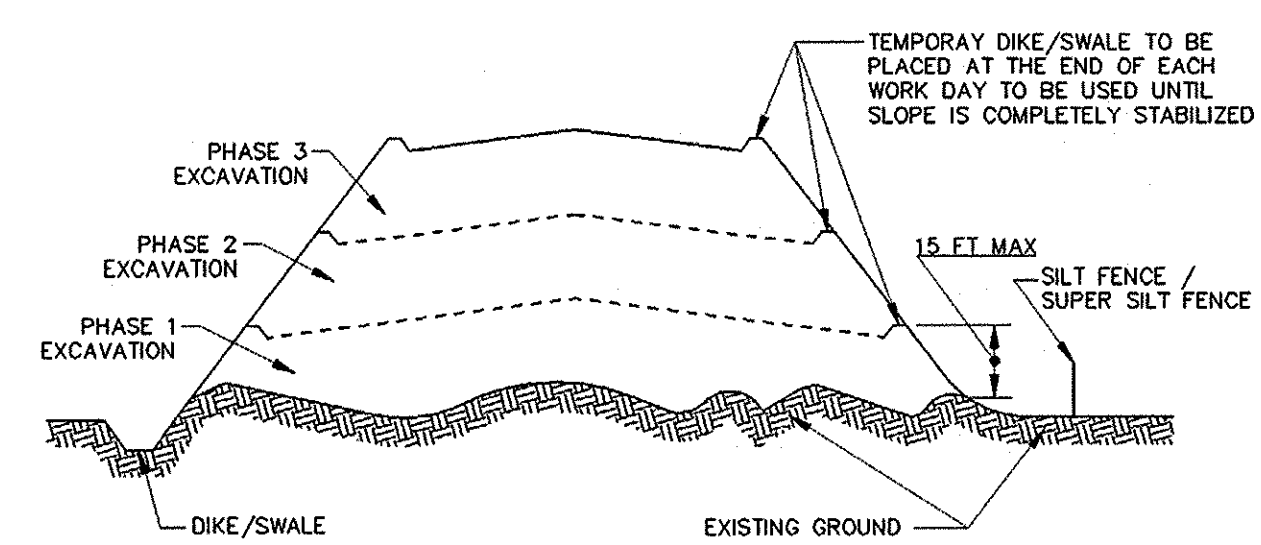


Figure B.2: Incremental Stabilization - Fill

TOTAL DISTURBED AREA: 0.33 AC.

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

- Soil Preparation
 - Temporary Stabilization
 - 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.
 - Apply fertilizer and lime as prescribed on the plans.
 - Incorporate lime and fertilizer into the top 3 to 5 inches of soil by disking or other suitable means.
 - Permanent Stabilization
 - A soil test is required for any earth disturbance of 5 acres or more. The minimum soil conditions required for permanent vegetative establishment are:
 - Soil pH between 6.0 and 7.0.
 - Soluble salts less than 500 parts per million (ppm).
 - 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.
 - Soil contains 1.5 percent minimum organic matter by weight.
 - Soil contains sufficient pore space to permit adequate root penetration.
 - Application of amendments or topsoil is required if on-site soils do not meet the above conditions.
 - 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.
 - Apply soil amendments as specified on the approved plan or as indicated by the results of a soil test.
 - 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.
- Topsailing
 - 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.
 - 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.
 - Topsailing is limited to areas having 2:1 or flatter slopes where:
 - The texture of the exposed subsoil/parent material is not adequate to produce vegetative growth.
 - 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.
 - The original soil to be vegetated contains material toxic to plant growth.
 - The soil is so acidic that treatment with limestone is not feasible.
 - Areas having slopes steeper than 2:1 require special consideration and design.
 - Topsoil Specifications: Soil to be used as topsoil must meet the following criteria:
 - 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 1 1/2 inches in diameter.
 - 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.
 - 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.
 - Topsoil Application
 - Erosion and sediment control practices must be maintained when applying topsoil.
 - 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 topsailing or other operations must be corrected in order to prevent the formation of depressions or water pockets.
 - 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

- Soil Amendments (Fertilizer and Lime Specifications)
 - 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.
 - 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.
 - Lime materials must be ground limestone (hydrated or burnt lime may be substituted except when hydrosedding) 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.
 - 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.
 - 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

- 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.
- For sites having soil tests performed, use and show the recommended rates by the testing agency. Soil tests are not required for Temporary Seeding.
- 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	FOXTAIL MILLET	20	5/16-7/31	1/2 INCH	2 tons/oc (90 LB/ 1000 SF)

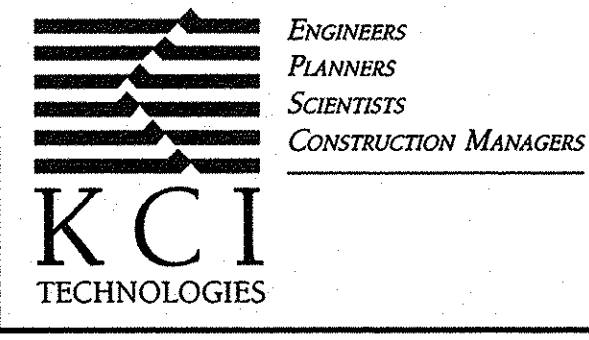
NOTES:

- 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.
- For sandy soils, plant seeds at twice the depth listed above.
- The planting dates listed are averages for each Zone and may require adjustment to reflect local conditions, especially near the boundaries of the zone.

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REVISIONS				DATE
NO.	DATE	DESCRIPTION	BY	
				12/2016
				SCALE
				NA
				DESIGNED BY
				JGK
				DRAWN BY
				KKP

**HOWARD COUNTY
ELICOTT CITY RETAINING WALLS
8A, 8B, 9A, AND 9B
EROSION & SEDIMENT CONTROL NOTES**

DRAWING NO.
SHEET 5 OF 22
KCI JOB NUMBER
1713334/96

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 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, 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; P₂O₅ (phosphorous), 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). 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 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. 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.
 - c. 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.
- 3. Anchoring**
- a. 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, Petrosol, 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 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 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: 1 1/2 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 1 1/2 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 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. This is especially true when seedlings are made late in the planting season, in abnormally dry or hot seasons, or on adverse sites.

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	10	3/1-5/15	1/4-1/2	45 LB/AC	90 lb/oc	90 lb/oc	2 tons/oc
	1 CREEPING RED FESCUE	15	5/16-6/15	1/4-1/2	(1.0 LB/	(2.0 LB/	(2.0 LB/	(90 LB/
	BUSH CLOVER	2		1/4-1/2	1000 SF)	1000 SF)	1000 SF)	1000 SF)
7	1 CREEPING RED FESCUE	60	3/1-5/15	1/4-1/2	1000 SF)	1000 SF)	1000 SF)	1000 SF)
	KENTUCKY BLUEGRASS	15	8/1-10/15	1/4-1/2				

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 3/4 inch, plus or minus 1/8 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 1/2 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.

MGWC 1.4: DIVERSION PIPE

Temporary measure for dewatering in-channel construction sites

DESCRIPTION

The work should consist of installing flow diversion pipes in combination with sandbag or stone diversions when construction activities occur within the stream channel.

EFFECTIVE USES & LIMITATIONS

Diversion pipes with an insufficient flow capacity can cause the channel diversion to fail thereby resulting in severe erosion of the disturbed channel section under construction. Therefore, in-channel construction activities should occur only during periods of low flow.

MATERIAL SPECIFICATIONS

Materials for stream diversions should meet the following requirements:

- **Riprap:** Stone should be washed and have a minimum diameter of 6 inches (15 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 temporary dewatering basins should be installed as the first order of business according to a plan approved by the WMA of local authority. Installation should proceed from upstream to downstream during low flow conditions. If necessary, silt fence or straw bales should be installed around the perimeter of the work area.

Diversion pipes with sandbag or stone barriers should be completed as follows (refer to Detail 1.4):

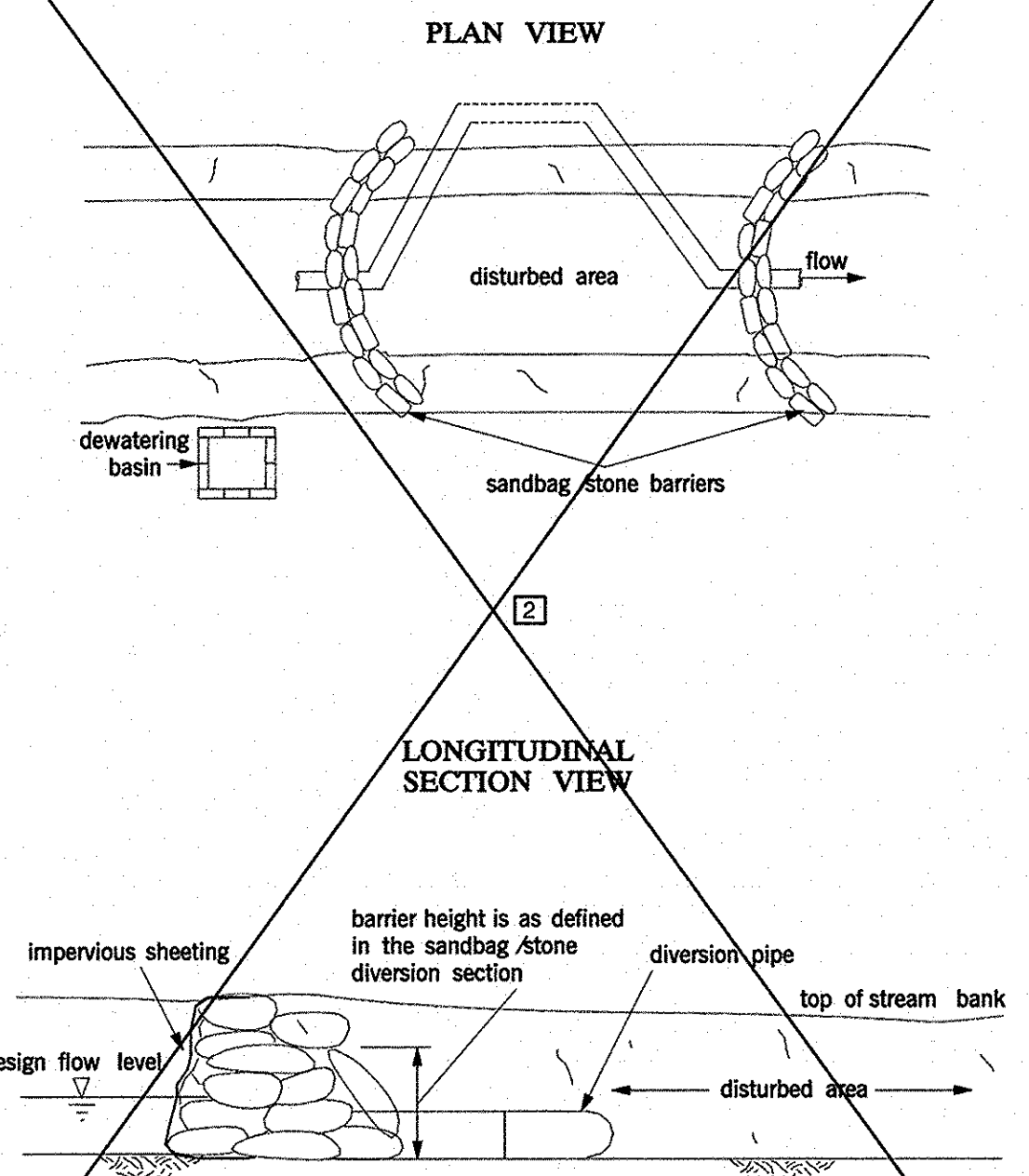
1. Sandbag/stone barriers should be sized and installed as detailed in MGWC 1.5: Sandbag/Stone Diversion. The materials should be sized to withstand baseflow velocities.
2. All excavated material should be deposited and stabilized in an approved area outside the 100-year floodplain unless otherwise authorized by the WMA.
3. Sediment-laden water from the construction area should be pumped to a dewatering basin.
4. The diversion pipe should have a minimum capacity sufficient to convey the 2-year flow for projects with a duration of two weeks or greater. For projects of shorter duration, the capacity of the pipe can be reduced accordingly.
5. If necessary, silt fence or straw bales should be installed around the perimeter of the work area.
6. Sediment control devices are to remain in place until all disturbed areas are stabilized and the inspecting authority approves their removal.

TEMPORARY INSTREAM CONSTRUCTION MEASURES

MARYLAND DEPARTMENT OF THE ENVIRONMENT
WATERWAY CONSTRUCTION GUIDELINES
REVISED NOVEMBER 2000

PAGE 1.4 - 1

**Maryland's Guidelines To Waterway Construction
DETAIL 1.4: DIVERSION PIPE**



TEMPORARY INSTREAM CONSTRUCTION MEASURES

REVISED NOVEMBER 2000
PAGE 1.4 - 2

MARYLAND DEPARTMENT OF THE ENVIRONMENT
WATER MANAGEMENT ADMINISTRATION

DRAWING NO.

**HOWARD COUNTY
ELLICOTT CITY RETAINING WALLS
8A, 8B, 9A, AND 9B
EROSION & SEDIMENT CONTROL NOTES**

SHEET 6 OF 22
KCI JOB NUMBER
1719331496

**ENGINEERS
PLANNERS
SCIENTISTS
CONSTRUCTION MANAGERS**

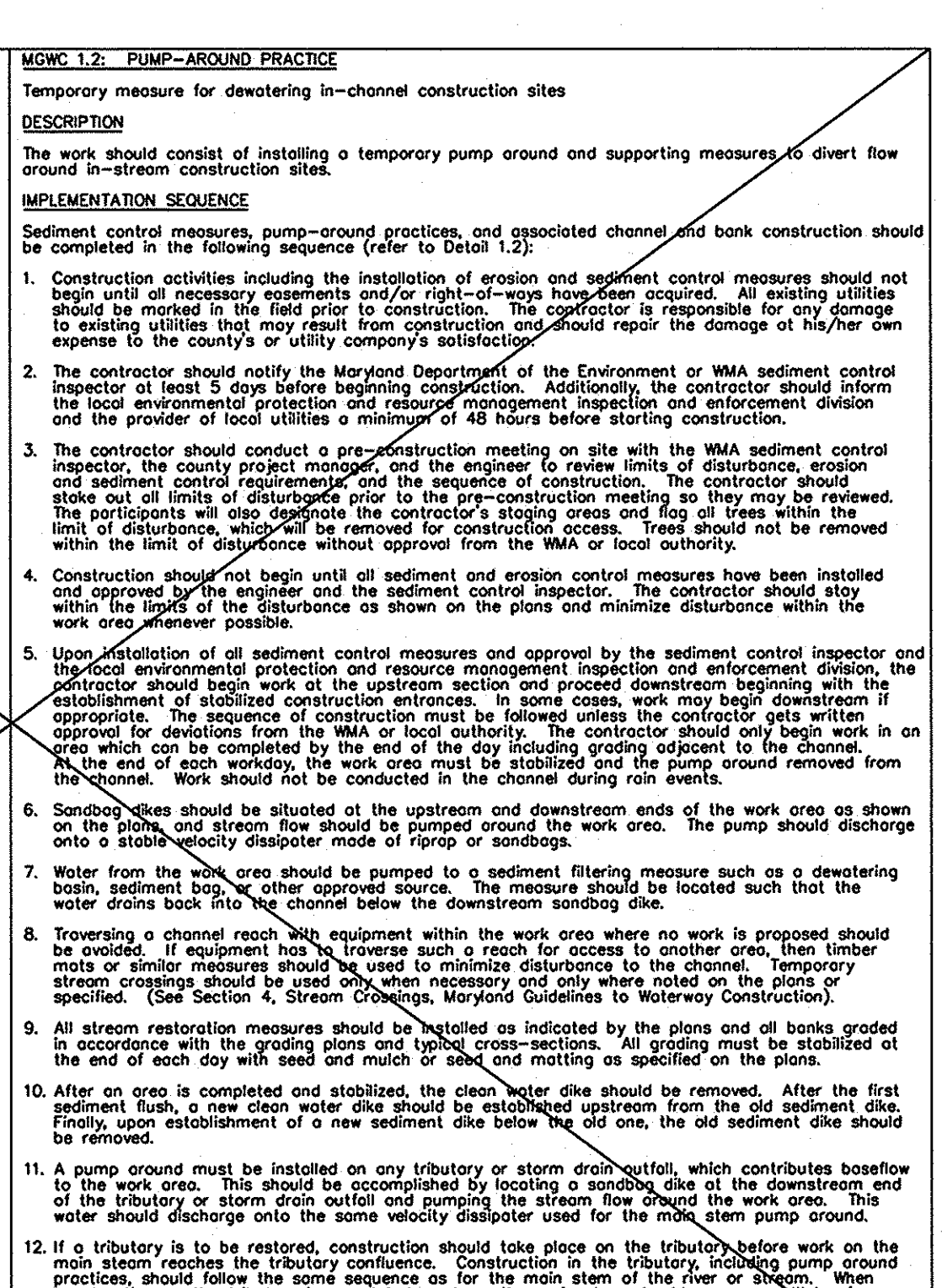
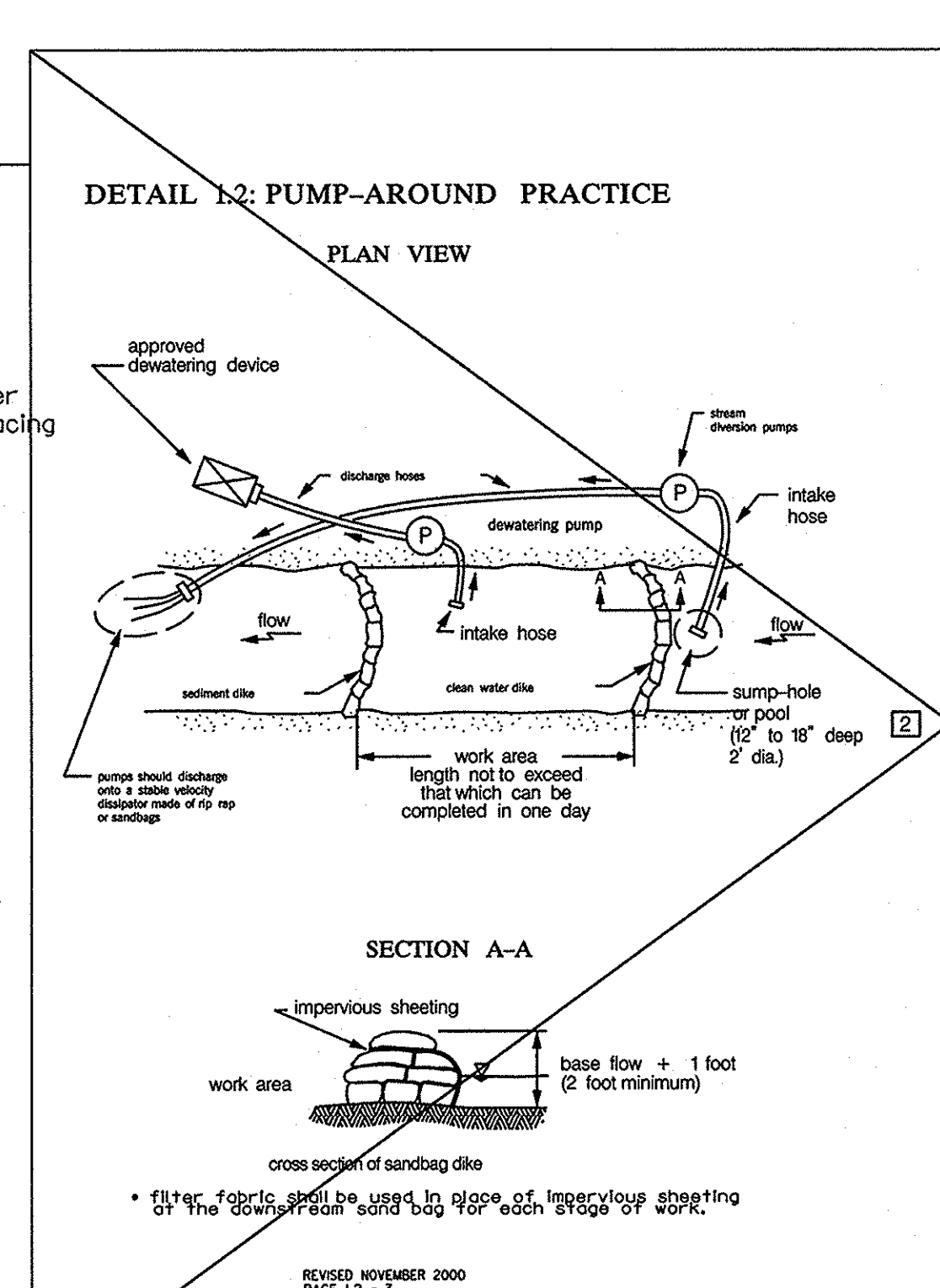
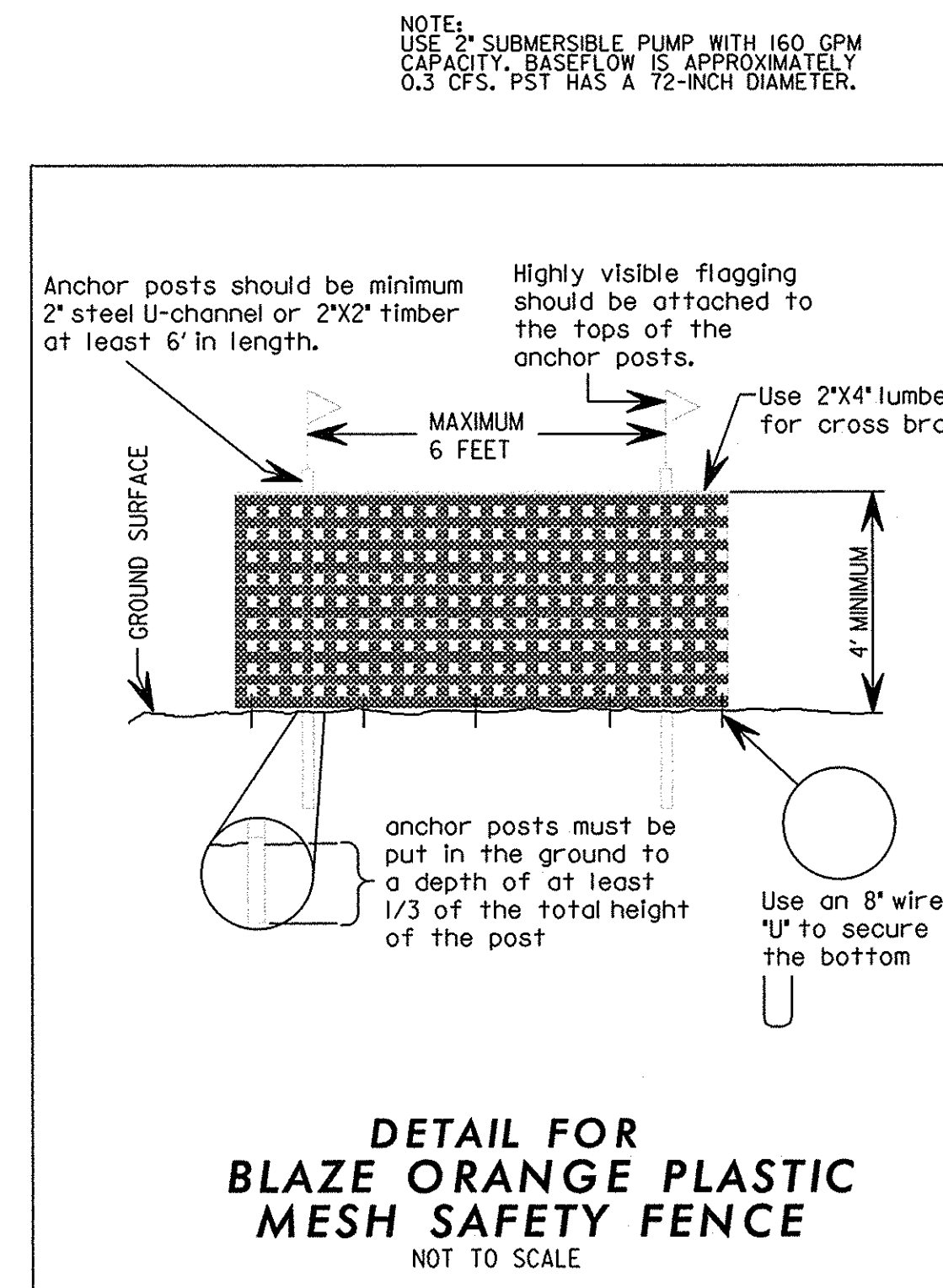
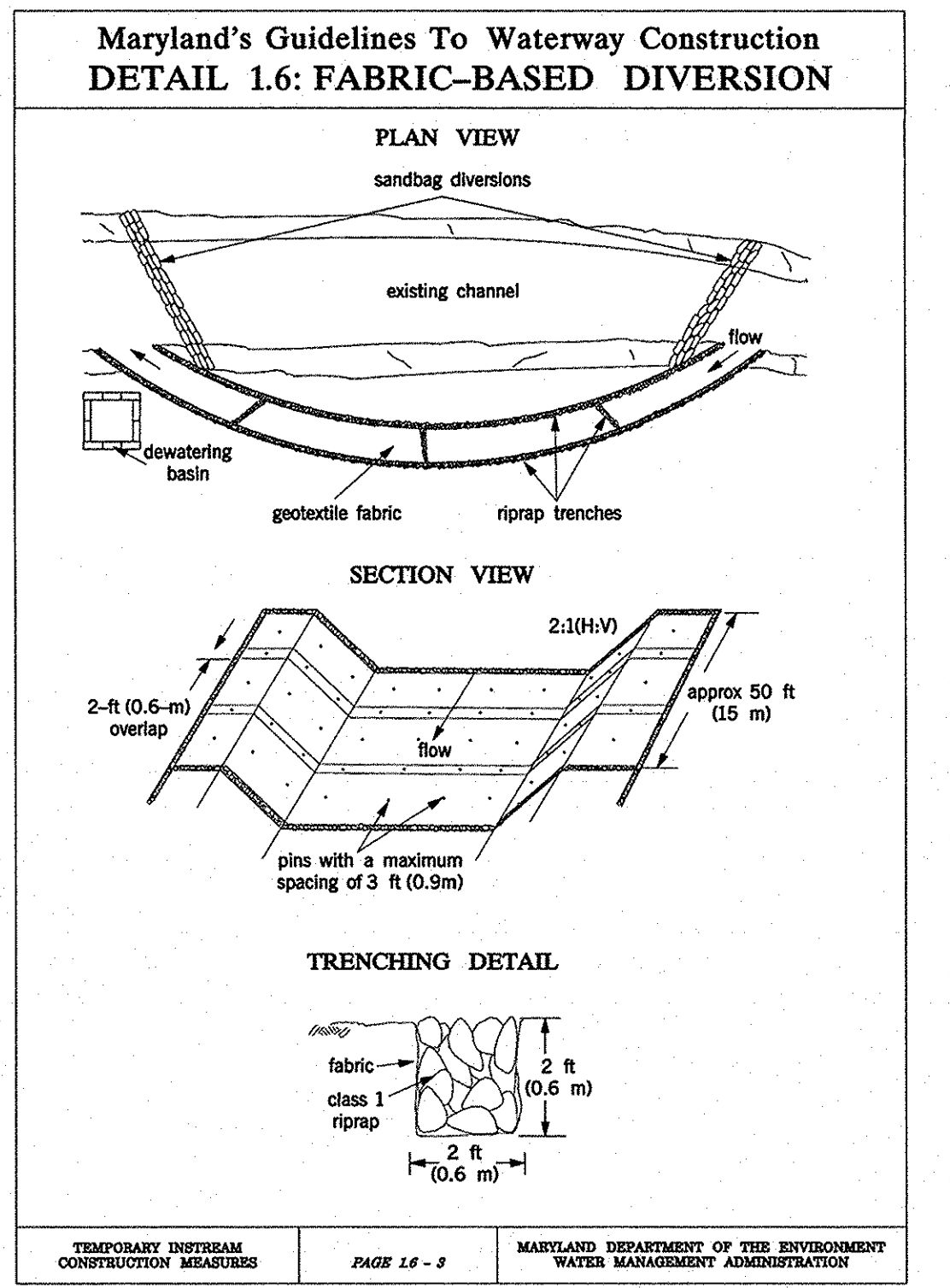
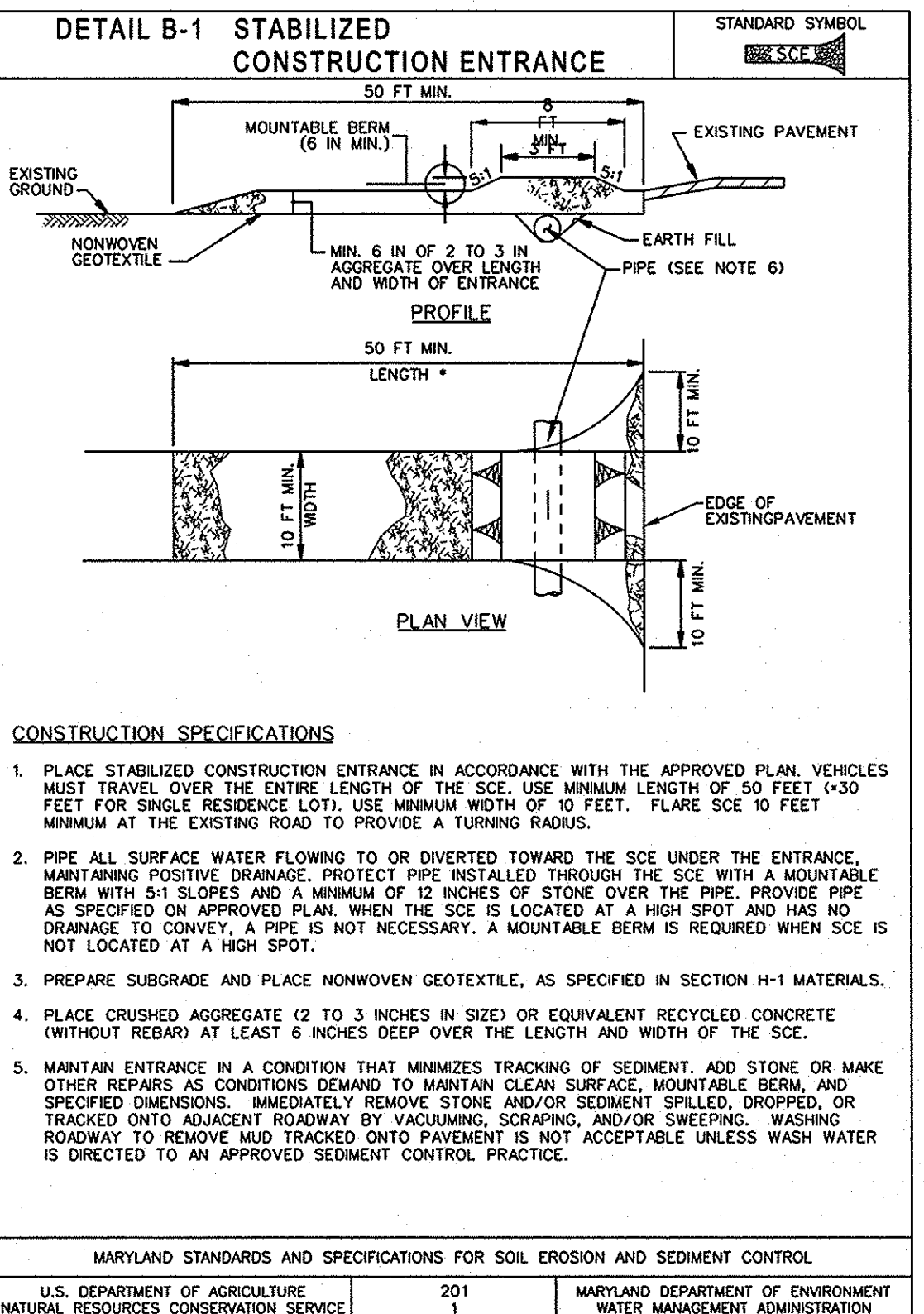
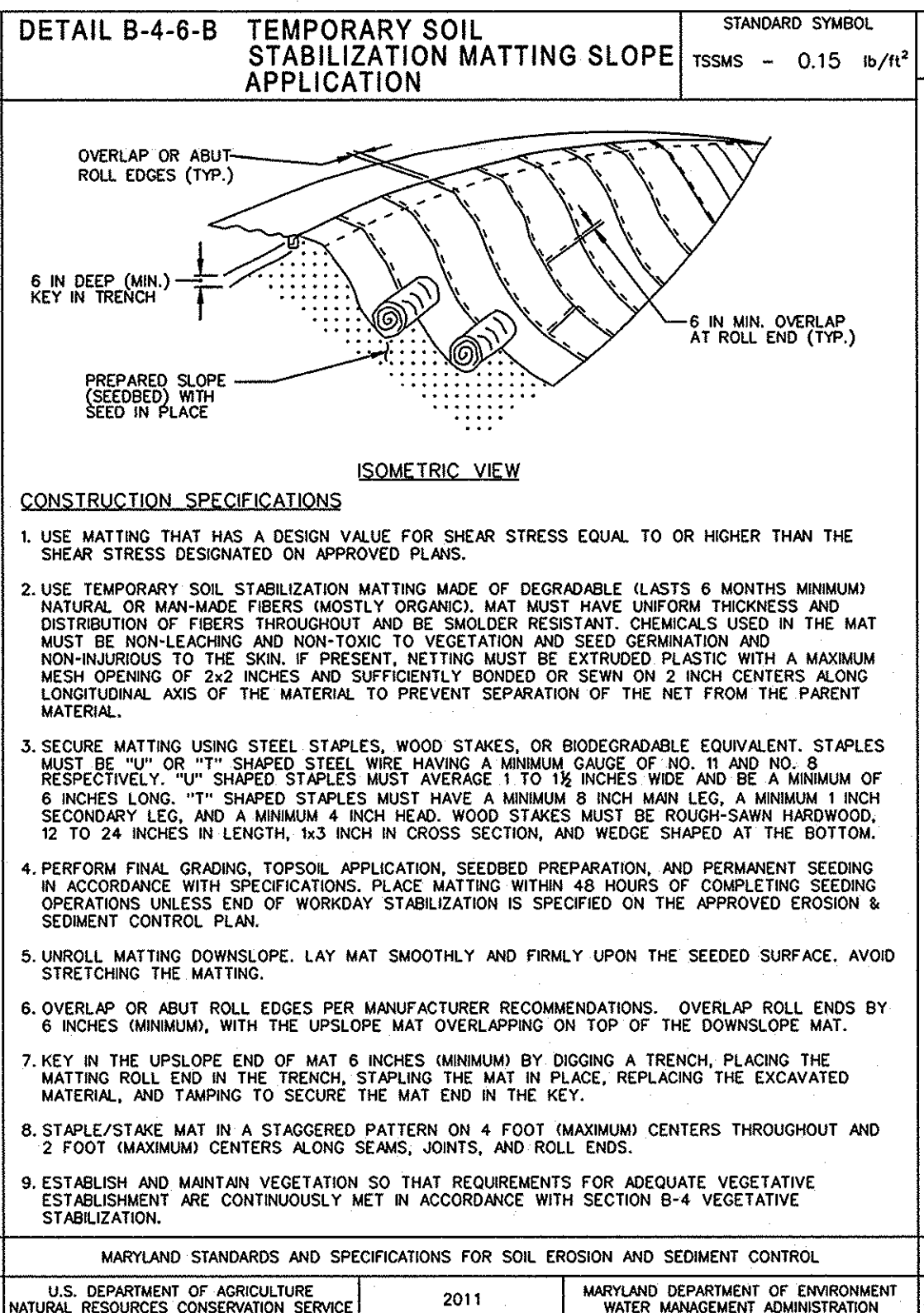
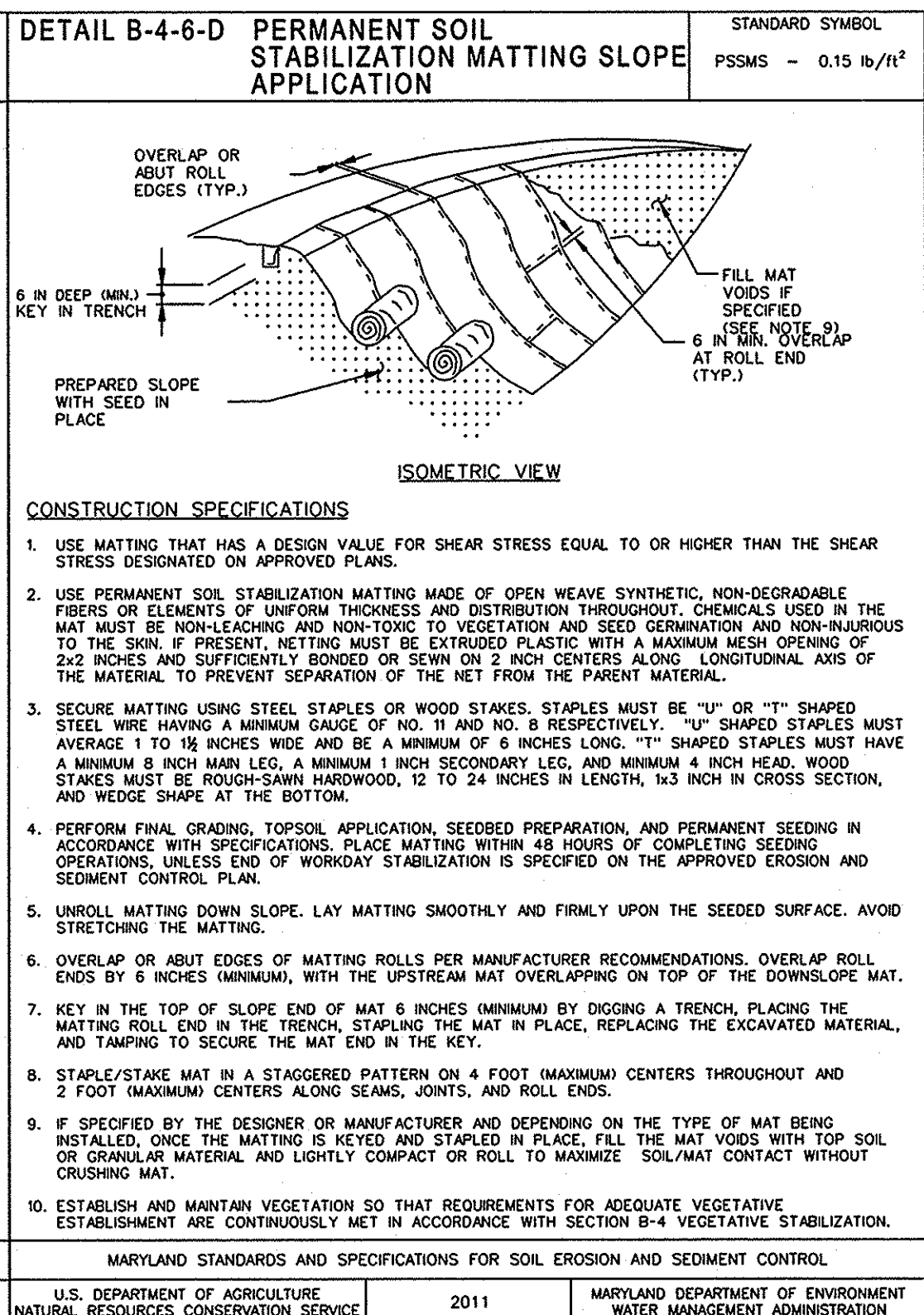
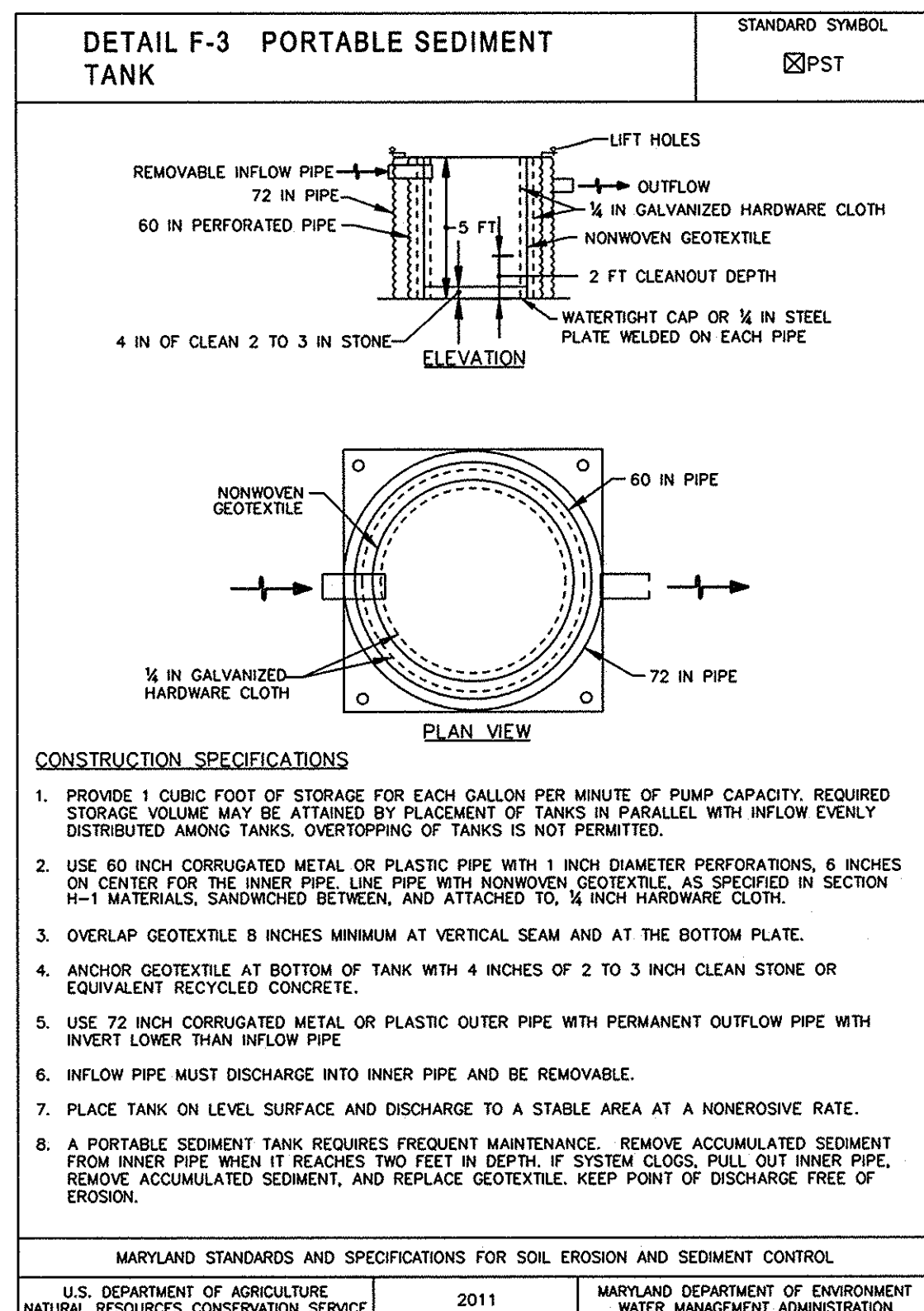
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TECHNOLOGIES**

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				DRAWN BY KKP

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BY: david.d.clayton
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ENGINEERS
PLANNERS
SCIENTISTS
CONSTRUCTION MANAGERS

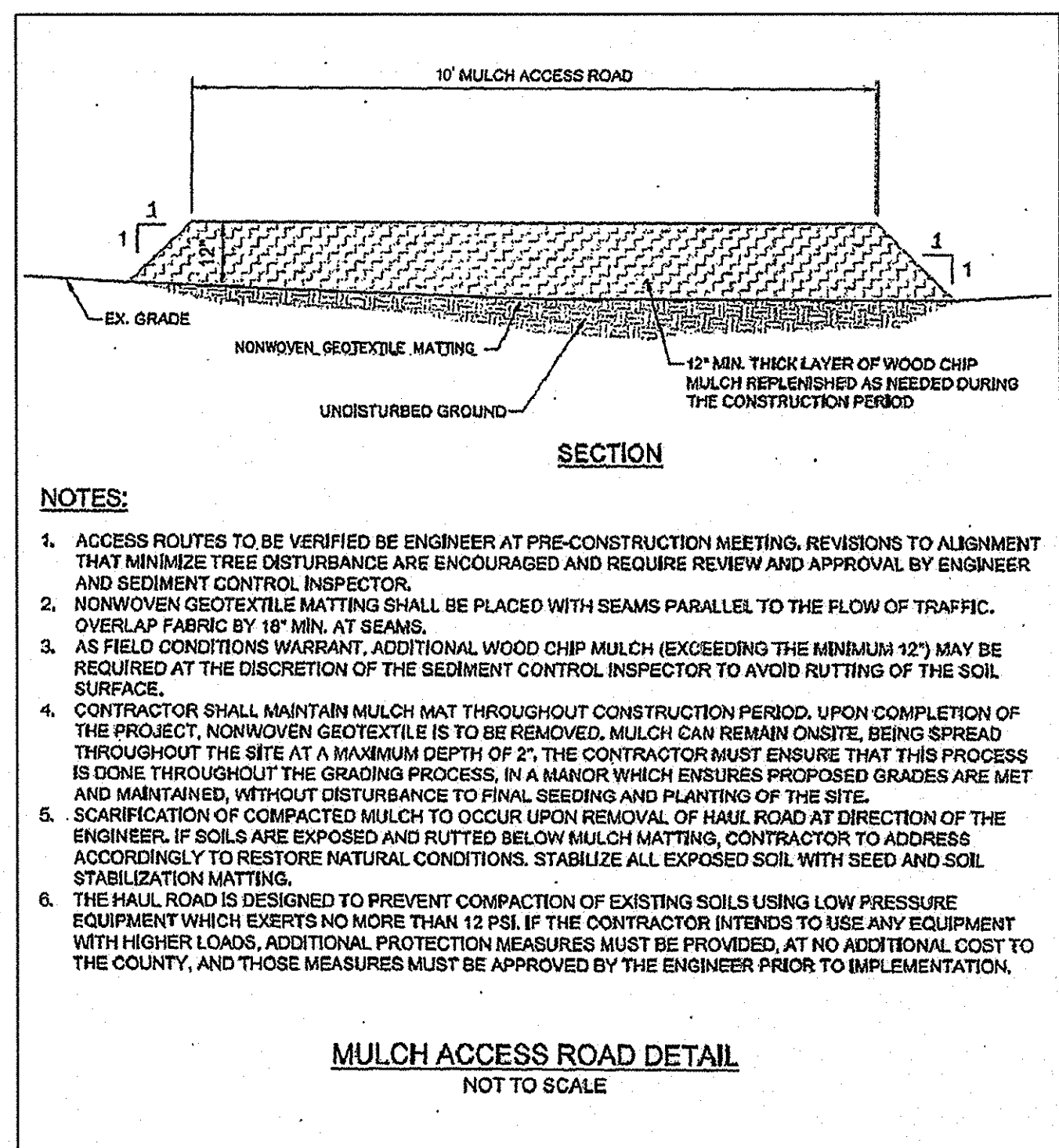
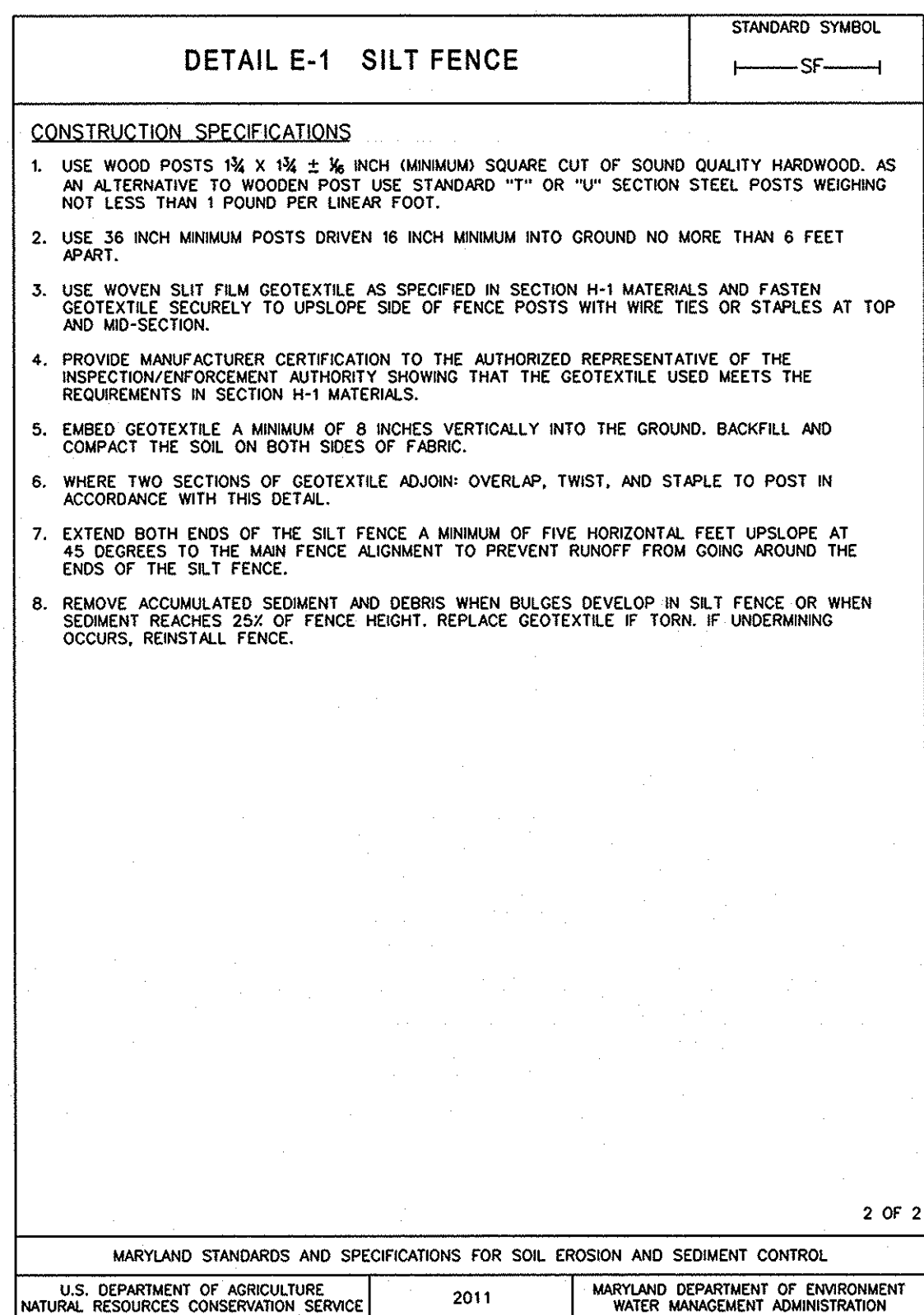
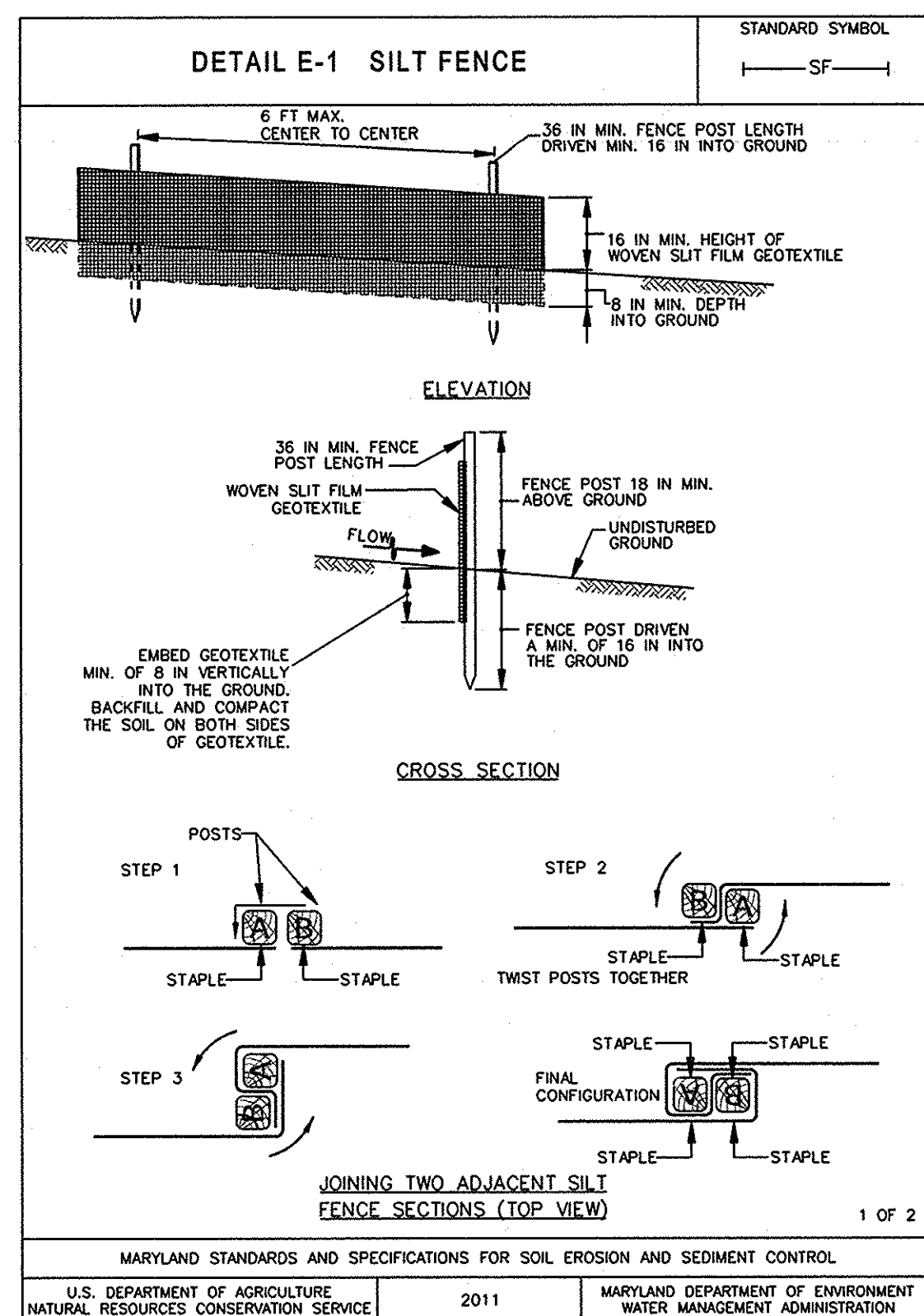
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**HOWARD COUNTY
ELLCOTT CITY RETAINING WALLS
8A, 8B, 9A, AND 9B**

EROSION & SEDIMENT CONTROL DETAILS

DRAWING NO. SHEET 7 OF 22
KCI JOB NUMBER 171333496



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

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

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

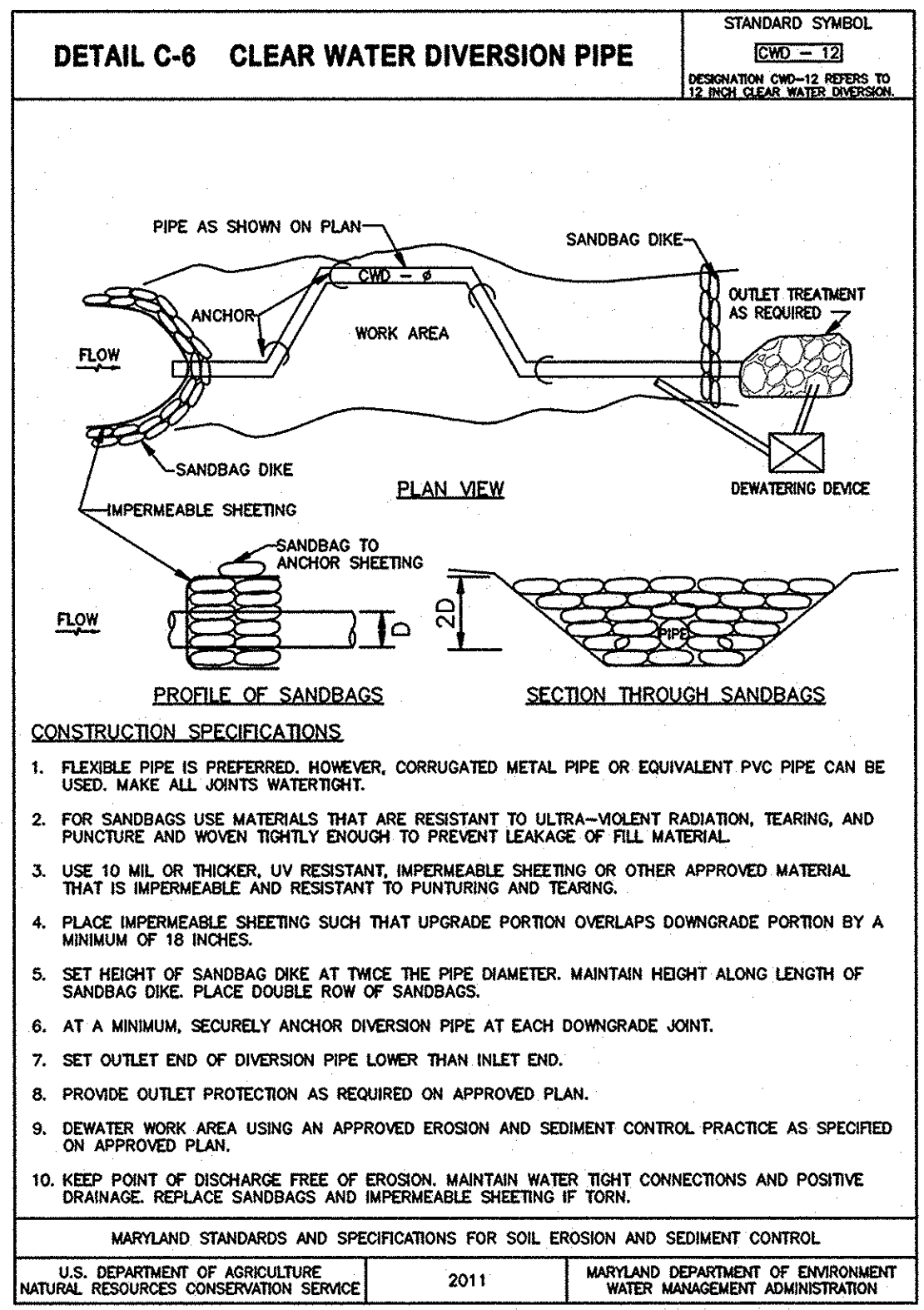
Maximum Drainage Area (acres)	Pipe Diameter (inches)
0.5	12
1.5	18
2.5	21
3.5	24
5.0	tw 24

- The height of the sandbag dike must be a minimum of twice the diameter of the diversion pipe.
- 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.
- 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.

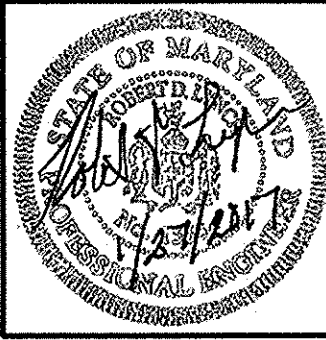
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MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL
U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE 2011 MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

C.20

PLOTTED: Wednesday, April 11, 2018 AT 01:53 PM
By: david.clayton
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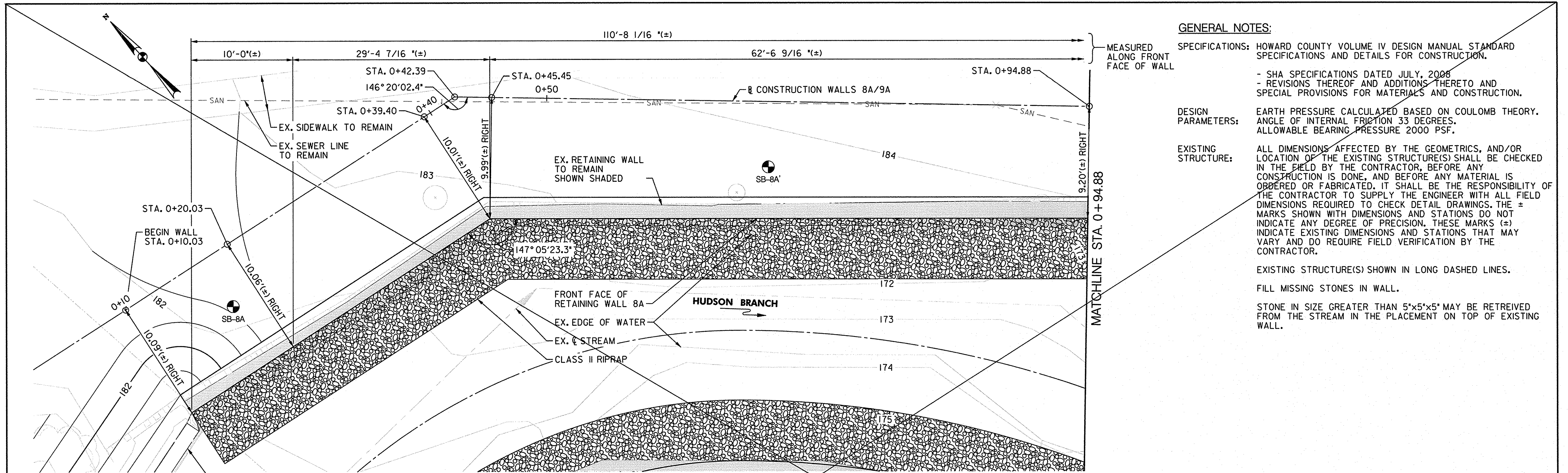


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BY	DATE
JGK	4/2017
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JGK	DESIGNED BY
KKP	DRAWN BY

HOWARD COUNTY
ELICOTT CITY RETAINING WALLS
8A, 8B, 9A, AND 9B
EROSION & SEDIMENT CONTROL
DETAILS II

DRAWING NO.
SHEET 7A OF 22
KCI JOB NUMBER
1713331496



GENERAL NOTES:

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

- SHA SPECIFICATIONS DATED JULY, 2008
- REVISIONS THEREOF AND ADDITIONS THERETO AND SPECIAL PROVISIONS FOR MATERIALS AND CONSTRUCTION.

DESIGN PARAMETERS: EARTH PRESSURE CALCULATED BASED ON COULOMB THEORY. ANGLE OF INTERNAL FRICTION 33 DEGREES. ALLOWABLE BEARING PRESSURE 2000 PSF.

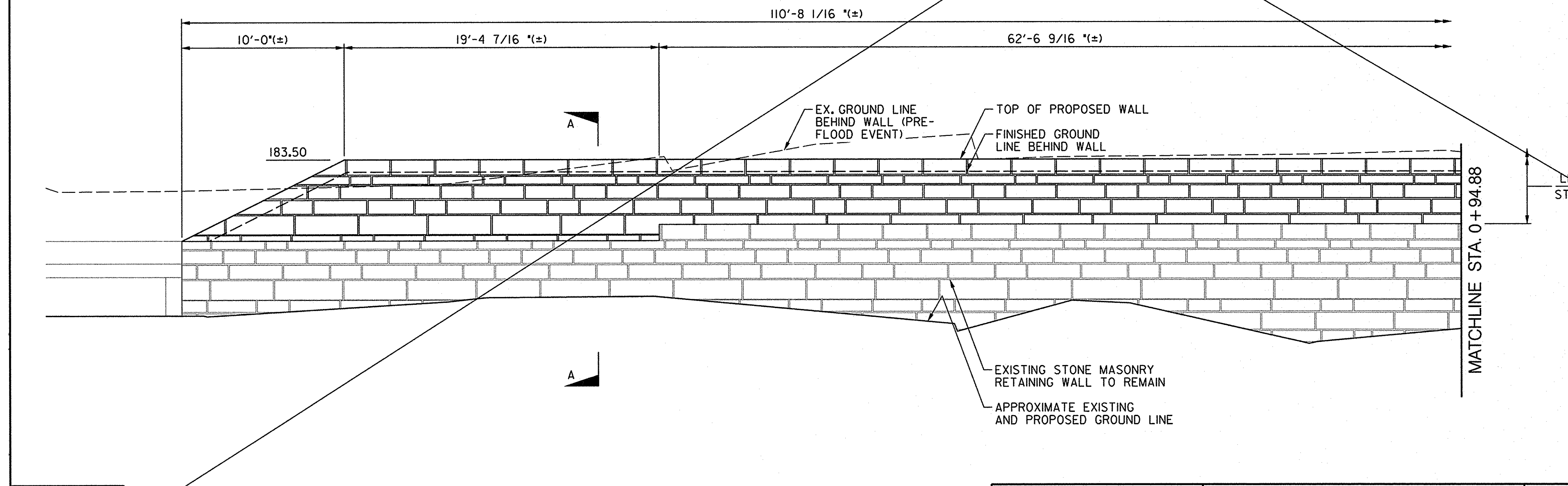
EXISTING STRUCTURE: ALL DIMENSIONS AFFECTED BY THE GEOMETRICS, AND/OR LOCATION OF THE EXISTING STRUCTURE(S) SHALL BE CHECKED IN THE FIELD BY THE CONTRACTOR, BEFORE ANY CONSTRUCTION IS DONE, AND BEFORE ANY MATERIAL IS ORDERED OR FABRICATED. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO SUPPLY THE 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.

FILL MISSING STONES IN WALL.

STONE IN SIZE GREATER THAN 5"x5"x5" MAY BE RETRIEVED FROM THE STREAM IN THE PLACEMENT ON TOP OF EXISTING WALL.

BASELINE CONSTRUCTION		
STA.	NORTHING	EASTING
0+10.00	583596.71	1368926.44
0+42.39	583591.36	1368958.38
1+00.00	583551.95	1369000.40



NOTES:

- FOR SECTION A-A, SEE DRAWING NO. RW8A-3.
- FOR BORINGS AND DRIVE TESTS, SEE DRAWING NO. RW8A-4.
- FOR CLARITY, CLASS II RIPRAP NOT SHOWN IN DEVELOPED ELEVATION VIEW.

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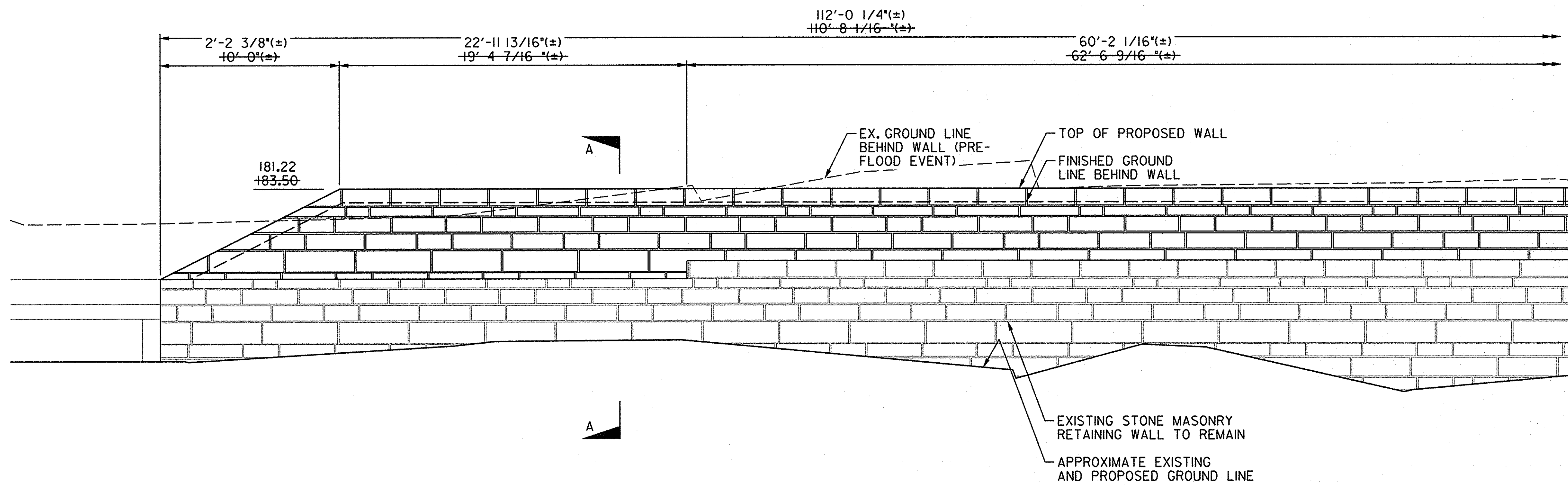
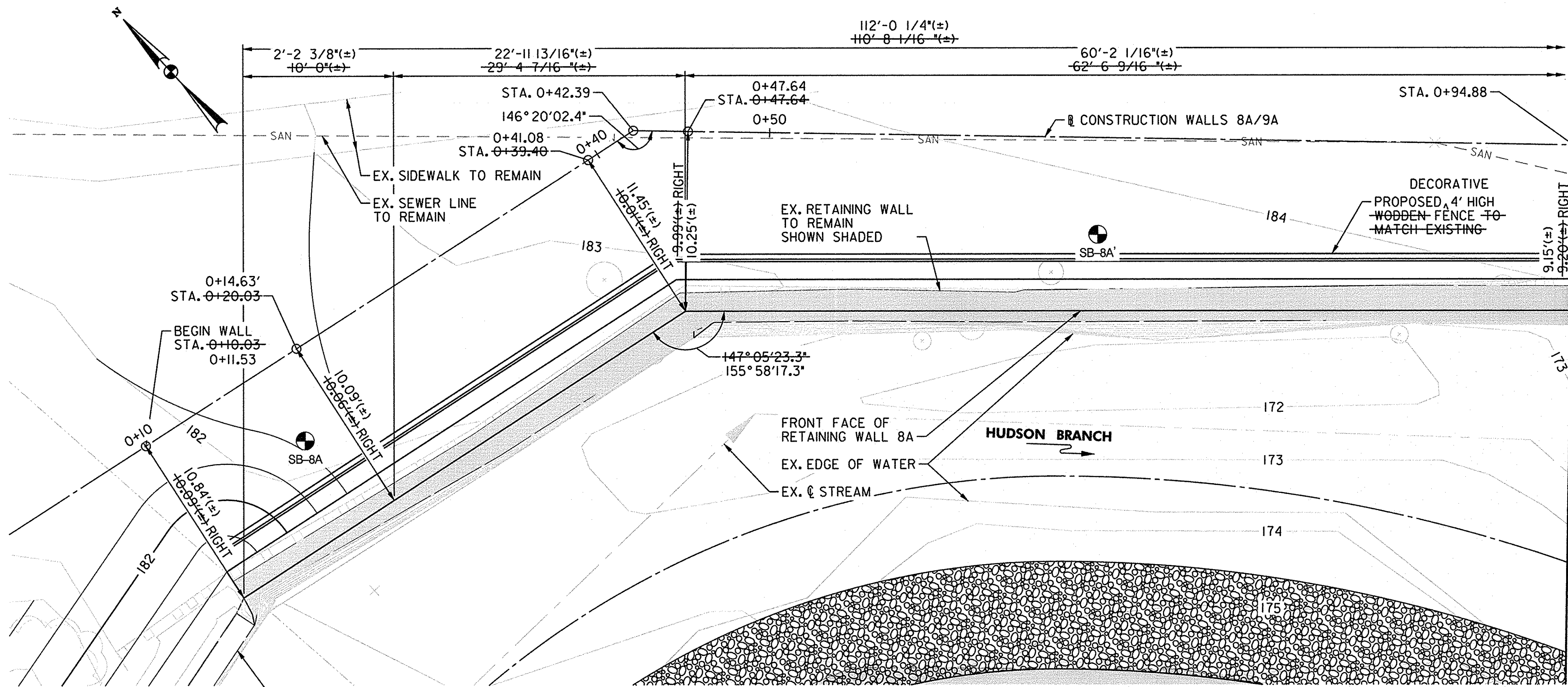
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SCALE: 1/4" = 1'-0"

ENGINEERS
PLANNERS
SCIENTISTS
CONSTRUCTION MANAGERS

REVISIONS				DATE
NO.	DATE	DESCRIPTION	BY	DATE
2	05/10/17	SHEET DELETED	DRC	12/2016

**HOWARD COUNTY
ELLCOTT CITY RETAINING WALL 8A
GENERAL PLAN AND
DEVELOPED ELEVATION**

DRAWING NO.
RW8A-1
SHEET 8 OF 22
KCI JOB NUMBER
1713331496



PLOTTED: Wednesday, Apr 11, 2018 AT 01:53 PM
 BY: david.clayton
 FILE: M:\2013\1713334\95 Drawings\DRG-GPOI_EllcottCity.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. 15554 EXPIRATION DATE: 10/09/2017

KCI TECHNOLOGIES

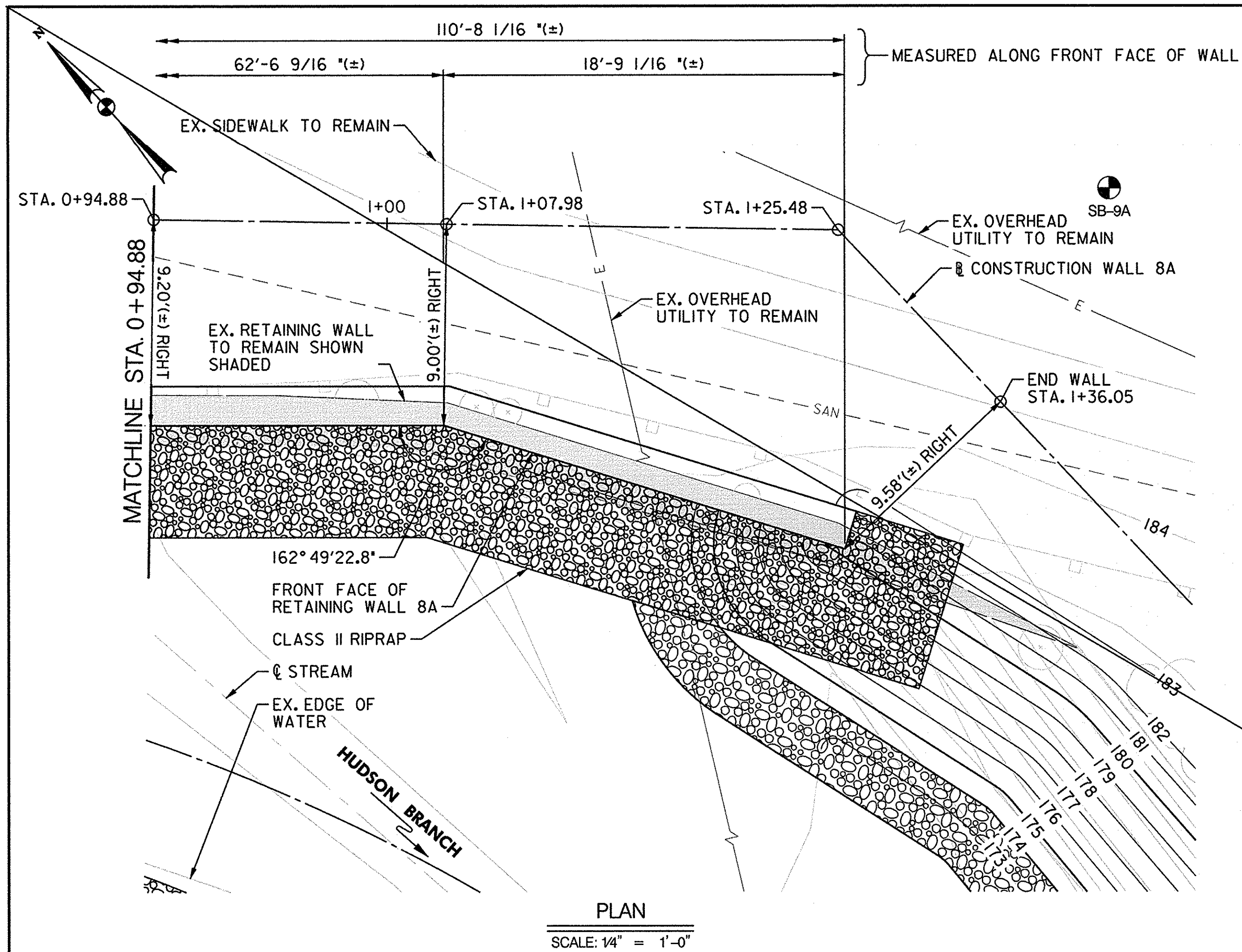
ENGINEERS
PLANNERS
SCIENTISTS
CONSTRUCTION MANAGERS

REVISIONS		DATE
NO.	DATE	DESCRIPTION
1	05/10/17	SHEET REPLACED
2	12/11/17	AS-BUILT

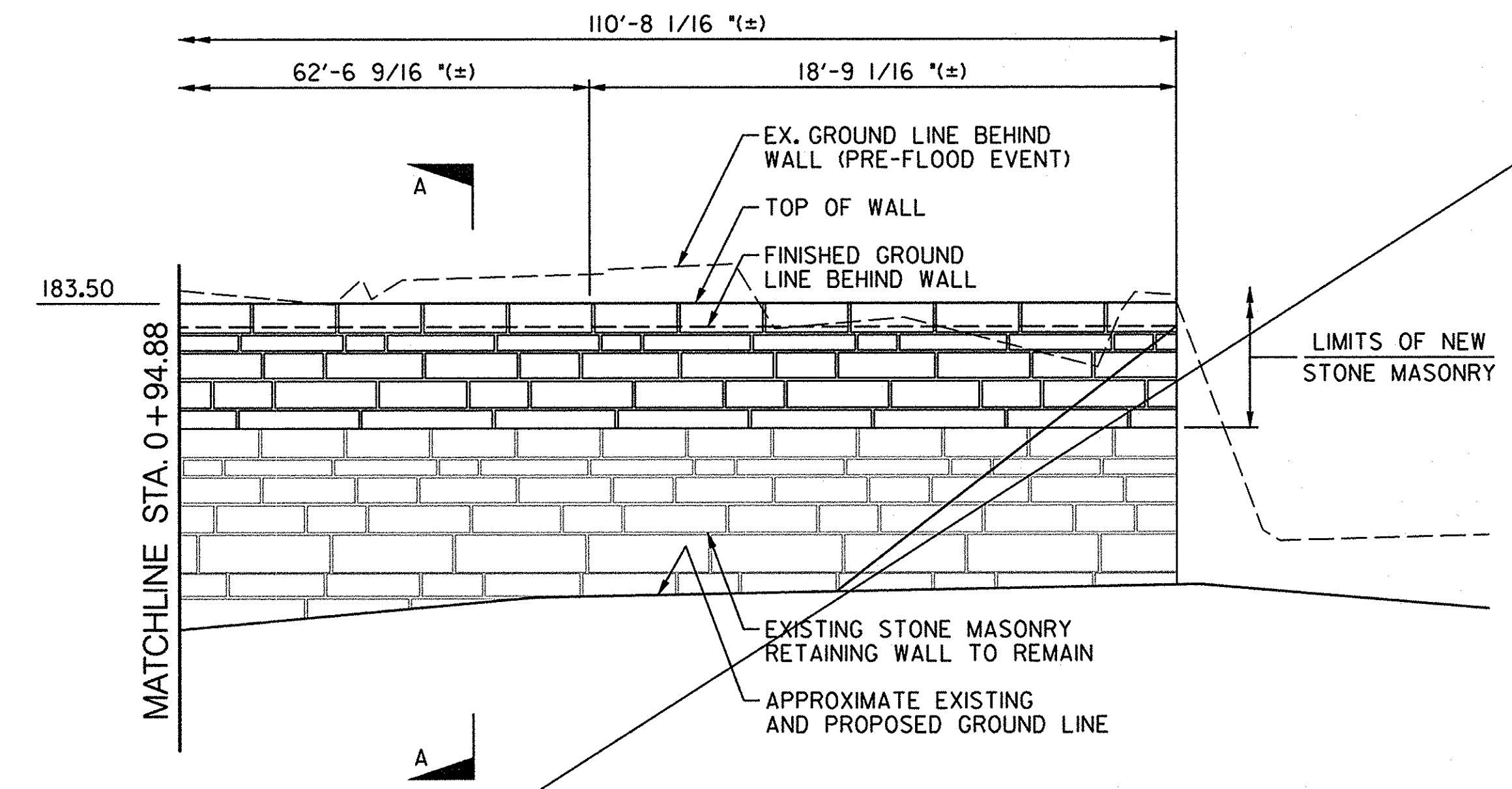
**HOWARD COUNTY
ELLCOTT CITY RETAINING WALL 8A
GENERAL PLAN AND
DEVELOPED ELEVATION**

DRAWING NO. **RW8A-1**

SHEET 8A OF 22
KCI JOB NUMBER
1713331496



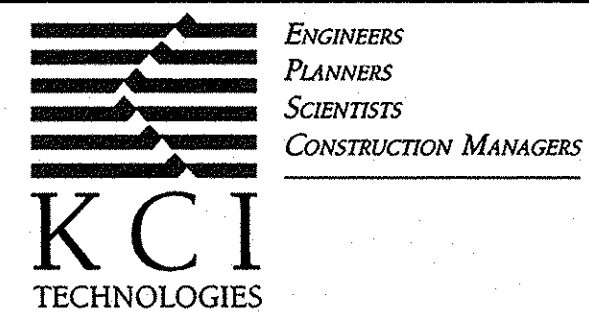
BASELINE CONSTRUCTION		
STA.	NORTHING	EASTING
0+94.88	583555.45	1368996.67
1+25.48	583534.51	1369018.99
1+36.05	583523.95	1369019.18



- NOTES:
- FOR SECTION A-A, SEE DRAWING NO. RW8A-3.
 - FOR BORINGS AND DRIVE TESTS, SEE DRAWING NO. RW8A-4.
 - FOR CLARITY, CLASS II RIPRAP NOT SHOWN IN DEVELOPED ELEVATION VIEW.



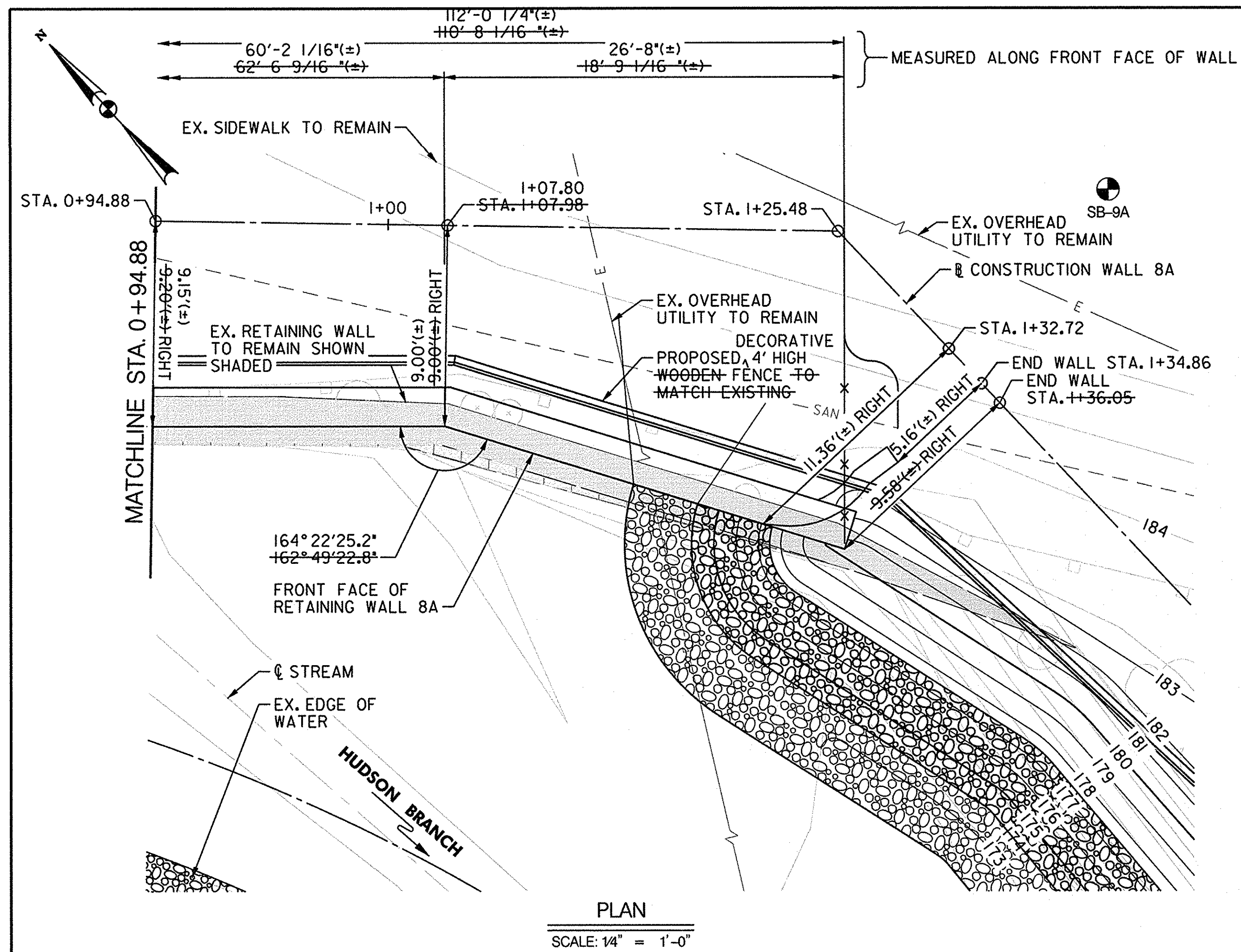
PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND LICENSE NO. 15554 EXPIRATION DATE: 10/06/2017



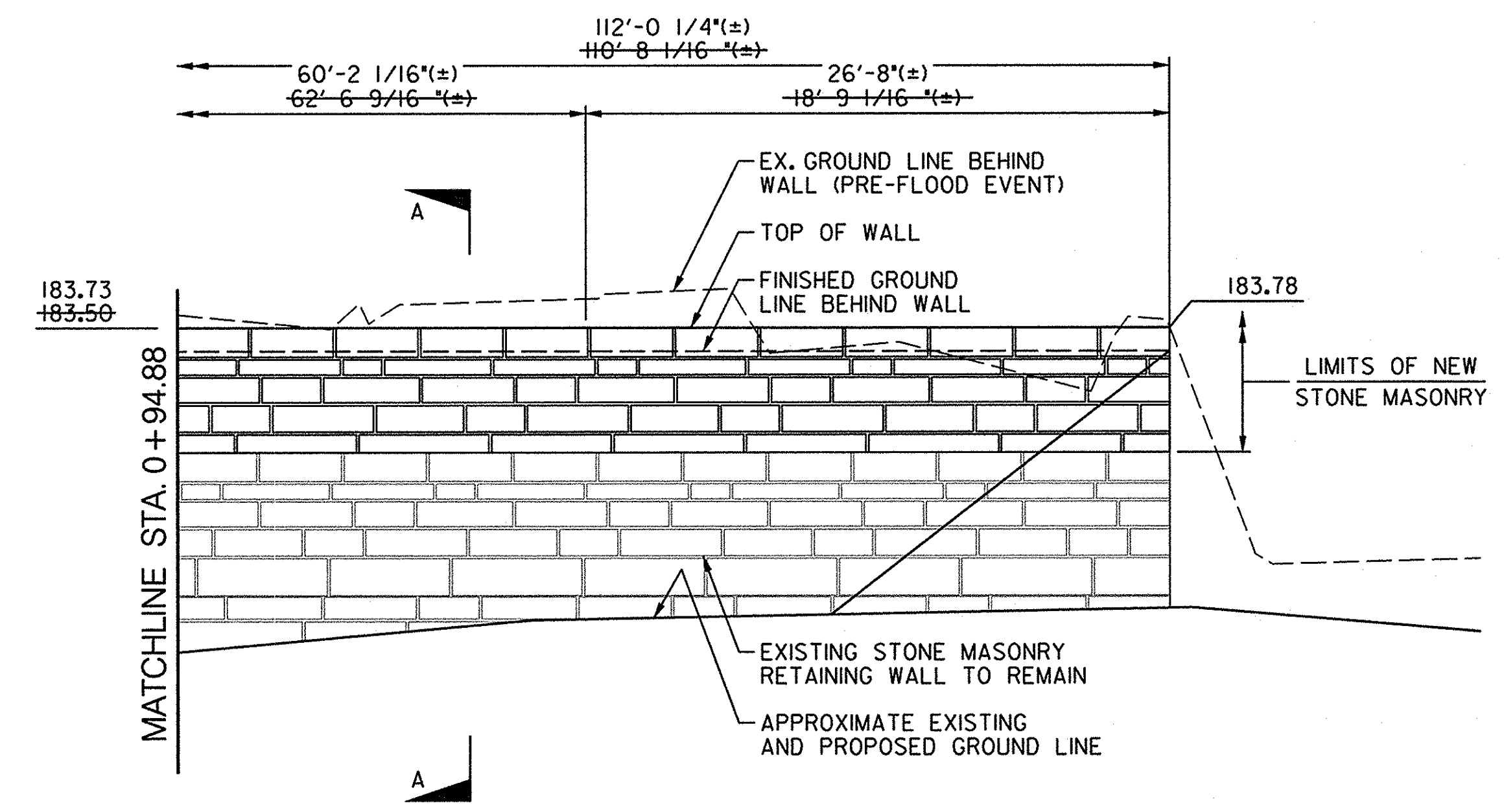
REVISIONS				DATE
NO.	DATE	DESCRIPTION	BY	DATE
2	05/10/17	SHEET DELETED	DRC	12/2016
				SCALE AS SHOWN
				DESIGNED BY RDL
				DRAWN BY DRC

HOWARD COUNTY
ELLCOTT CITY RETAINING WALL 8A
GENERAL PLAN AND
DEVELOPED ELEVATION

DRAWING NO.
RW8A-2
SHEET 9 OF 22
KCI JOB NUMBER
1713331496



BASELINE CONSTRUCTION		
STA.	NORTHING	EASTING
0+94.88	583555.45	1368996.67
1+25.48	583534.51	1369018.99
1+36.05	583523.95	1369019.18



AS-BUILT CERTIFICATION
 I HEREBY 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

15554
 PE NO.

4/13/18
 DATE

- NOTES:
- FOR SECTION A-A, SEE DRAWING NO. RW8A-3.
 - FOR BORINGS AND DRIVE TESTS, SEE DRAWING NO. RW8A-4.

PLOTTED: Wednesday, April 11, 2018 AT 04:53 PM
 BY: david.clayton
 FILE: M:\2013\17133314\96-Dr\dwg\8A-DR-02-EllicottCity.dwg



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: 10/06/2017

KCI
 TECHNOLOGIES

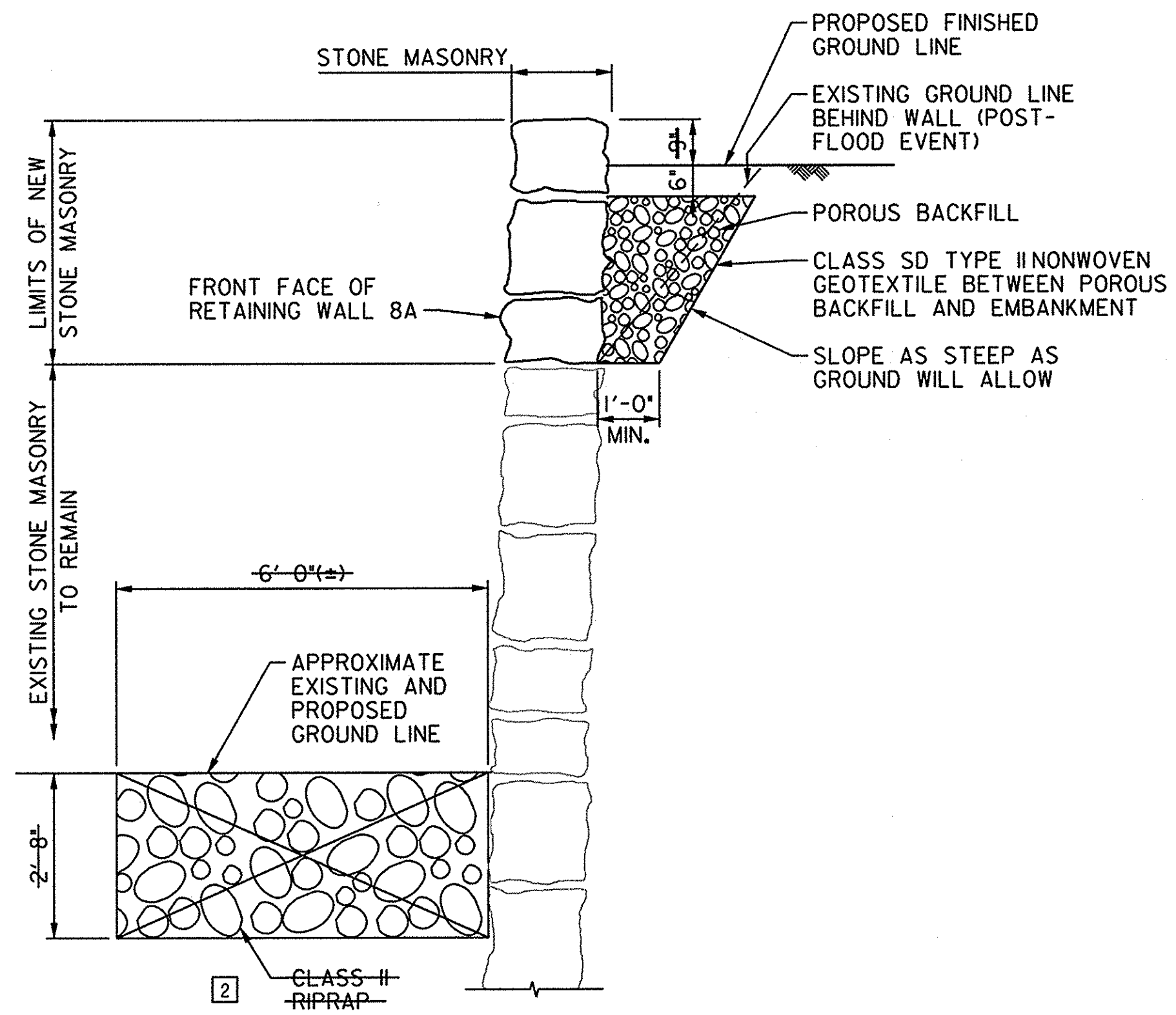
ENGINEERS
 PLANNERS
 SCIENTISTS
 CONSTRUCTION MANAGERS

REVISIONS				DATE
NO.	DATE	DESCRIPTION	BY	12/2016
2	05/10/17	SHEET REPLACED	DRC	SCALE
	12/11/17	AS-BUILT	DRC	AS SHOWN
				DESIGNED BY
				RDL
				DRAWN BY
				DRC

**HOWARD COUNTY
 ELLICOTT CITY RETAINING WALL 8A
 GENERAL PLAN AND
 DEVELOPED ELEVATION**


DRAWING NO.
RW8A-2

SHEET 9A OF 22
 KCI JOB NUMBER
 1713331496



SECTION A-A
SCALE: 12" = 1'-0"

AS-BUILT CERTIFICATION
I HEREBY 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

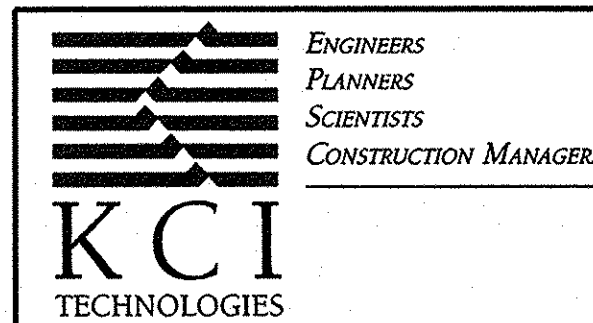
15554
 PE NO.

4/13/18
 DATE

PLOTTED: Wednesday, April 11, 2018 AT 01:53 PM
 BY: c:\p\dwg\dwgplotter\p8r-de02-EllicottCity.dgn
 FILE: M:\2013\17133314_96\Drawings\p8r-de02-EllicottCity.dgn



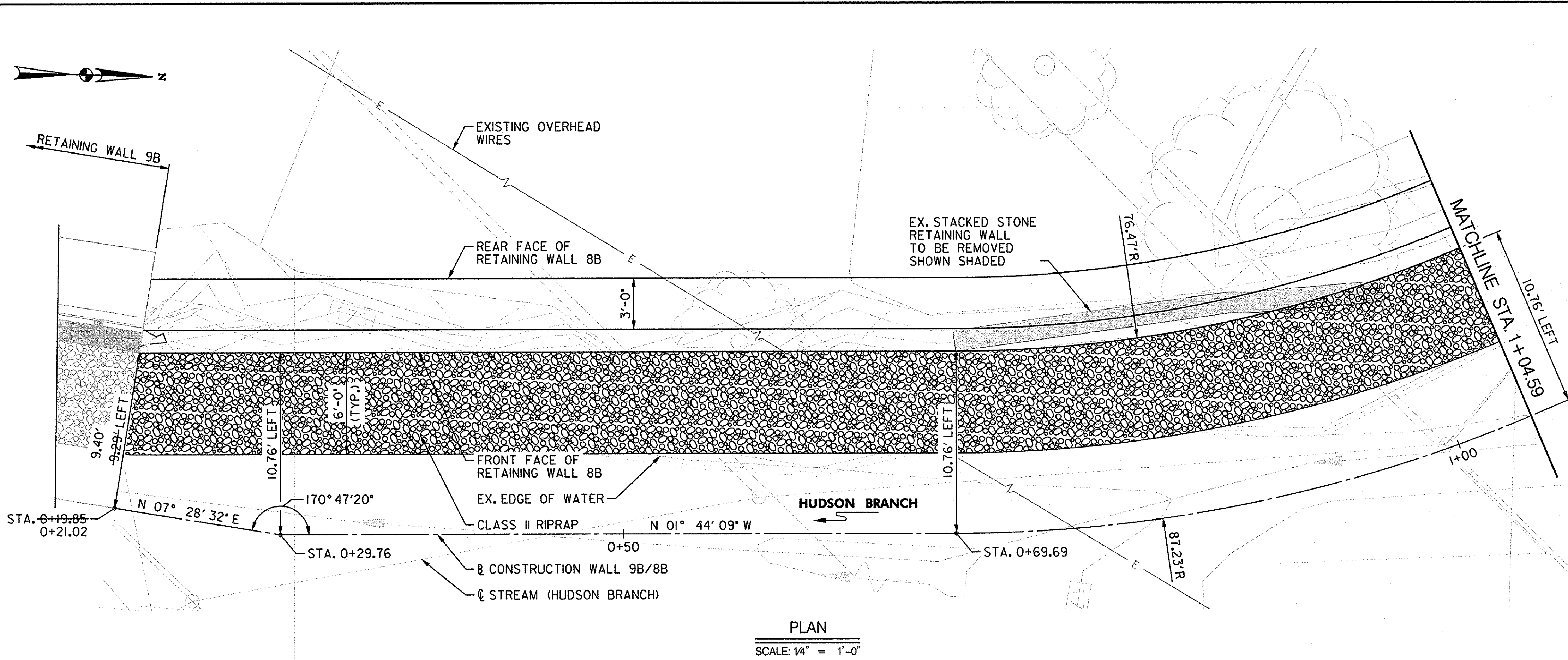
PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT
THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME
AND THAT I AM A DULY LICENSED PROFESSIONAL
ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND
LICENSE NO. 15554 EXPIRATION DATE: 10/06/2017



REVISIONS				DATE
NO.	DATE	DESCRIPTION	BY	DATE
2	05/10/17	RIPRAP DETAIL	DRC	12/2016
	12/11/17	AS-BUILT	DRC	SCALE AS SHOWN
				DESIGNED BY RDL
				DRAWN BY DRC

HOWARD COUNTY
ELLICOTT CITY RETAINING WALL 8B
SECTION

DRAWING NO.
RW8A-3
 SHEET 10 OF 22
 KCI JOB NUMBER
 1713331496



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

GENERAL NOTES:

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

- SHA SPECIFICATIONS DATED JULY, 2008
- REVISIONS THEREOF AND ADDITIONS THERETO AND SPECIAL PROVISIONS FOR MATERIALS AND CONSTRUCTION.

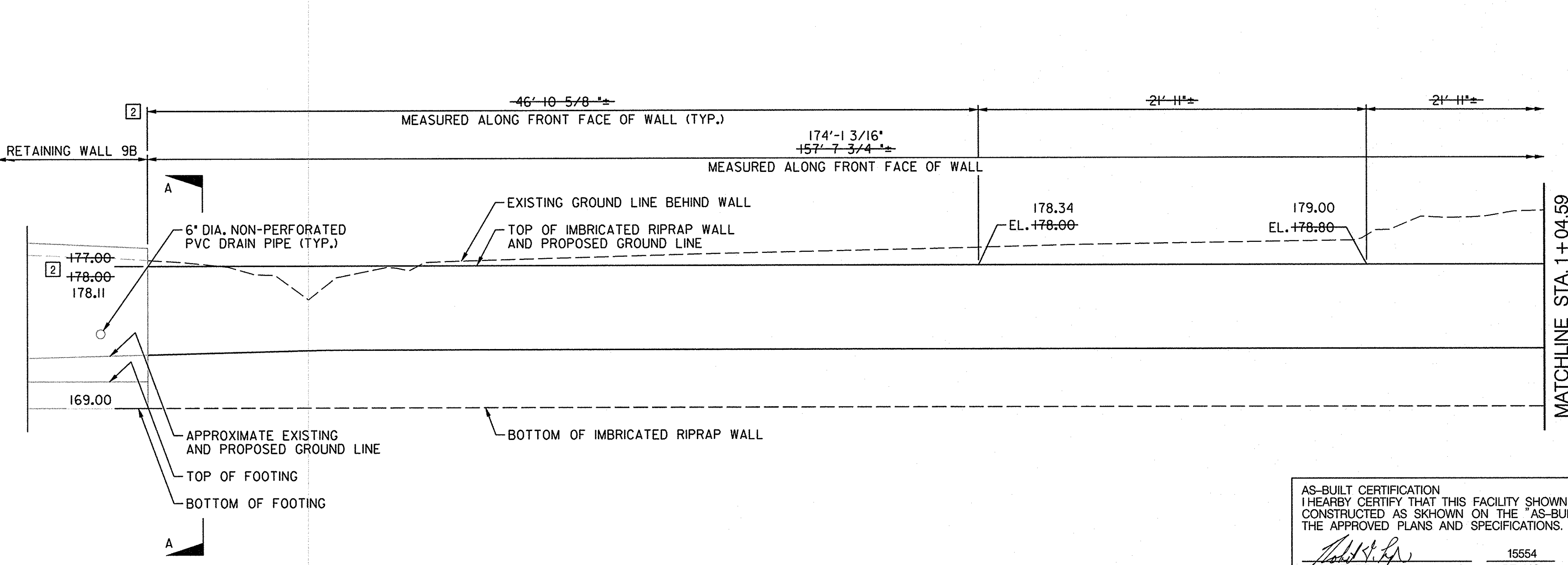
DESIGN PARAMETERS: EARTH PRESSURE CALCULATED BASED ON COULOMB THEORY. ANGLE OF INTERNAL FRICTION 33 DEGREES. ALLOWABLE BEARING PRESSURE 2000 PSF.

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.

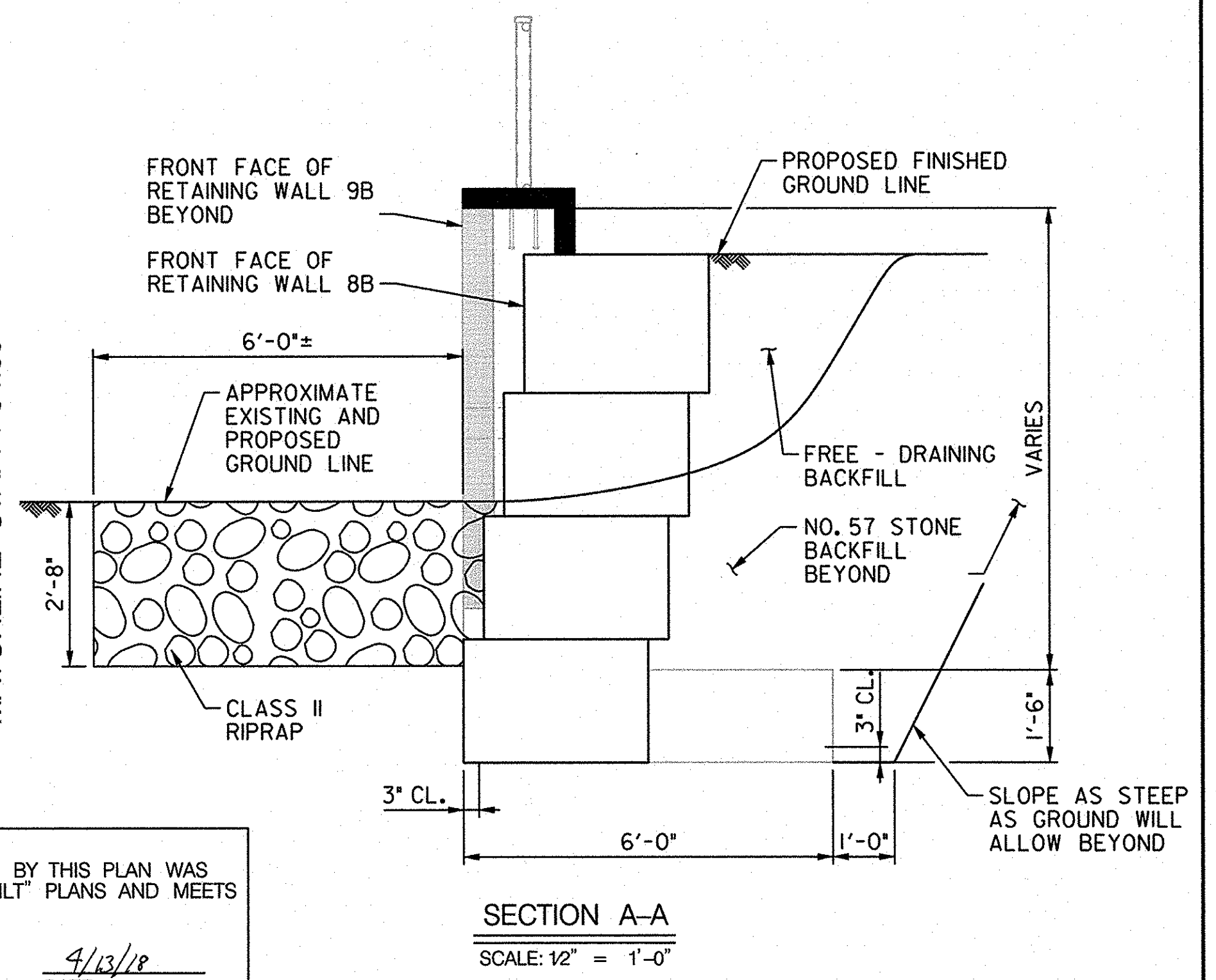
EXISTING STRUCTURE(S) SHOWN SHADED.

BASELINE CONSTRUCTION		
STA.	NORTHING	EASTING
0+19.85	583449.66	1368991.27
0+29.76	583459.50	1368992.56
0+69.69	583499.41	1368991.35
1+04.59	583533.15	1368983.43

- NOTES:**
1. CLASS II RIPRAP SHALL BE DARK GREY/BLUE IN COLOR.
 2. WALL INCLINATION IS 1H : 6V.



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



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

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

SIGNATURE: *[Signature]* PE NO. 15554 DATE 4/13/18

PLOTTED: Wednesday, April 11, 2018 AT 04:54 PM
BY: david.croyton
FILE: M:\2013\17133314\95\Drawings\8B-R-CP08_EllcottCity.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. 15554 EXPIRATION DATE: 10/06/2017

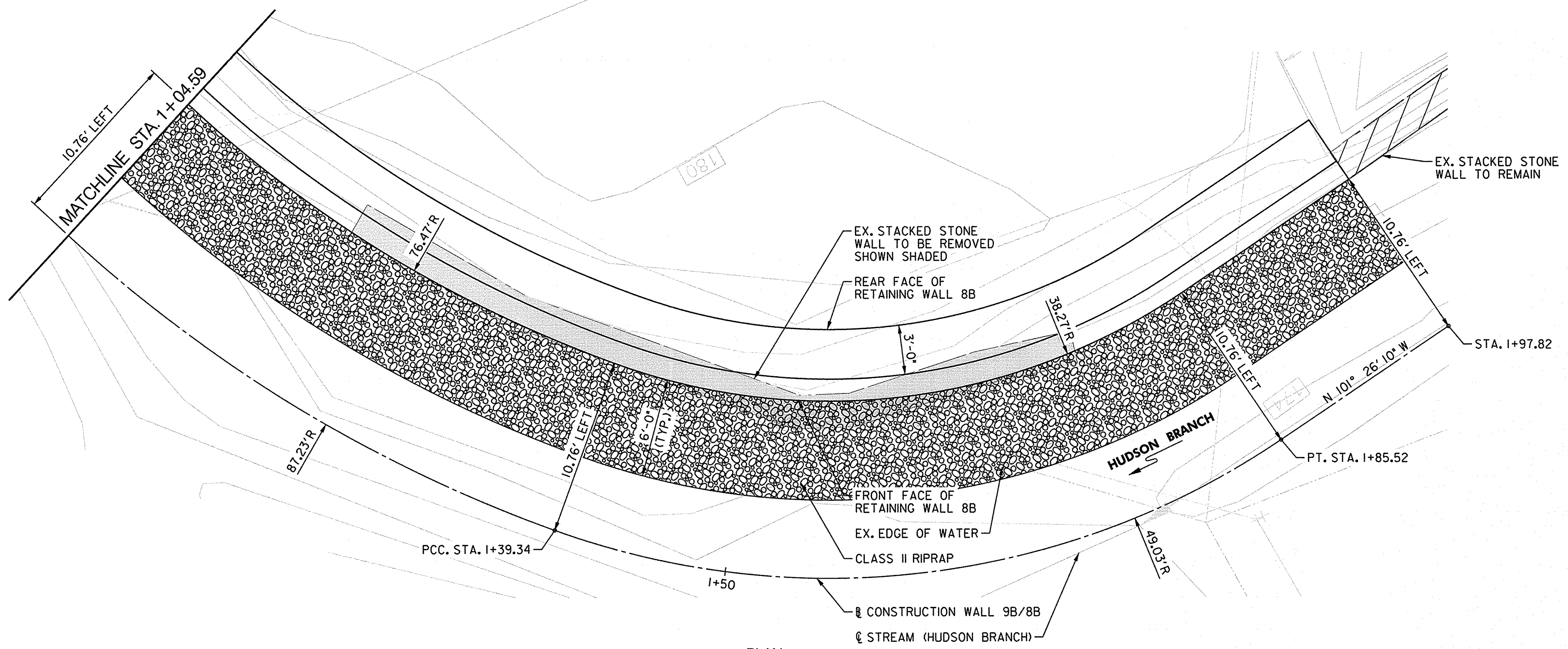
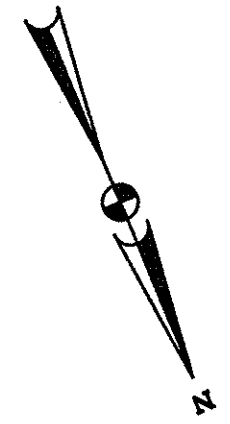


REVISIONS		DATE
NO.	DATE	DESCRIPTION
1	03/09/17	NEW SHEET
2	05/10/17	REVISED ELEVATIONS
	12/11/17	AS-BUILT

HOWARD COUNTY
ELLCOTT CITY RETAINING WALL 8B
GENERAL PLAN AND DEVELOPED ELEVATION

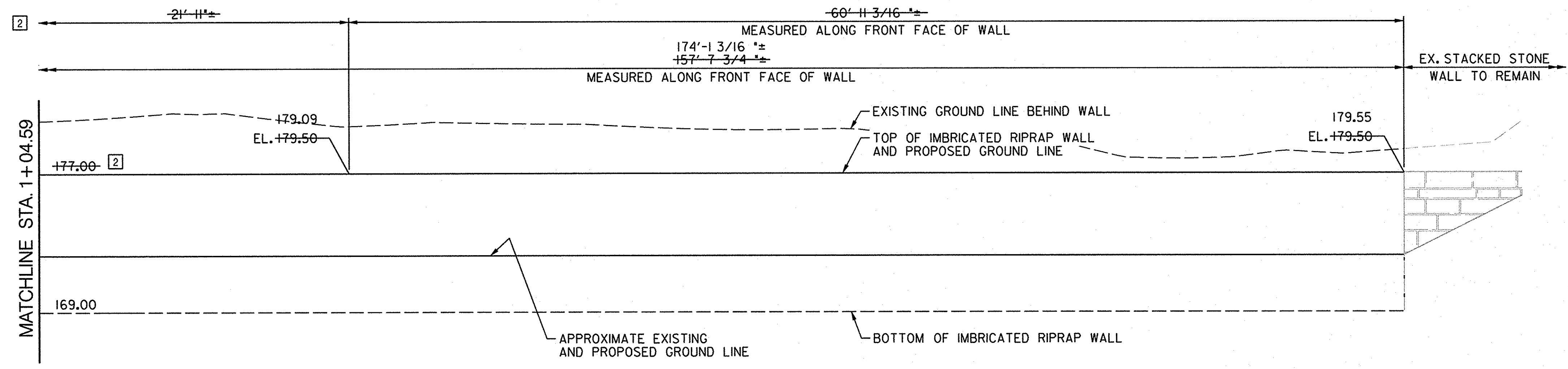
DRAWING NO. **RW8B-1**

SHEET 11A OF 22
KCI JOB NUMBER 1713331496




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

BASELINE CONSTRUCTION		
STA.	NORTHING	EASTING
1+04.59	583533.15	1368983.43
1+39.34	583561.05	1368963.10
1+85.52	583572.99	1368920.22
1+97.82	583570.55	1368908.18



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

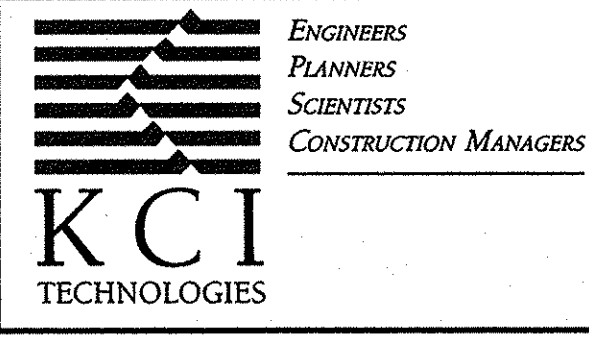
AS-BUILT CERTIFICATION
I HEREBY CERTIFY THAT THIS FACILITY SHOWN BY THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND MEETS THE APPROVED PLANS AND SPECIFICATIONS.


 SIGNATURE
 15554
 PE NO.
 4/13/18
 DATE

PLOTTED: Wednesday, April 11, 2018 AT 01:54 PM
 BY: david.coynton
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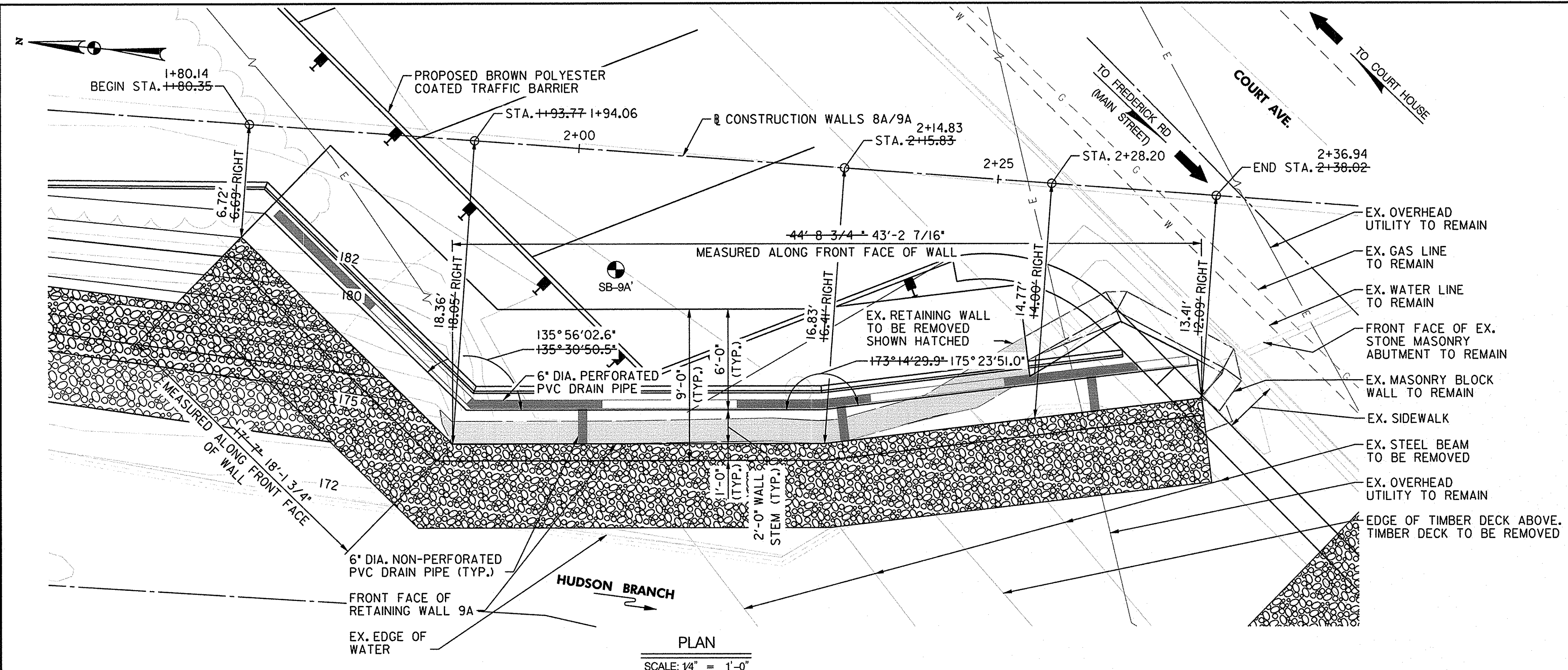


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REVISIONS		DATE
NO.	DATE	DESCRIPTION
1	03/09/17	NEW SHEET
2	05/10/17	REVISED ELEVATIONS
	12/11/17	AS-BUILT

HOWARD COUNTY ELLCOTT CITY RETAINING WALL 8B GENERAL PLAN AND DEVELOPED ELEVATION		DRAWING NO.
		RW8B-2
SHEET 11B OF 22 TCT JOB NUMBER 1713331496		



GENERAL NOTES:

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

- SHA SPECIFICATIONS DATED JULY, 2008
- REVISIONS THEREOF AND ADDITIONS THERETO AND SPECIAL PROVISIONS FOR MATERIALS AND CONSTRUCTION.

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

CONCRETE DESIGN: LOAD AND RESISTANCE FACTOR DESIGN METHOD
f'c = 3000 PSI

REINFORCING STEEL DESIGN: fy = 60,000 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 SHOWN, SHALL BE LAPPED AS PER BAR LAP CHARTS. 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.

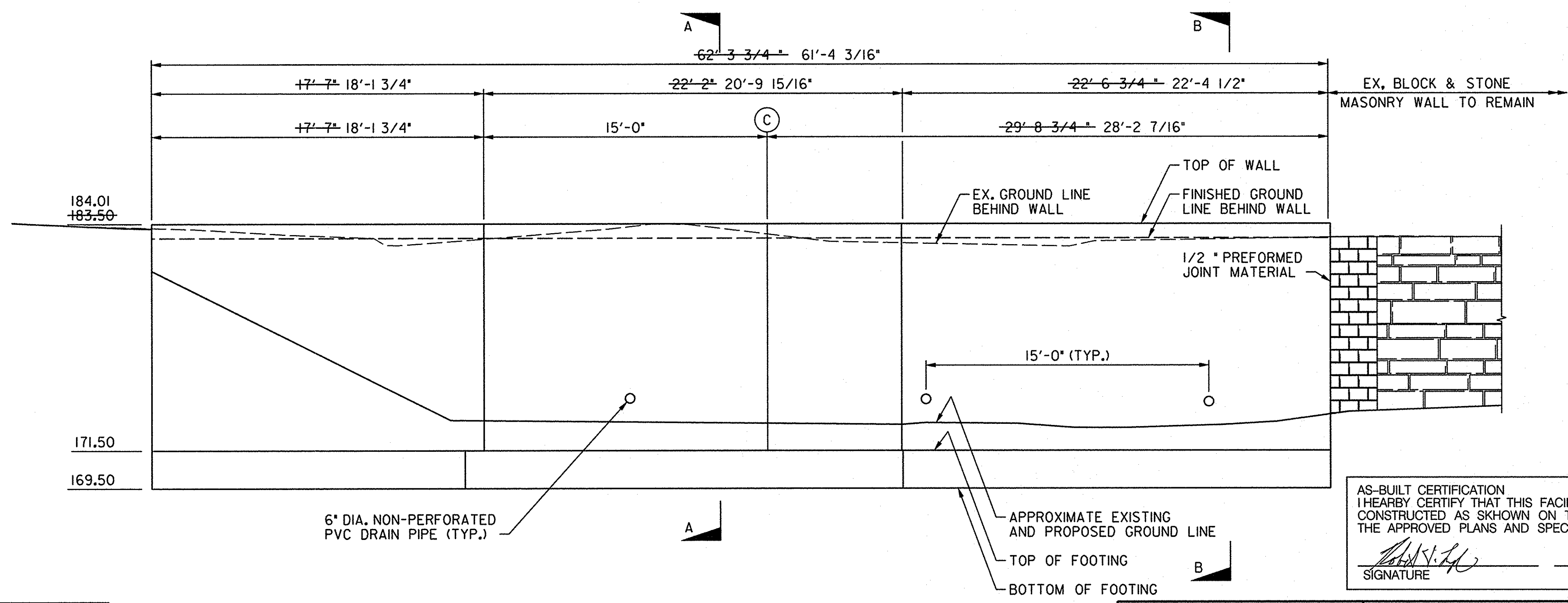
DESIGN PARAMETERS: EARTH PRESSURE CALCULATED BASED ON COULOMB THEORY. ANGLE OF INTERNAL FRICTION 33 DEGREES. ALLOWABLE BEARING PRESSURE 4500 PSF.

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.

PORTIONS OF EXISTING STRUCTURE(S) SHOWN SHADED TO BE REMOVED.

BASELINE CONSTRUCTION		
STA.	NORTHING	EASTING
1+80.35	583479.66	1369020.01
2+38.02	583421.99	1369021.08



LEGEND:

(C) = CONTRACTION JOINT
(E) = EXPANSION JOINT

- NOTES:**
- FOR SECTIONS A-A AND B-B, SEE DRAWING NO. RW9A-2.
 - FOR CORNER REINFORCEMENT DETAIL, SEE DRAWING NO. RW9A-2.
 - FOR BORING AND DRIVE TESTS, SEE DRAWING NO. RW9A-3.
 - FOR CLARITY, EXISTING RETAINING WALL TO BE REMOVED AND CLASS II RIPRAP NOT SHOWN IN DEVELOPED ELEVATION VIEW.
 - FOR CLARITY, EXISTING TIMBER DECK ABOVE NOT SHOWN.

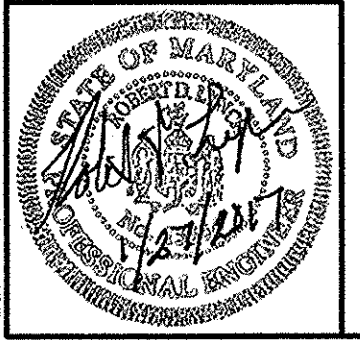
AS-BUILT CERTIFICATION
I HEREBY CERTIFY THAT THIS FACILITY SHOWN BY THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND MEETS THE APPROVED PLANS AND SPECIFICATIONS.

SIGNATURE

15554
PE NO.

4/13/18
DATE

PLOTTED: Wednesday, April 11, 2018 AT 01:54 PM
 BY: david@cityofellcotton.com
 FILE: M:\2013\17133314_96\Drawings\DR-CR00-EllicottCity.dgn



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KCI TECHNOLOGIES

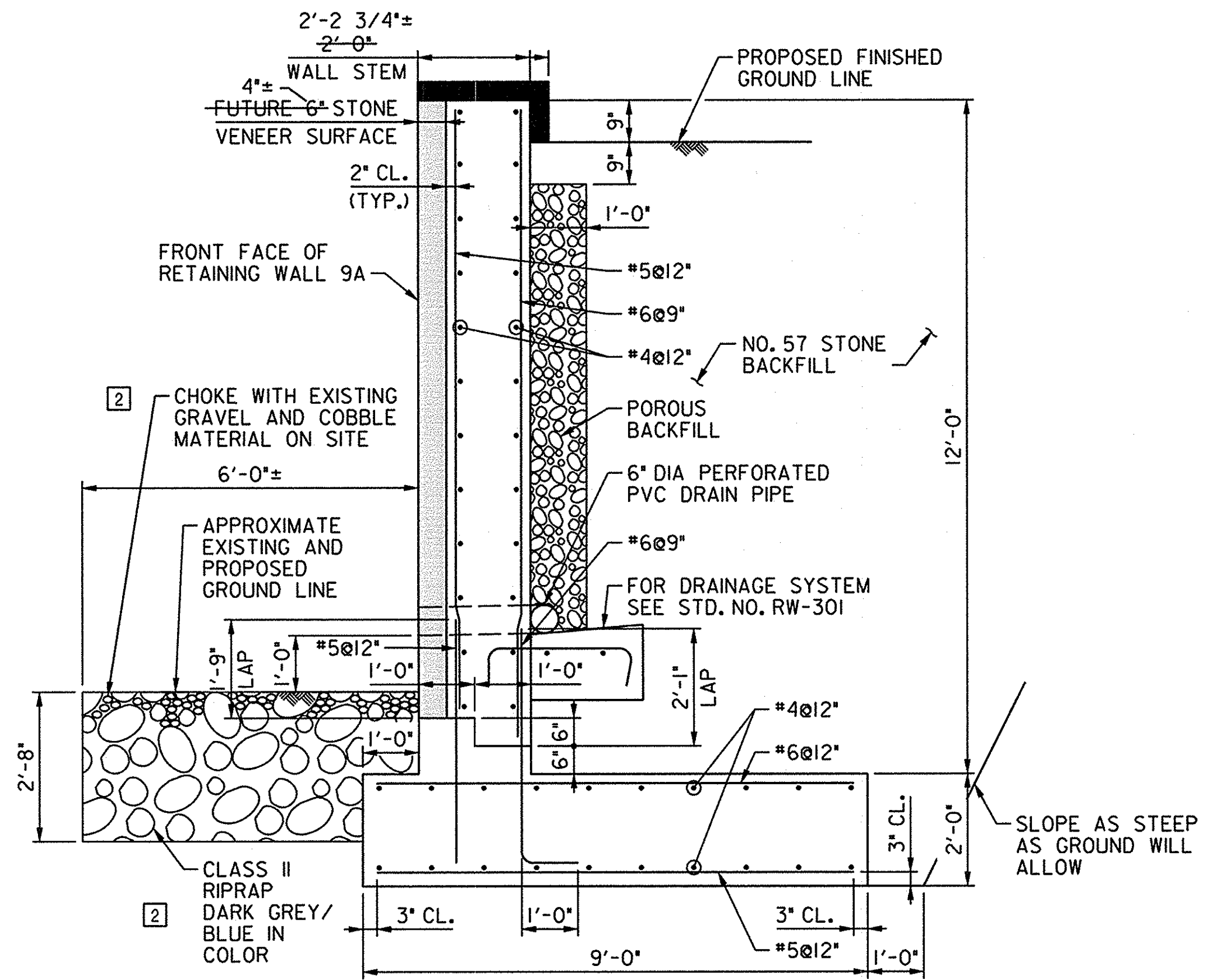
ENGINEERS
PLANNERS
SCIENTISTS
CONSTRUCTION MANAGERS

REVISIONS		DATE
NO.	DATE	DESCRIPTION
1	12/11/17	AS-BUILT

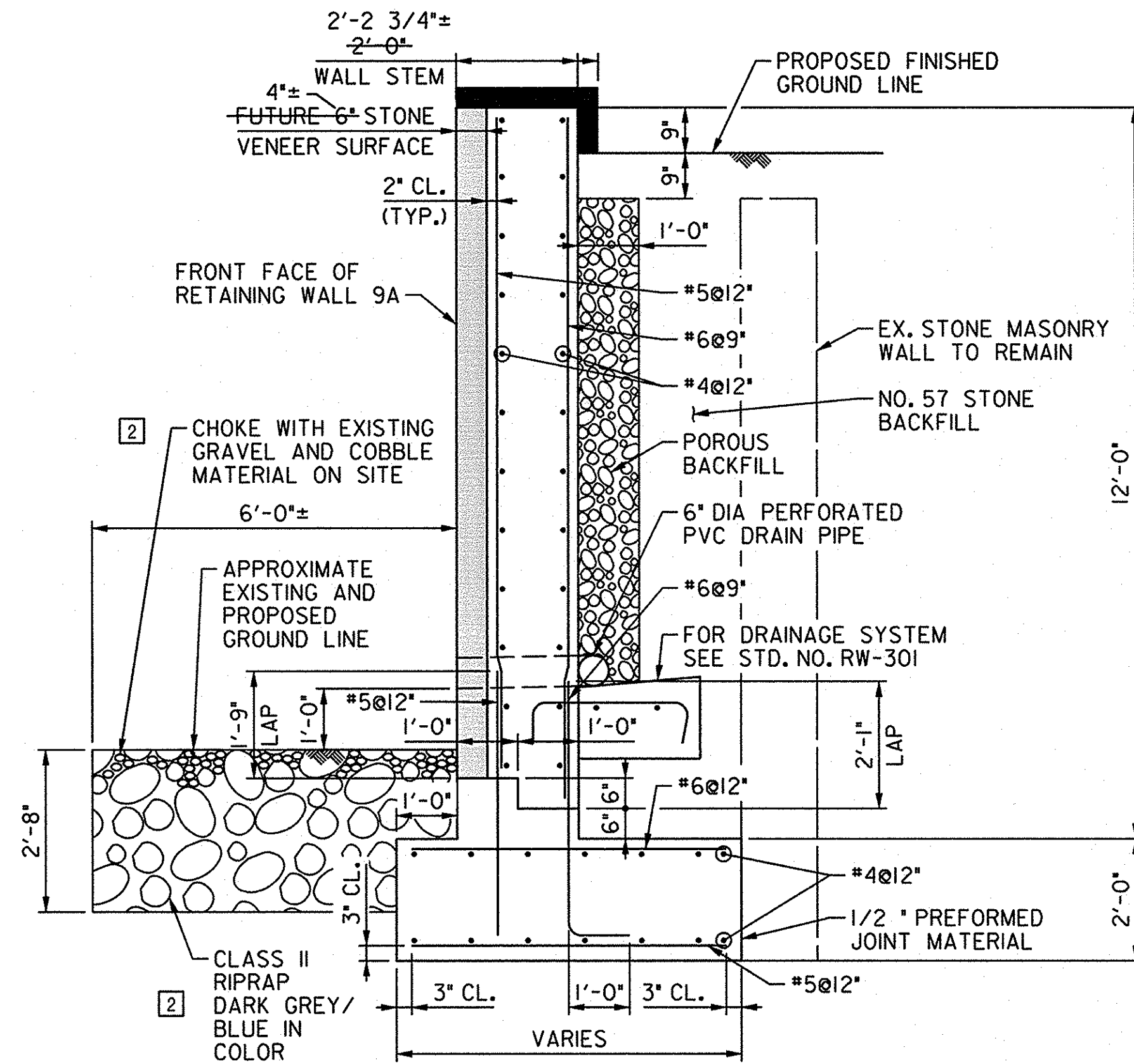
**HOWARD COUNTY
ELLCOTT CITY RETAINING WALL 9A
GENERAL PLAN AND
DEVELOPED ELEVATION**

RW9A-1

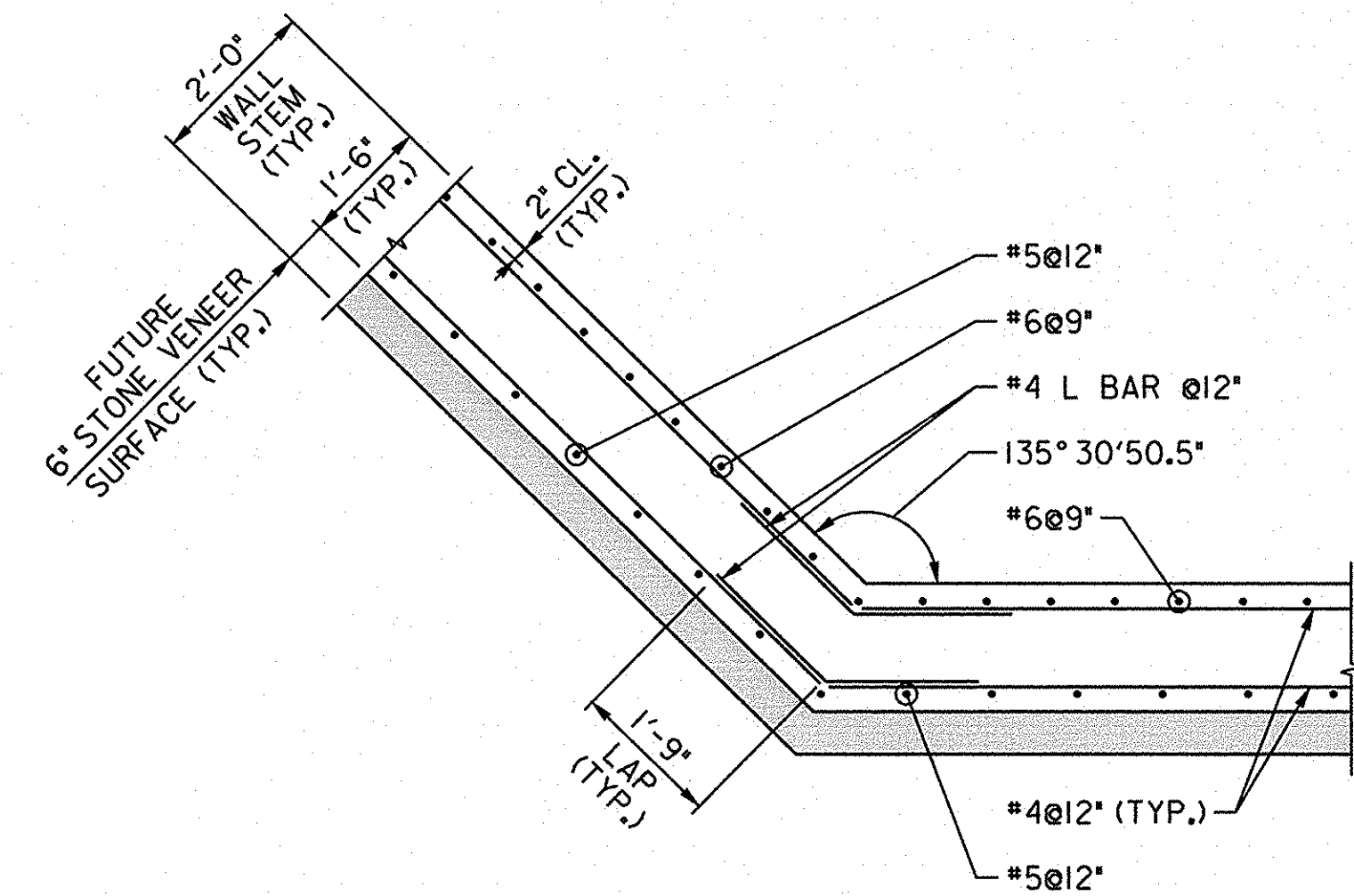
SHEET 12 OF 22
RJT JOB NUMBER
1713331496



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



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



CORNER REINFORCEMENT DETAIL
SCALE: 1/2" = 1'-0"

PLOTTED: Wednesday, April 11, 2018 AT 04:54 PM
 FILE: \\MA2031\17133314_96\Drawings\p8r-de00-EllicottCity.dgn



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 ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND
 LICENSE NO. 15554 EXPIRATION DATE: 10/06/2017

KCI
 TECHNOLOGIES
 ENGINEERS
 PLANNERS
 SCIENTISTS
 CONSTRUCTION MANAGERS

REVISIONS				DATE
NO.	DATE	DESCRIPTION	BY	DATE
2	05/10/17	RIPRAP DETAIL	DRC	12/2016
	12/11/17	AS-BUILT	DRC	SCALE AS SHOWN
				DESIGNED BY RDJ
				DRAWN BY DRC

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

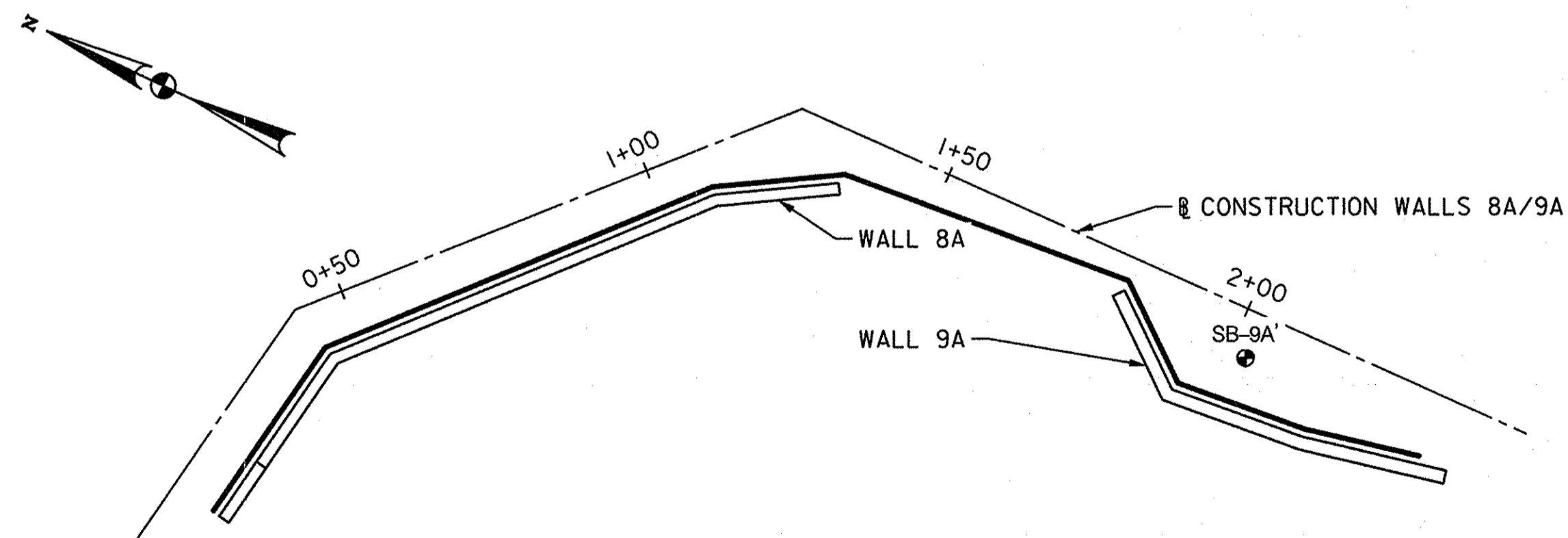
SIGNATURE: *[Signature]* PE NO. 15554 DATE: 4/13/18

HOWARD COUNTY
ELLICOTT CITY RETAINING WALL 9A
SECTIONS

DRAWING NO. **RW9A-2**
 SHEET 13 OF 22
 KCI JOB NUMBER 1713331496

Project No. 2013045.01		LOG OF BOREHOLE SB-9A'		Sheet 1 of 1							
CLIENT: KCI Technologies Inc		PROJECT: Stream Retaining Walls 9A & 9B									
ARCHITECT/ENGINEER:		SITE: Ellicott City Howard County, Maryland									
		SAMPLES		TESTS							
SURFACE ELEV.: 0.2' Topsoil		DEPTH (FT)	BLOWS PER FOOT	NUMBER	TYPE	IN. RECOVERED IN DRIVEN	MOISTURE (%)	DRY DENSITY (PCF)	QU (TSF)	% PASSING #20 SIEVE	REMARKS/ ADDITIONAL DATA
0.2' Topsoil		3-3.3	N=6	1	SS	18/18	100%			36	
Loose to very loose brown and gray SILTY SAND (SM) with gravel and mica (Fill)		4-2.1	N=3	2	SS	10/18	56%				
6.0		2-2.3	N=5	3	SS	18/18	100%			40	
Loose dark brown SILTY SAND (SM) with roots and gravel		2-3.4	N=7	4	SS	8/18	44%				
9.0		18-28-43	N=71	5	SS	18/18	100%				
Dense yellowish brown and brown SILTY SAND (SM) with rock fragments		5-27-51/2'		6	SS	14/14	100%			18	
13.0		51/5"		7	SS	5/5	100%				
Very dense yellowish brown and brown SILTY SAND (SM) with rock fragments (Decomposed Rock)		51/2"		8	SS	2/2	100%				
-rock fragments below 28 ft		51/1"		9	SS	1/1	100%				
35.0		51/0" RCD=50%		10	SS RC	0/0	50/50	100%			
Auger and spoon refusal @ 35 ft Medium hard, gray, slightly weathered, moderately closed and gently dipping banded GRANITE (igneous Rock)											
40.0											
End of Boring @ 40 ft Borehole was backfilled after 24 hour water reading											
WATER LEVEL OBSERVATIONS		AB Consultants, Inc. 9450 Annapolis Road Lanham, MD 20706 Phone: 301-306-3091 Fax: 301-306-3092		STARTED: 5/10/16	FINISHED: 5/10/16						
WL	18.5	@ Drilling	DRILL CO.: ABC		DRILL RCD: ATV D-50						
WL	14.5	@ 0 Hrs	DRILLER: WR		ASST DRILLER:						
WL	11	@ 24 Hrs	LOGGED BY:		APPROVED:						

BORINGS AND DRIVE TESTS
NO SCALE



BORINGS AND DRIVE TESTS LOCATION PLAN
NO SCALE

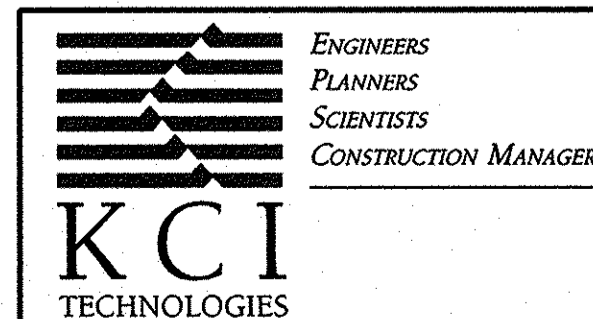
NOTES:

- THE BORINGS AND DRIVE TESTS WERE TAKEN IN MAY, 2016 BY AB CONSULTANTS, INC.
 - C = DEPTH OF HOLLOW-STEM CONTINUOUS FLIGHT AUGER WITH A 3 1/4 INCH ID.
 - 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.
 - W.L. = WATER LEVEL READING. THE FIGURE IN PARENTHESIS INDICATES THE READING IN HOURS AFTER COMPLETION OF BORING.
 - BORINGS AND SAMPLINGS CONFORM TO AASHTO DESIGNATIONS T-206 AND T-306.
 - THE SOIL SYMBOLS REFLECT ONLY THE MAJOR SOIL CONSTITUENT, FOR MORE COMPLETE SOIL CHARACTERISTIC REFER TO THE SOIL DESCRIPTIVE TEXT.
 - 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.
 - THE SOIL HAS BEEN VISUALLY CLASSIFIED BY THE DRILLER.
- 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.

PLOTTED: Wednesday, April 11, 2016 AT 04:54 PM
FILE: \\VA2013\17133314\96\Drawings\BDR-BL01-EllicottCity.dgn



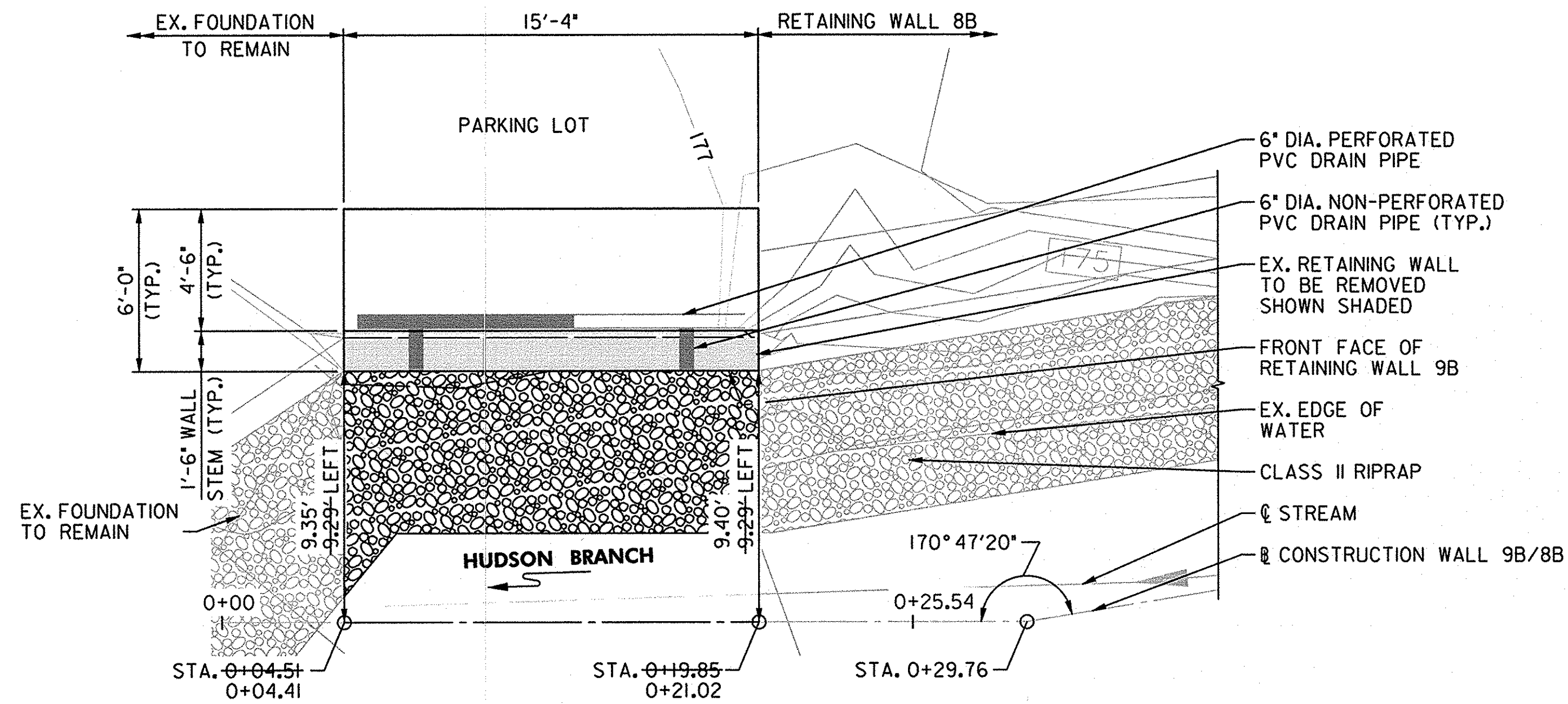
PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND LICENSE NO. 15554 EXPIRATION DATE: 10/08/2017



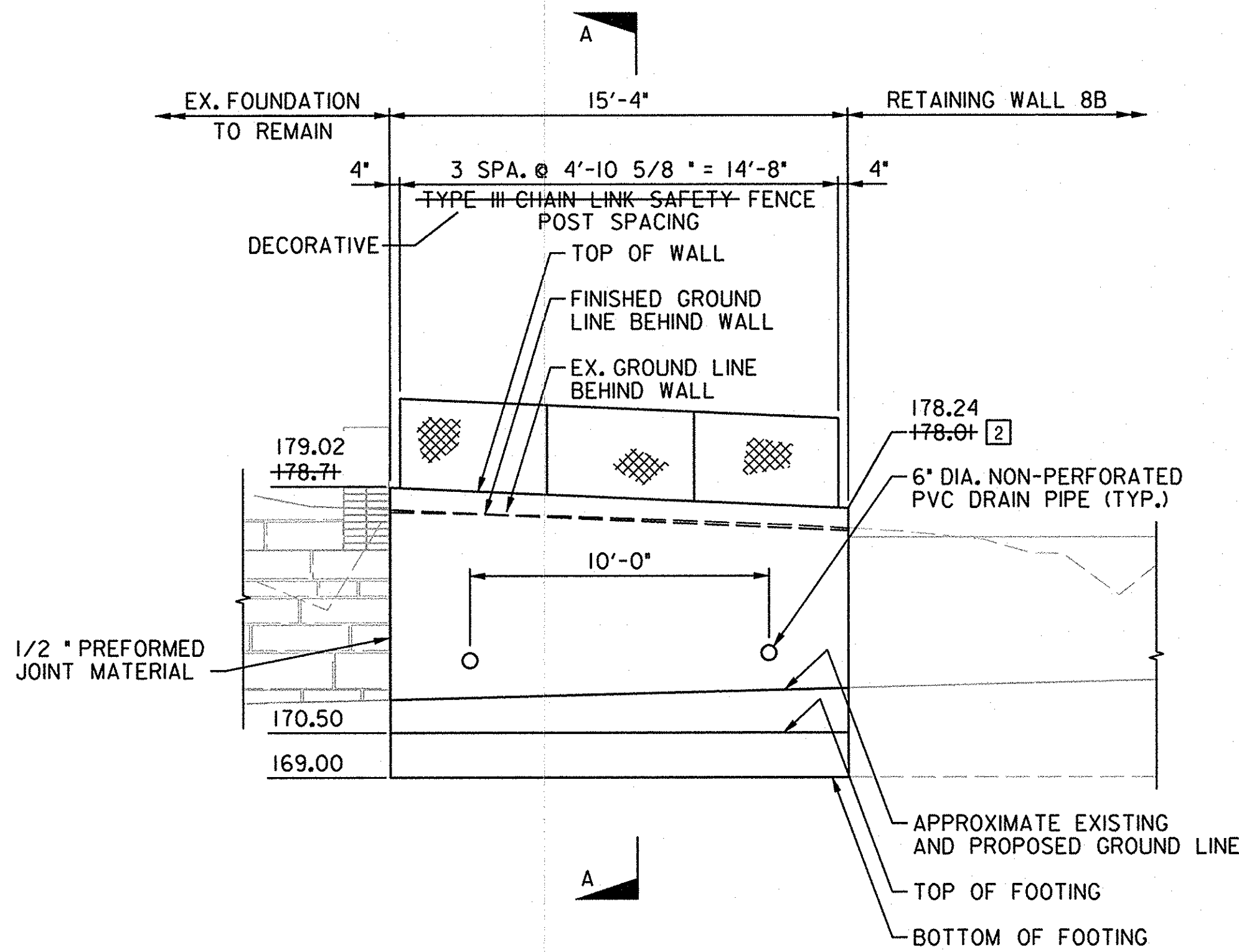
REVISIONS			DATE
NO.	DATE	DESCRIPTION	BY
	12/2016		

**HOWARD COUNTY
ELLICOTT CITY RETAINING WALL 9A
BORINGS AND DRIVE TESTS**

DRAWING NO. **RW9A-3**
SHEET 14 OF 22
KCI JOB NUMBER
1713331496



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



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

GENERAL NOTES:

SPECIFICATIONS: HOWARD COUNTY VOLUME IV DESIGN MANUAL STANDARD SPECIFICATIONS AND DETAILS FOR CONSTRUCTION.
 - SHA SPECIFICATIONS DATED JULY, 2008
 - REVISIONS THEREOF AND ADDITIONS THERETO AND SPECIAL PROVISIONS FOR MATERIALS AND CONSTRUCTION.
 AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS DATED 2014 FOR DESIGN INCLUDING 2015 INTERIMS.

CONCRETE DESIGN: LOAD AND RESISTANCE FACTOR DESIGN METHOD
 $f'_c = 3000$ PSI

REINFORCING STEEL DESIGN: $f_y = 60,000$ 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 SHOWN, SHALL BE LAPPED AS PER BAR LAP CHARTS. 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 4500 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.

PORTIONS OF EXISTING STRUCTURE(S) SHOWN SHADED TO BE REMOVED.

BASELINE CONSTRUCTION		
STA.	NORTHING	EASTING
0+00.00	583429.98	1368988.68
0+04.51	583434.46	1368989.27
0+19.85	583449.66	1368991.27
0+29.76	583459.50	1368992.56

AS-BUILT CERTIFICATION
 I HEREBY 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: *[Signature]* 15554 PE NO. 4/13/18 DATE

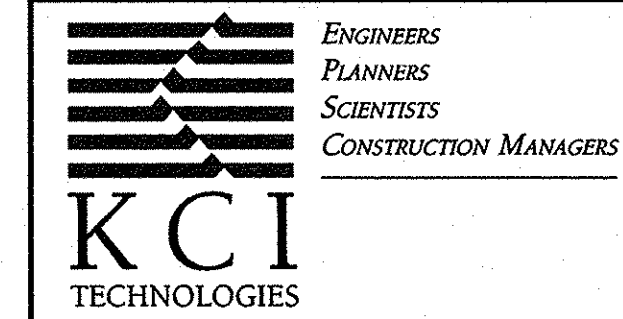
NOTES:

- FOR SECTION A-A, SEE DRAWING NO. RW9B-2.
- FOR CLARITY, EXISTING RETAINING WALL TO BE REMOVED AND CLASS II RIPRAP NOT SHOWN IN DEVELOPED ELEVATION VIEW.

PLOTTED: Wednesday, April 11, 2018 AT 01:54 PM
 BY: david.coynton
 FILE: M:\2015\17133314\96\Drawings\9B-R-CP03-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. 15554 EXPIRATION DATE: 10/06/2017

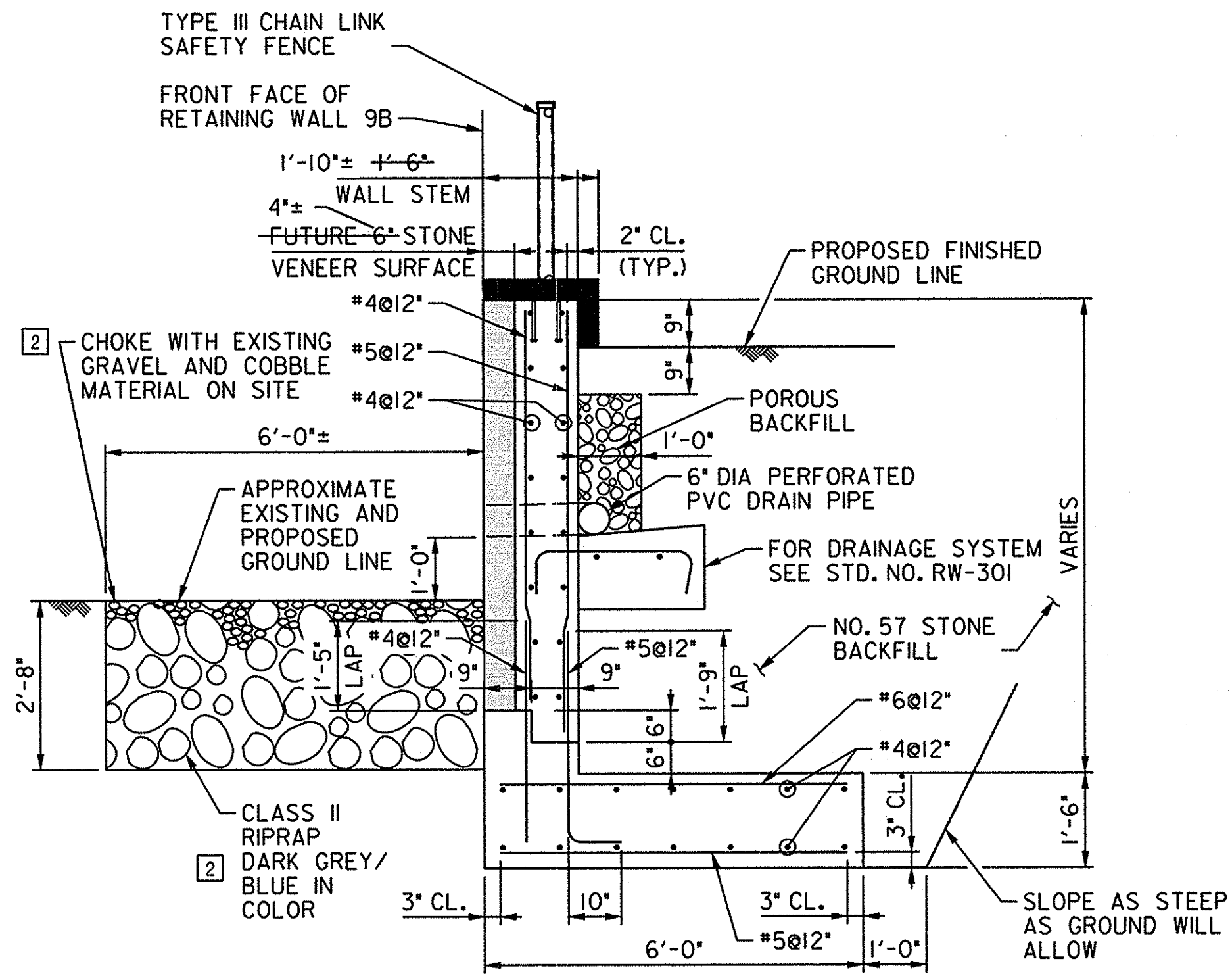


REVISIONS				DATE
NO.	DATE	DESCRIPTION	BY	SCALE
2	05/10/17	ADDED ELEVATION	DRC	AS SHOWN
	12/11/17	AS-BUILT	DRC	

**HOWARD COUNTY
 ELLICOTT CITY RETAINING WALL 9B
 GENERAL PLAN AND
 DEVELOPED ELEVATION**

RW9B-1

SHEET 15 OF 22
 KCI JOB NUMBER
 1713331496



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

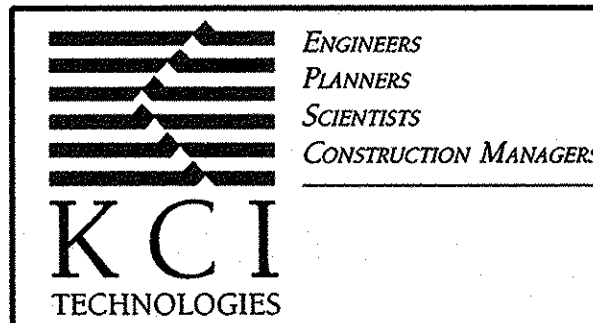
AS-BUILT CERTIFICATION
I HEREBY CERTIFY THAT THIS FACILITY SHOWN BY THIS PLAN WAS
CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND MEETS
THE APPROVED PLANS AND SPECIFICATIONS.

[Signature] 15554 4/13/18
SIGNATURE PE NO. DATE

PLOTED: Wednesday, April 11, 2018 AT 01:54 PM
BY: davidc@kci.com
FILE: M:\2013\17133314_96\Drawings\p8r-DE01-EllicottCity.dgn



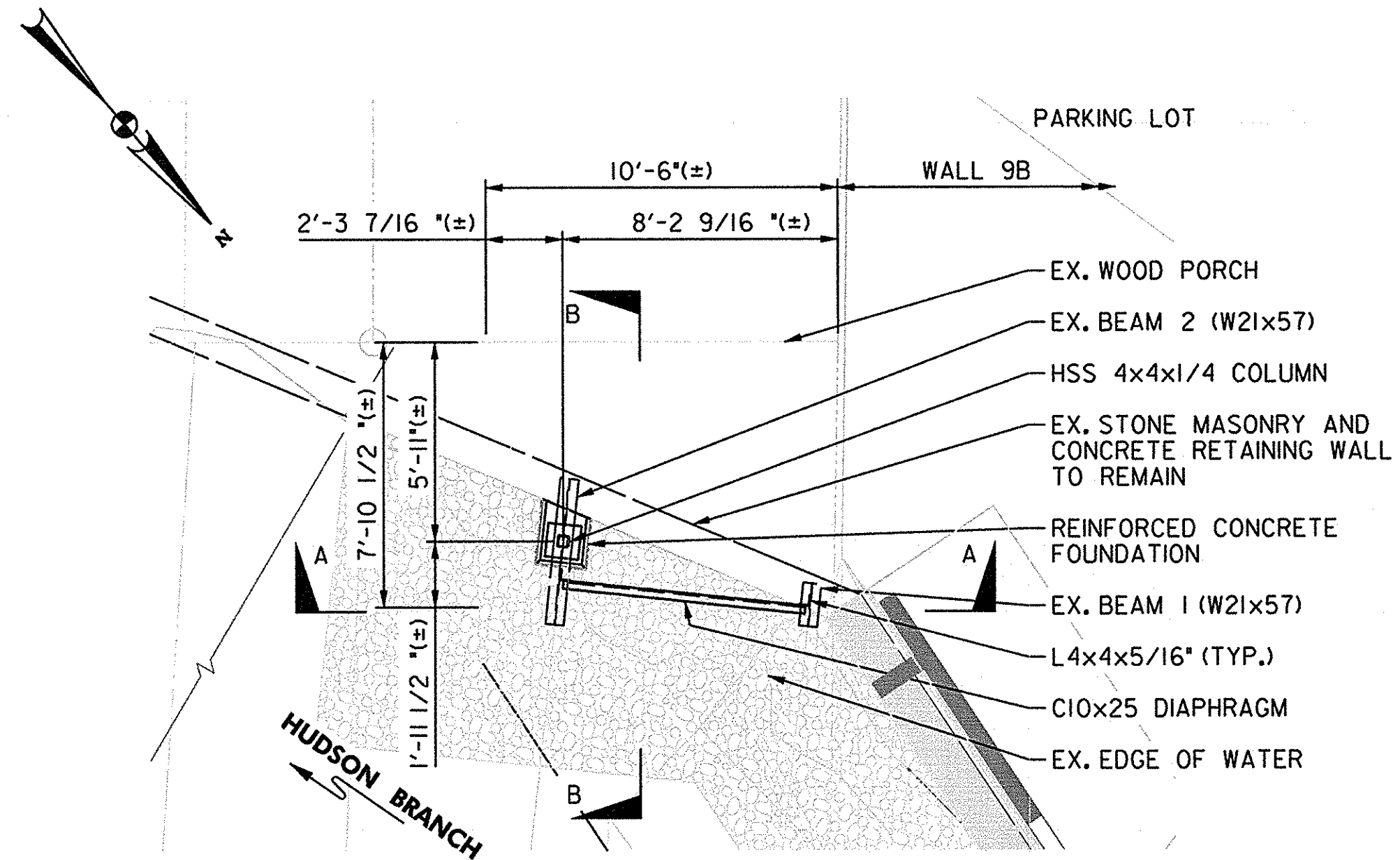
PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT
THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME
AND THAT I AM A DULY LICENSED PROFESSIONAL
ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND
LICENSE NO. 15554 EXPIRATION DATE: 10/06/2017



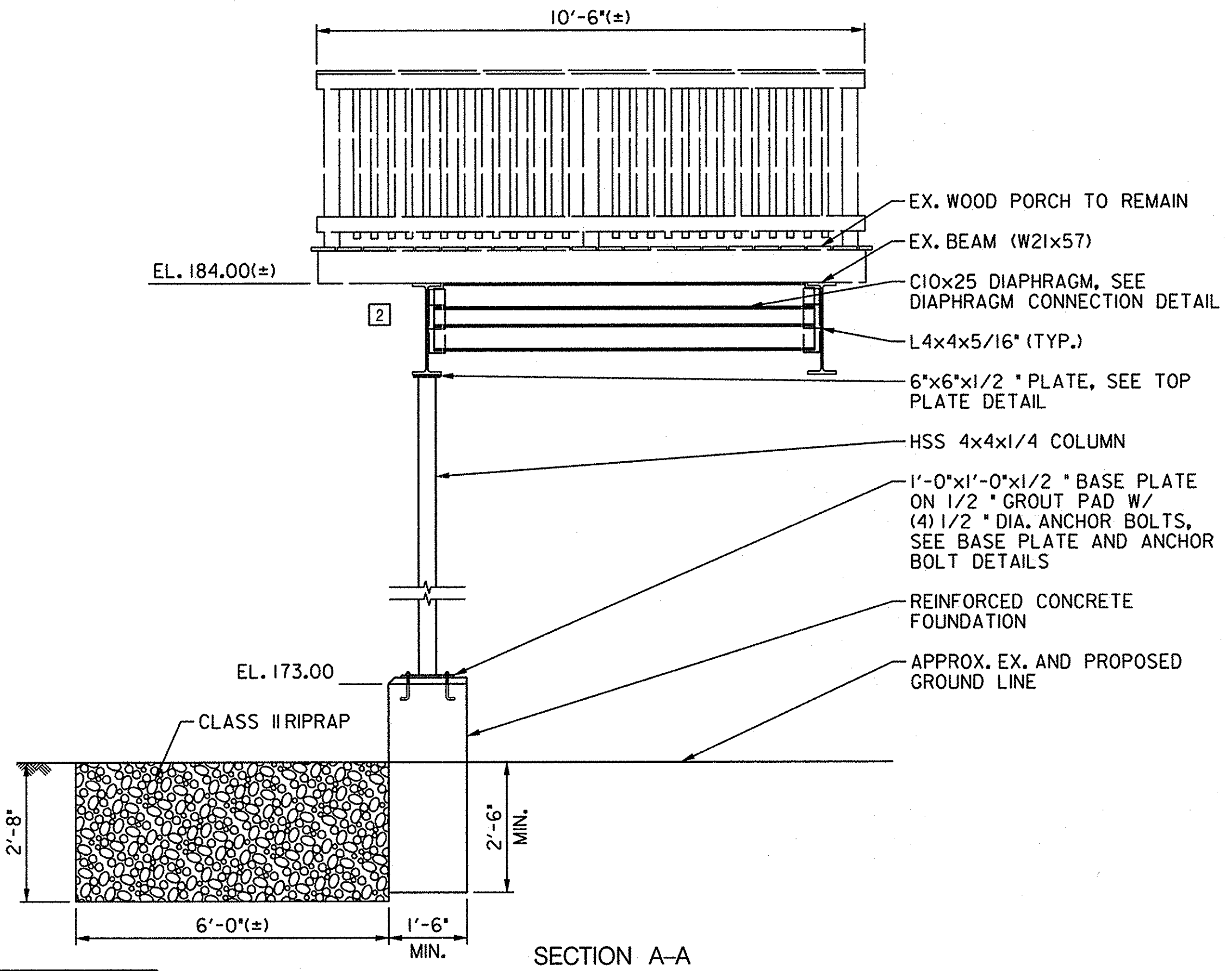
REVISIONS				DATE
NO.	DATE	DESCRIPTION	BY	12/2016
2	05/10/17	RIPRAP DETAIL	DRC	SCALE AS SHOWN
	12/11/17	AS-BUILT	DRC	DESIGNED BY RDL
				DRAWN BY DRC

**HOWARD COUNTY
ELLICOTT CITY RETAINING WALL 9B
SECTION**

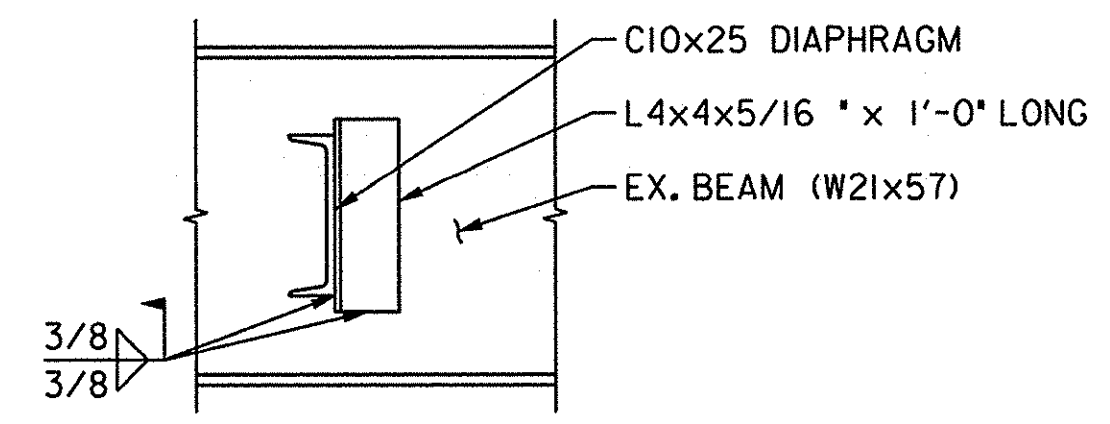
DRAWING NO.
RW9B-2
SHEET 16 OF 22
KCI JOB NUMBER
1713331496



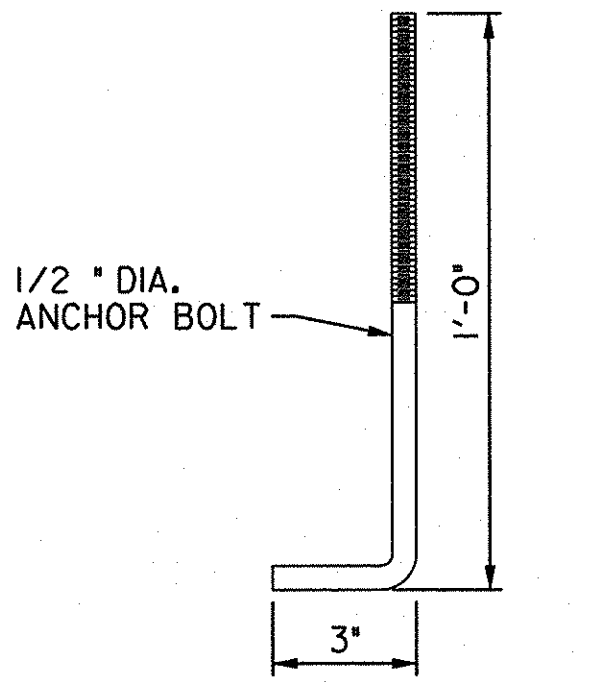
PLAN
SCALE: 1/4" = 1'-0"



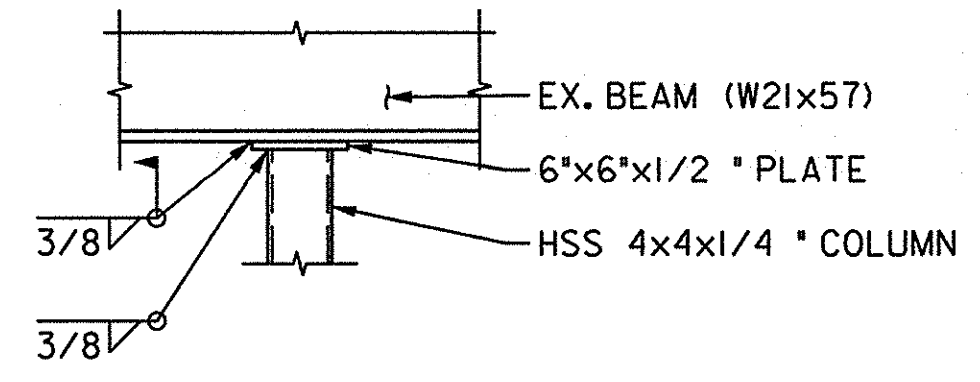
SECTION A-A
SCALE: 1/2" = 1'-0"



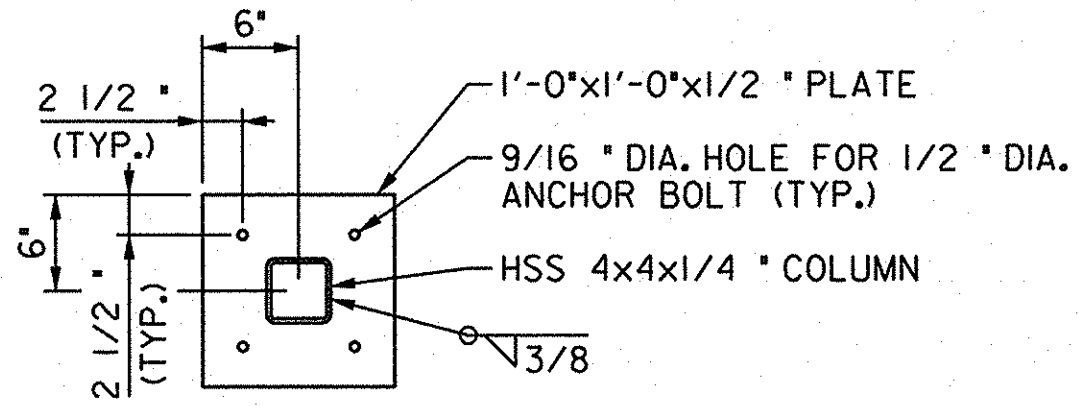
DIAPHRAGM CONNECTION DETAIL
SCALE: 1" = 1'-0"



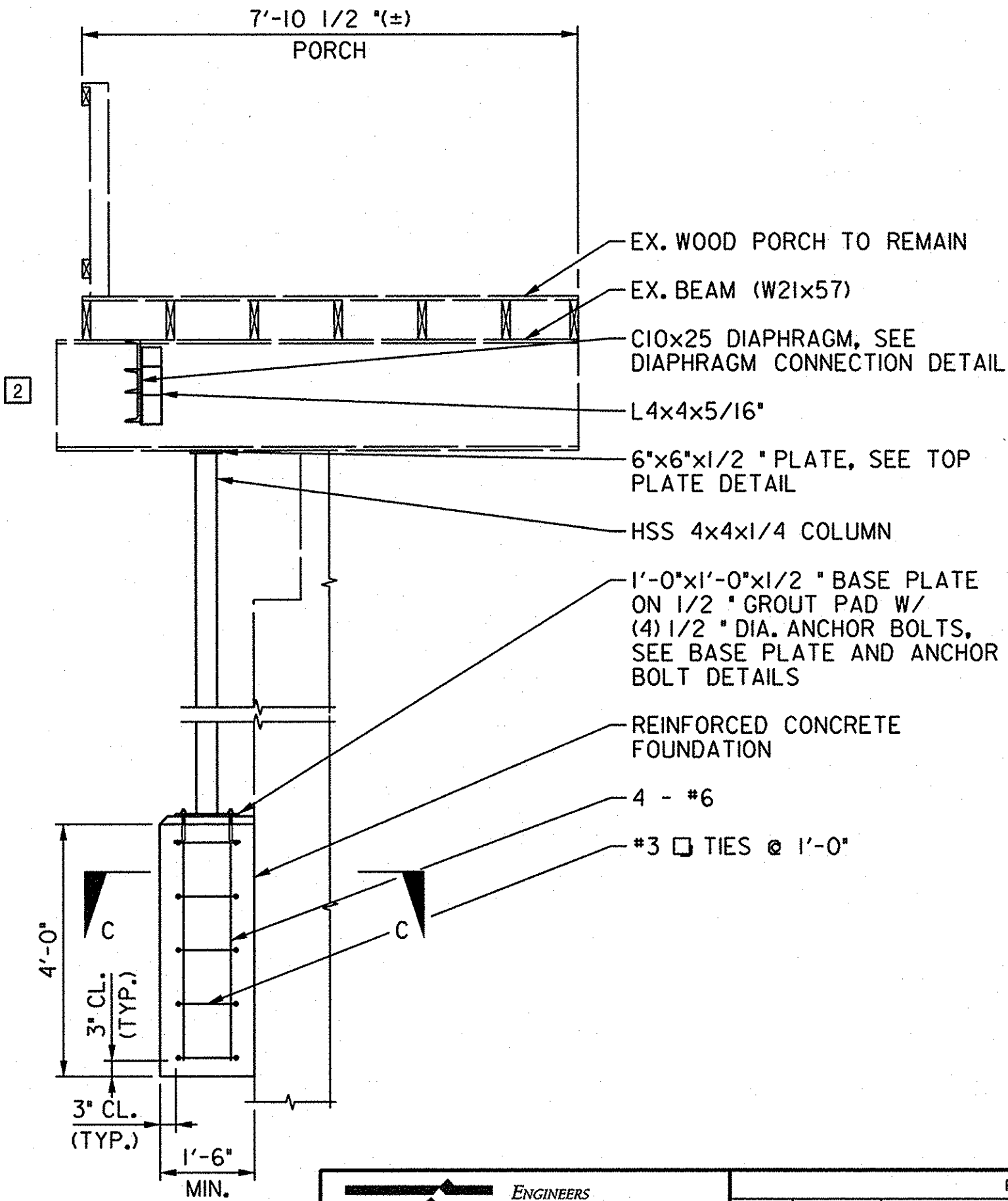
ANCHOR BOLT DETAIL
SCALE: 3" = 1'-0"



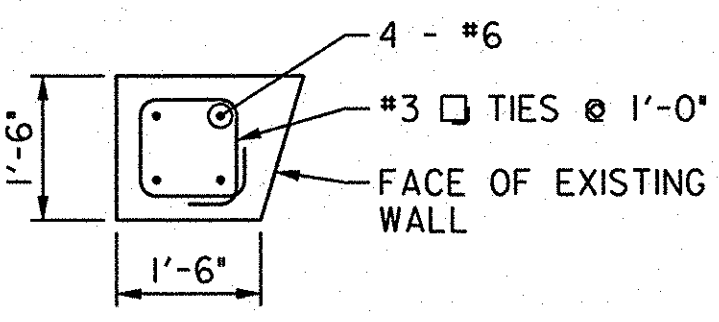
TOP PLATE DETAIL
SCALE: 1" = 1'-0"



BASE PLATE DETAIL
SCALE: 1" = 1'-0"



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



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

NOTE:

PORCH SUPPORT WILL NOT BE MEASURED BUT WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE. THE PAYMENT WILL BE FULL COMPENSATION FOR ALL FORMS AND FORM REMOVAL, CONCRETE, REINFORCEMENT STEEL, CURING, TEMPORARY SUPPORTS, EXCAVATION, REMOVAL OF EXISTING STRUCTURE, FABRICATED STRUCTURAL STEEL, ANCHOR BOLTS, AND ALL MATERIAL, LABOR, EQUIPMENT, TOOLS AND INCIDENTALS NECESSARY TO COMPLETE THE WORK.

GENERAL NOTES:

SPECIFICATIONS: HOWARD COUNTY VOLUME IV DESIGN MANUAL STANDARD SPECIFICATIONS AND DETAILS FOR CONSTRUCTION.
- SHA SPECIFICATIONS DATED JULY, 2008
- REVISIONS THEREOF AND ADDITIONS THERETO AND SPECIAL PROVISIONS FOR MATERIALS AND CONSTRUCTION.
AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS DATED 2014 FOR DESIGN INCLUDING 2015 INTERIMS.

CONCRETE DESIGN: LOAD AND RESISTANCE FACTOR DESIGN METHOD
f'c = 3000 PSI

REINFORCING STEEL DESIGN: fy = 60,000 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 SHOWN, SHALL BE LAPPED AS PER BAR LAP CHARTS. 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.

DESIGN PARAMETERS: EARTH PRESSURE CALCULATED BASED ON COULOMB THEORY. ANGLE OF INTERNAL FRICTION 33 DEGREES. ALLOWABLE BEARING PRESSURE 4500 PSF.

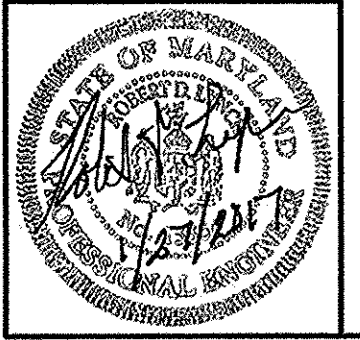
EXISTING STRUCTURE: ALL DIMENSIONS AFFECTED BY THE GEOMETRICS, AND/OR LOCATION OF THE EXISTING STRUCTURE(S) SHALL BE CHECKED IN THE FIELD BY THE CONTRACTOR, BEFORE ANY CONSTRUCTION IS DONE, AND BEFORE ANY MATERIAL IS ORDERED OR FABRICATED. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO SUPPLY THE 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.

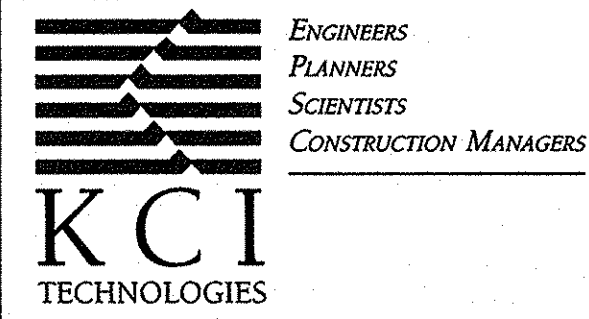
STRUCTURAL STEEL: STRUCTURAL STEEL SHALL CONFORM TO A 709, GRADE 50.

RECTANGULAR HOLLOW STRUCTURAL SECTIONS (HSS) SHALL CONFORM TO ASTM 500, GRADE B (fy = 46 KSI).

PLOTTER: Wednesday, April 11, 2018 AT 01:54 PM
BY: david@cityofellc.com
FILE: M:\2013\17133314\96\Drawings\p8R-cp05-EllicottCity.dgn



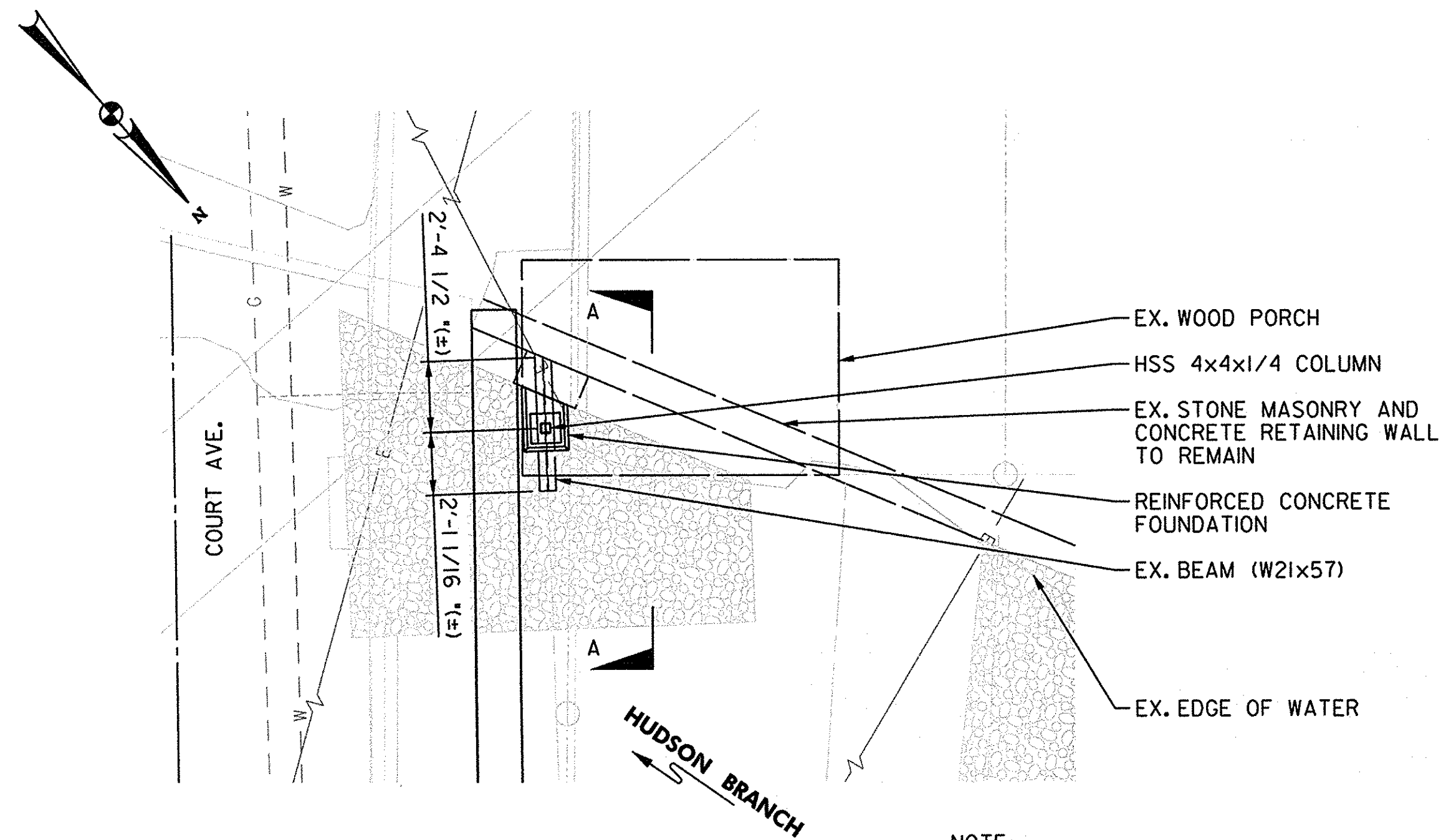
PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND LICENSE NO. 15564 EXPIRATION DATE: 10/06/2017



REVISIONS				DATE
NO.	DATE	DESCRIPTION	BY	SCALE
2	05/10/17	ADJUSTED DIAPHRAGM	DRC	AS SHOWN
				DESIGNED BY
				RDL
				DRAWN BY
				DRC

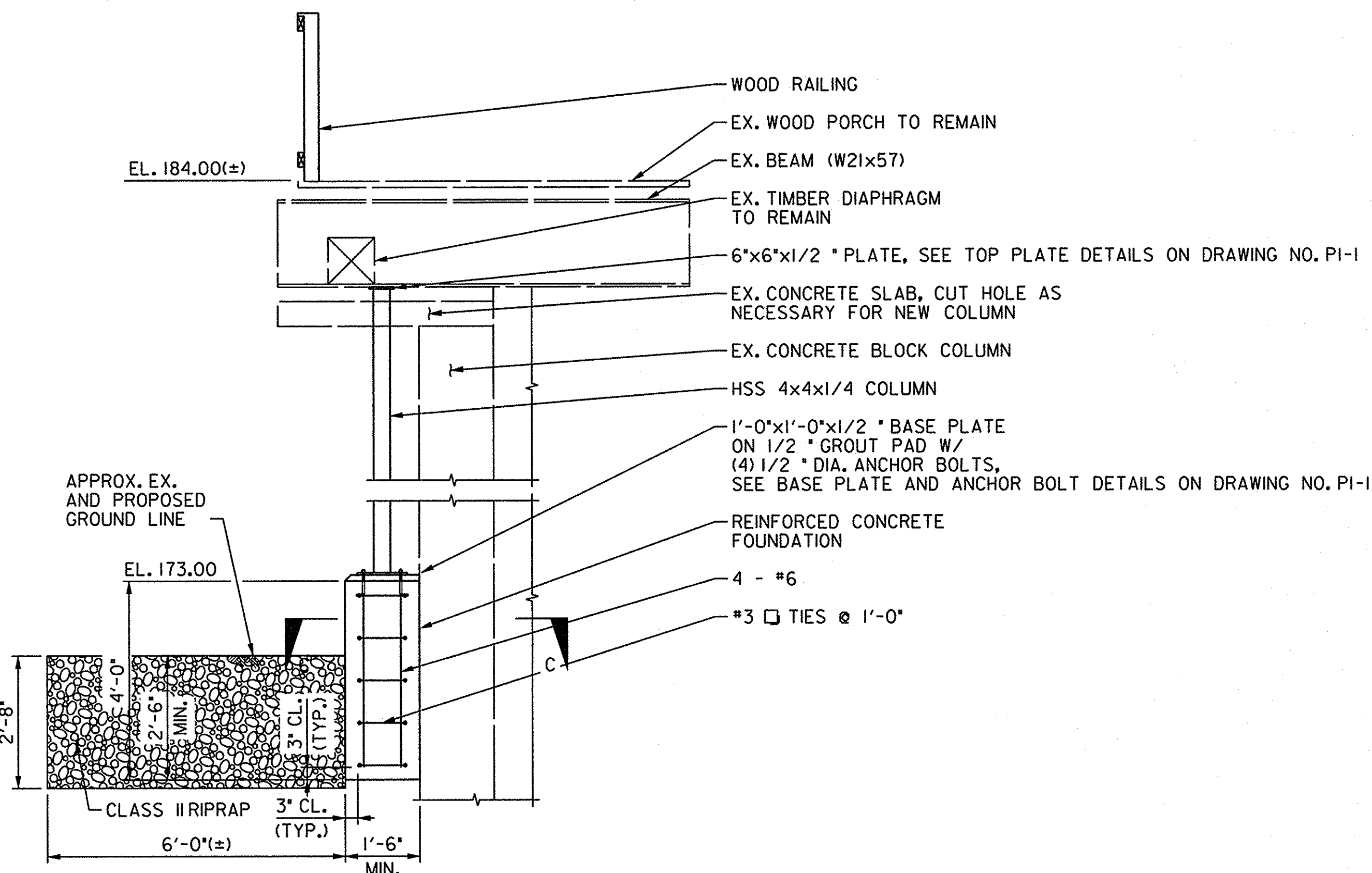
**HOWARD COUNTY
ELICOTT CITY PORCH 1 RETROFIT
PLAN, SECTIONS
AND DETAILS**

DRAWING NO. **P1-1**
SHEET 17 OF 22
KCI JOB NUMBER
1713331496



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

NOTE:
FRONT FACE OF EXISTING WALL IS APPROXIMATE
BASED OFF FIELD MEASUREMENTS.



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

GENERAL NOTES:

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

- SHA SPECIFICATIONS DATED JULY, 2008
- REVISIONS THEREOF AND ADDITIONS THERETO AND SPECIAL PROVISIONS FOR MATERIALS AND CONSTRUCTION.

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

CONCRETE DESIGN: LOAD AND RESISTANCE FACTOR DESIGN METHOD
f'c = 3000 PSI

REINFORCING STEEL DESIGN: fy = 60,000 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 SHOWN, SHALL BE LAPPED AS PER BAR LAP CHARTS. 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.

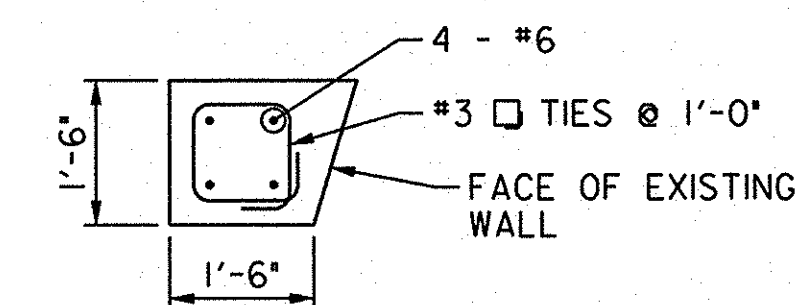
DESIGN PARAMETERS: EARTH PRESSURE CALCULATED BASED ON COULOMB THEORY. ANGLE OF INTERNAL FRICTION 33 DEGREES. ALLOWABLE BEARING PRESSURE 4500 PSF.

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.

STRUCTURAL STEEL: STRUCTURAL STEEL SHALL CONFORM TO A 709, GRADE 50.

RECTANGULAR HOLLOW STRUCTURAL SECTIONS (HSS) SHALL CONFORM TO ASTM 500, GRADE B (fy = 46 KSI).



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

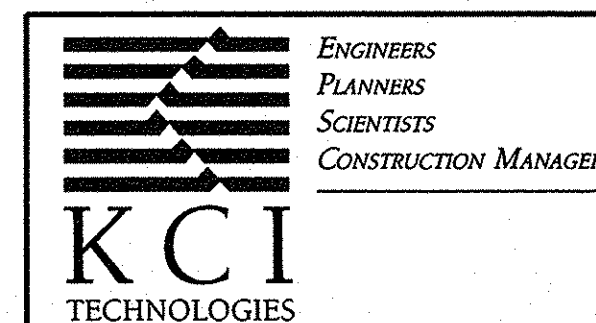
NOTE:

PORCH SUPPORT WILL NOT BE MEASURED BUT WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE. THE PAYMENT WILL BE FULL COMPENSATION FOR ALL FORMS AND FORM REMOVAL, CONCRETE, REINFORCEMENT STEEL, CURING, TEMPORARY SUPPORTS, EXCAVATION, REMOVAL OF EXISTING STRUCTURE, FABRICATED STRUCTURAL STEEL, ANCHOR BOLTS, AND ALL MATERIAL, LABOR, EQUIPMENT, TOOLS AND INCIDENTALS NECESSARY TO COMPLETE THE WORK.

PLOTTED: Wednesday, April 11, 2018 AT 01:54 PM
BY: david@cityofhdc.com
FILE: M:\2013\17133314_95\Drawings\pDR-GP07-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. 15554 EXPIRATION DATE: 10/06/2017



REVISIONS				DATE
NO.	DATE	DESCRIPTION	BY	12/2016

HOWARD COUNTY ELICOTT CITY PORCH 2 RETROFIT PLAN AND SECTIONS	DRAWING NO.	P2-1
	SHEET	18 OF 22
	KCT JOB NUMBER	1713331496
	SCALE	AS SHOWN
DESIGNED BY	RDL	
DRAWN BY	DRC	

GENERAL NOTES:

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

- SHA SPECIFICATIONS DATED JULY, 2008
 - REVISIONS THEREOF AND ADDITIONS THERETO AND SPECIAL PROVISIONS FOR MATERIALS AND CONSTRUCTION.

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

CONCRETE DESIGN: LOAD AND RESISTANCE FACTOR DESIGN METHOD
 f'c = 3000 PSI

REINFORCING STEEL DESIGN: fy = 60,000 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 SHOWN, SHALL BE LAPPED AS PER BAR LAP CHARTS. 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.

STRUCTURAL STEEL: STRUCTURAL STEEL SHALL CONFORM TO ASTM A 709, GRADE 50.

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 2000 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.

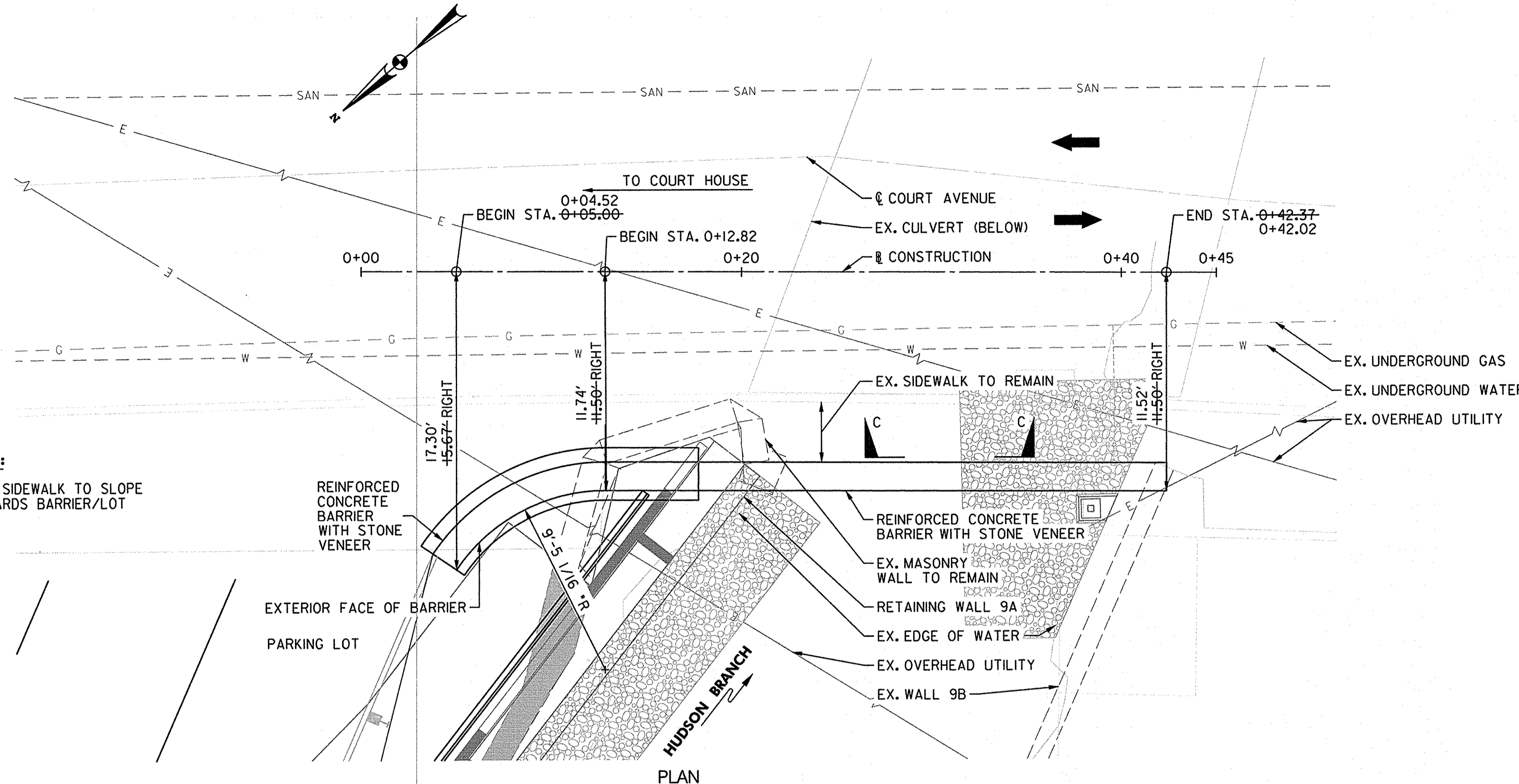
PORTIONS OF EXISTING STRUCTURE(S) SHOWN SHADED TO BE REMOVED.

BASELINE CONSTRUCTION		
STA.	NORTHING	EASTING
0+00.00	583430.59	1369029.75
0+45.00	583396.27	1369000.64

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

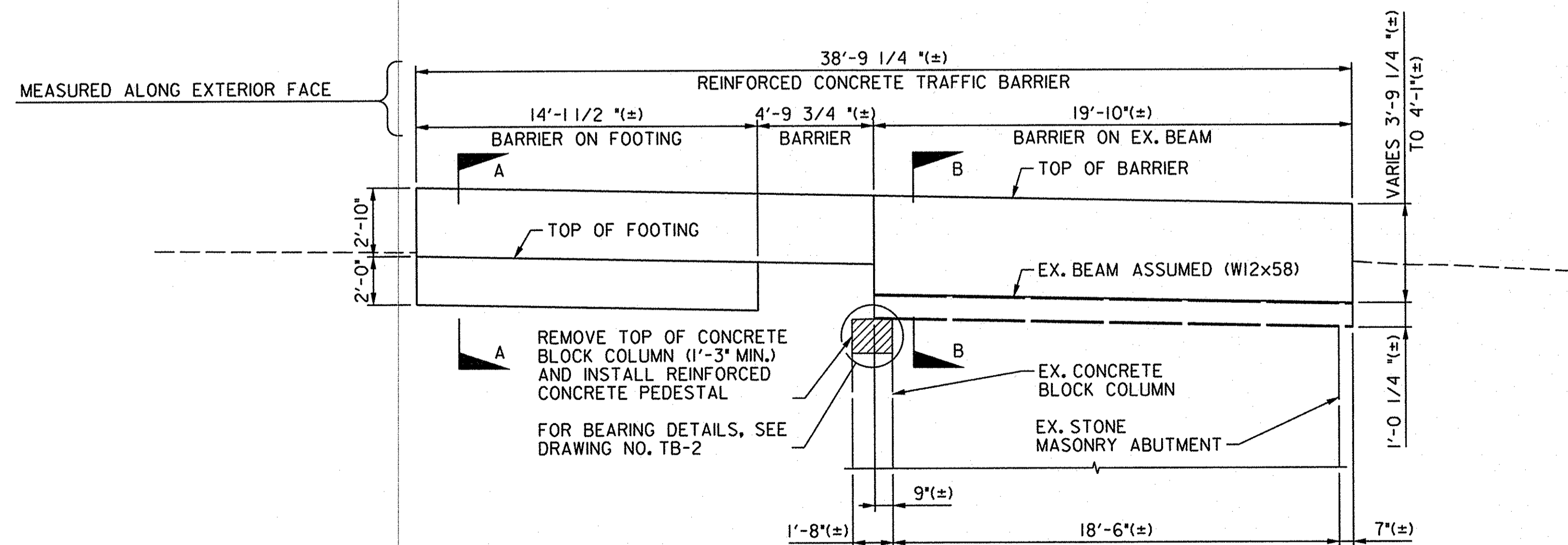
 15554 4/13/18
 SIGNATURE PE NO. DATE

- NOTES:**
- FOR SECTION A-A, B-B AND C-C, SEE DRAWING NO. TB-2.
 - FOR CLARITY, RETAINING WALL 9B AND CLASS II RIPRAP NOT SHOWN IN DEVELOPED ELEVATION VIEW.



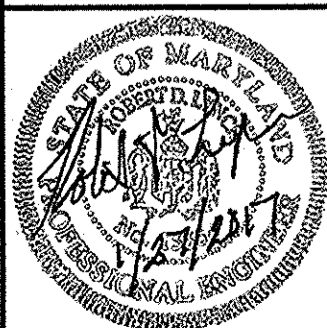
NOTE:
 NEW SIDEWALK TO SLOPE TOWARDS BARRIER/LOT

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

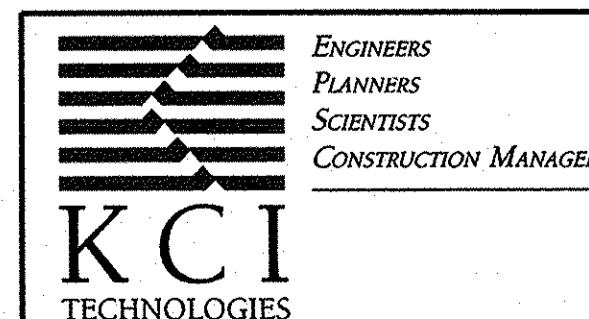


DEVELOPED ELEVATION
 SCALE: 1/4" = 1'-0"

PLOTTED: Wednesday, April 11, 2018 AT 04:54 PM
 BY: c:\p\city\p00
 FILE: M:\2013\17133314\96\Drawings\DR-CP04-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. 15554 EXPIRATION DATE: 10/08/2017

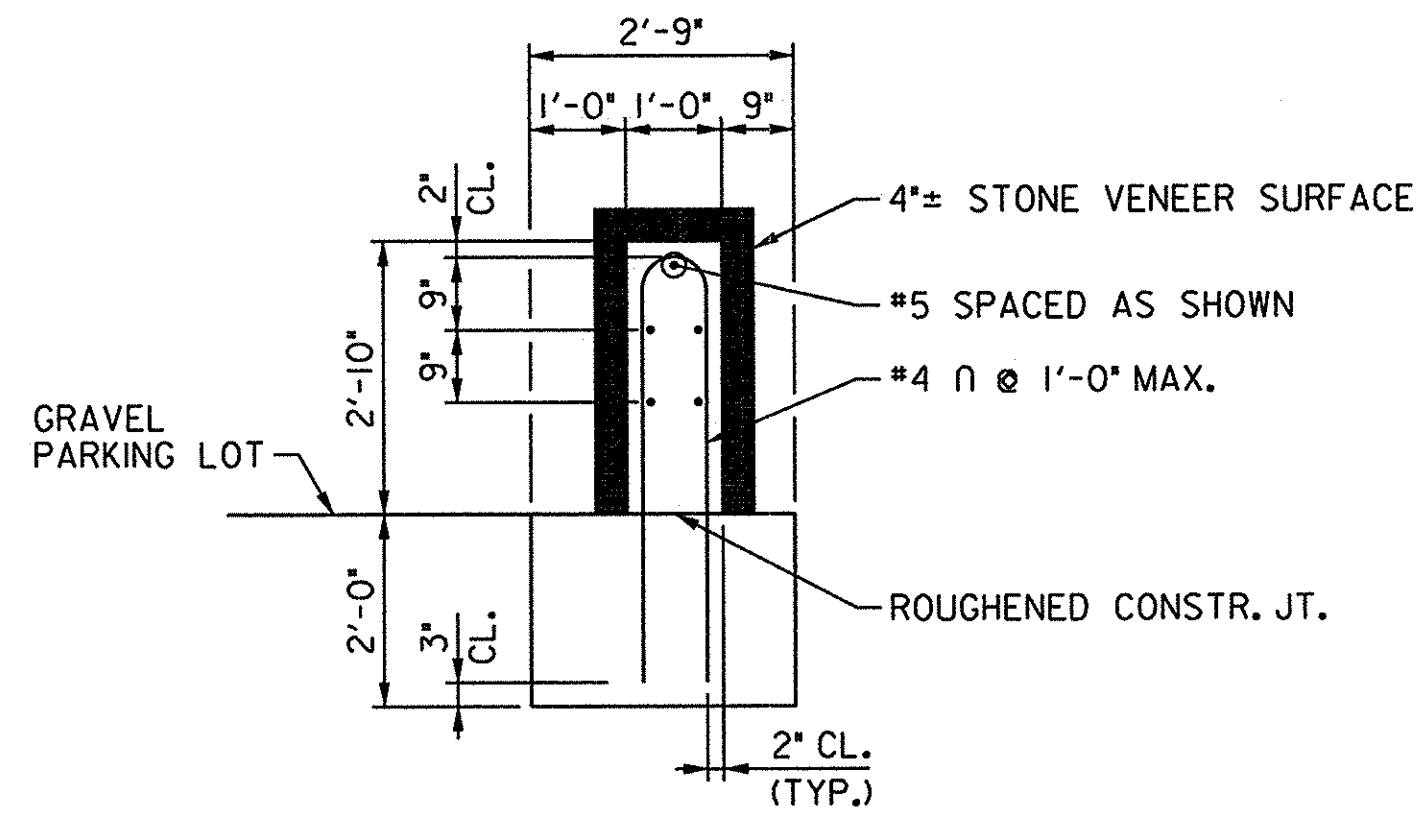


REVISIONS		DATE
NO.	DATE	DESCRIPTION
21	05/10/17	ADDED NOTE
	12/11/17	AS-BUILT

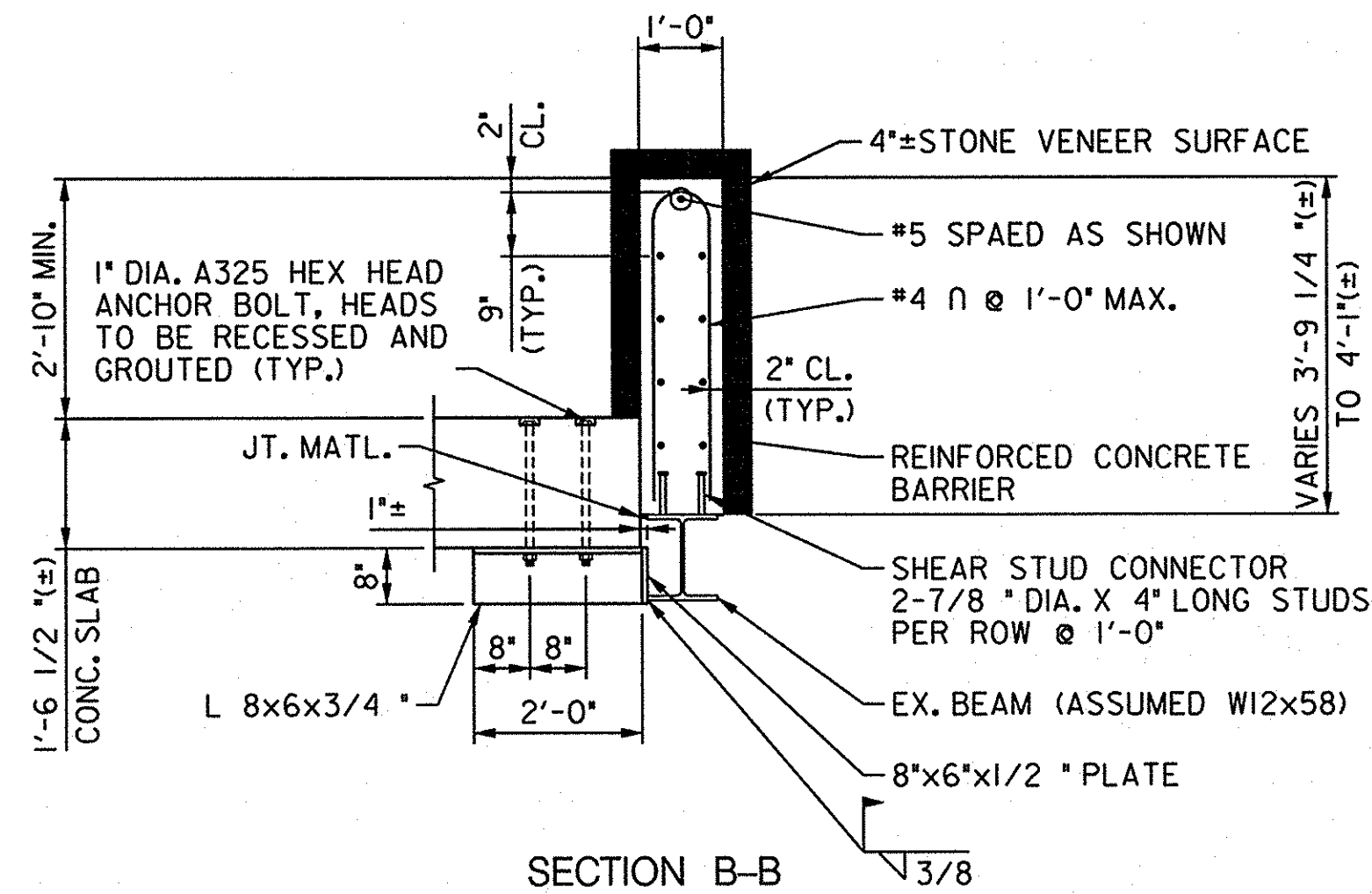
COURT AVENUE TRAFFIC BARRIER GENERAL PLAN AND DEVELOPED ELEVATION	DATE 12/2016
	SCALE AS SHOWN
	DESIGNED BY RDL
	DRAWN BY DRC

DRAWING NO. TB-1

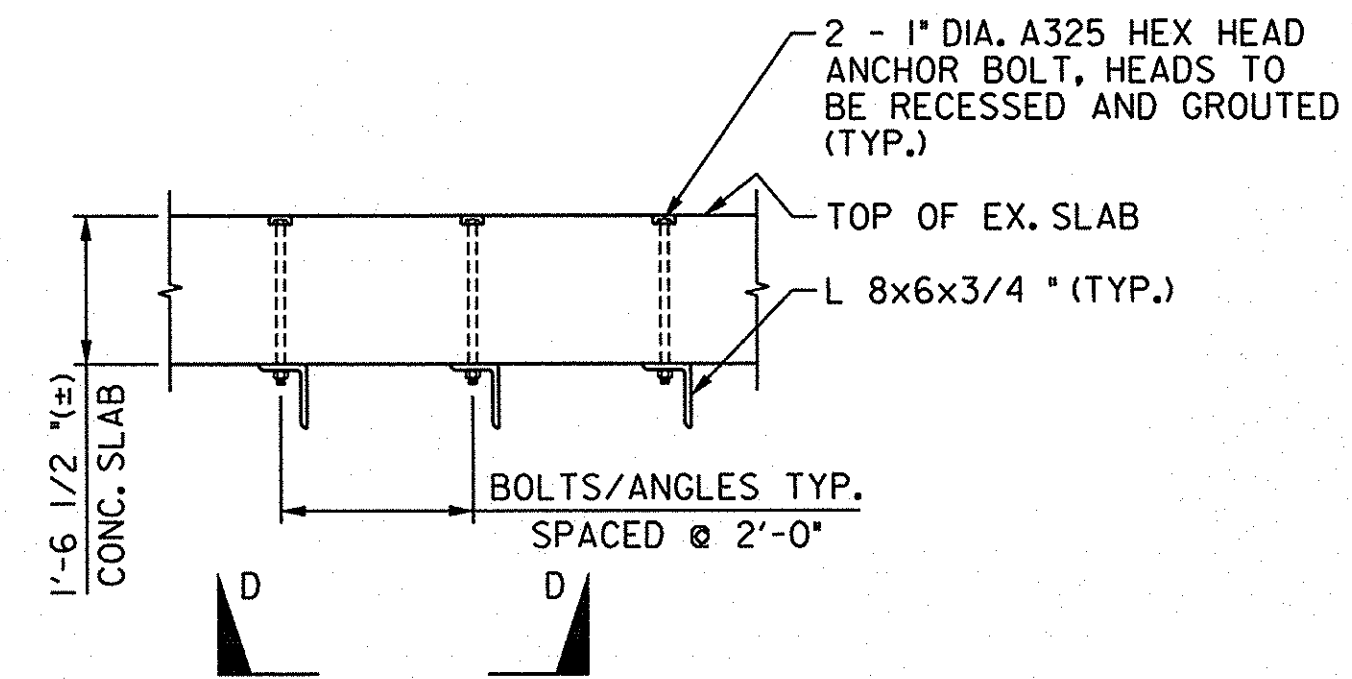
SHEET 19 OF 22
KCI JOB NUMBER 1713331496



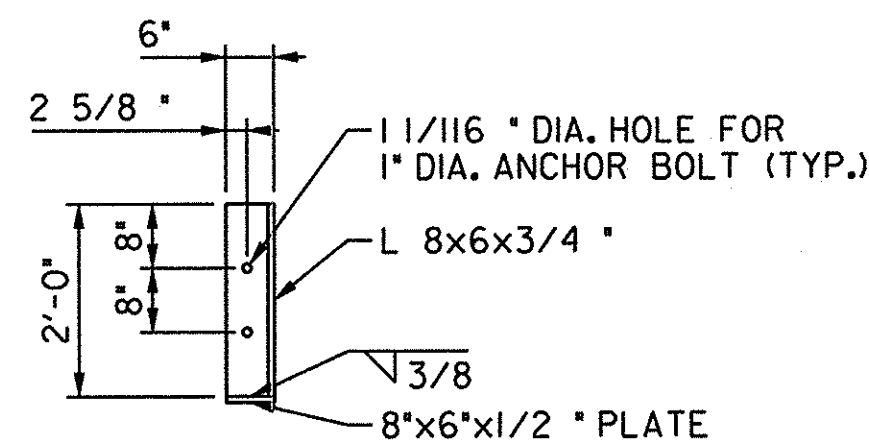
SECTION A-A
SCALE: 1/2" = 1'-0"



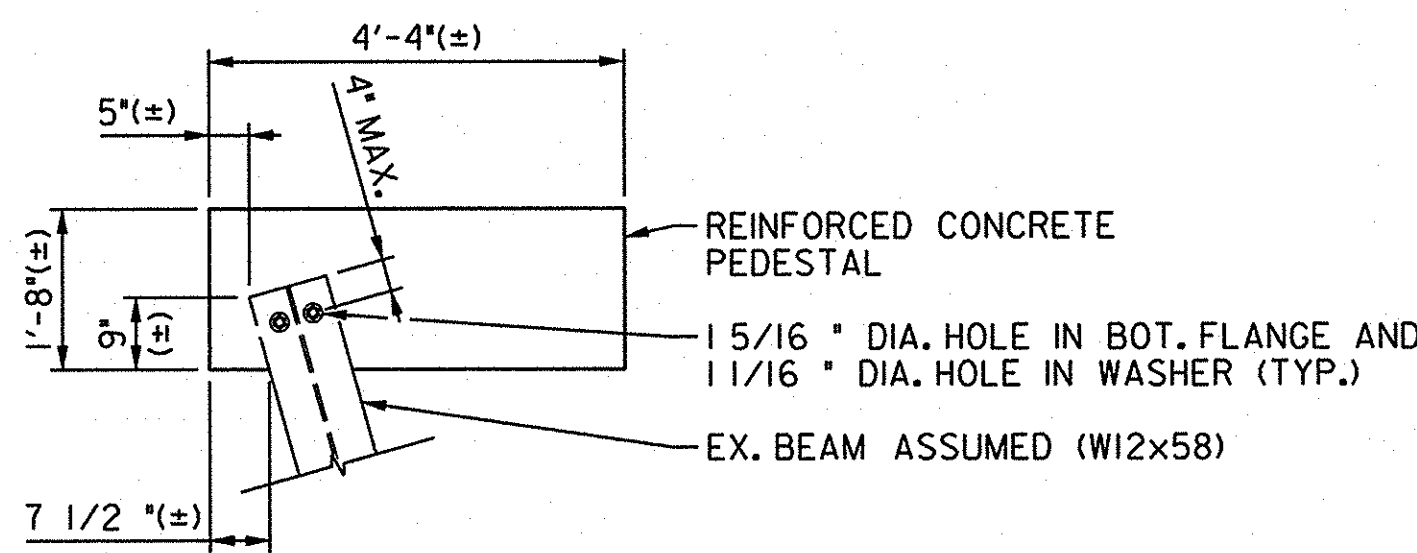
SECTION B-B
SCALE: 1/2" = 1'-0"



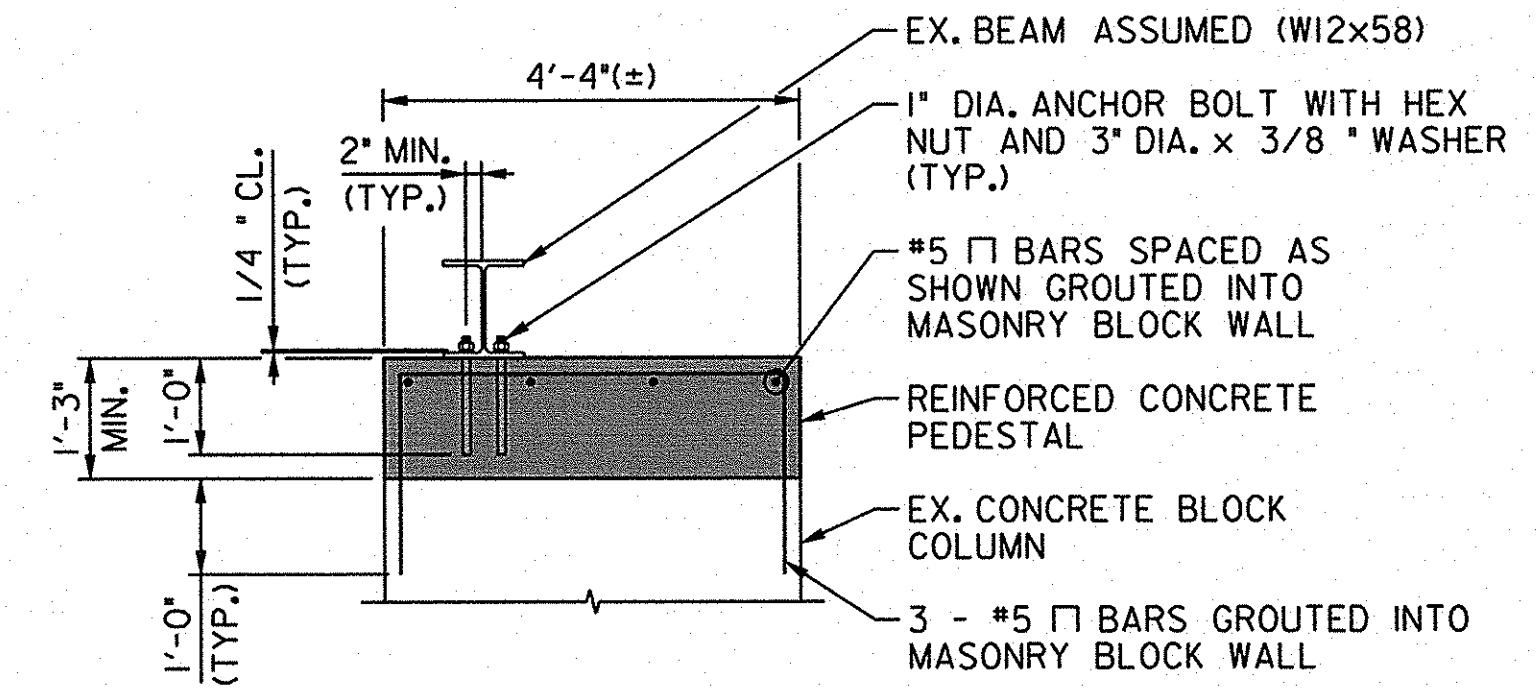
SECTION C-C
SCALE: 1/2" = 1'-0"



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



BEARING DETAIL PLAN
SCALE: 1/2" = 1'-0"



BEARING DETAIL ELEVATION
SCALE: 1/2" = 1'-0"

NOTE:

TRAFFIC BARRIER WILL NOT BE MEASURED BUT WILL BE PAID AT THE CONTRACT LUMP SUM PRICE. THE PAYMENT WILL BE FULL COMPENSATION FOR ALL FORMS AND FORM REMOVAL, CONCRETE, REINFORCEMENT STEEL, CURING, TEMPORARY SUPPORTS, EXCAVATION, REMOVAL OF EXISTING STRUCTURE, FABRICATED STRUCTURAL STEEL, ANCHOR BOLTS, STEEL STUD SHEAR DEVELOPERS, AND ALL MATERIAL, LABOR, EQUIPMENT, TOOLS AND INCIDENTALS NECESSARY TO COMPLETE THE WORK.

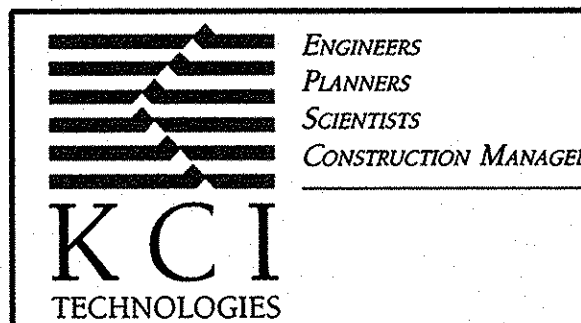
AS-BUILT CERTIFICATION
I HEREBY CERTIFY THAT THIS FACILITY SHOWN BY THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND MEETS THE APPROVED PLANS AND SPECIFICATIONS.

SIGNATURE: *[Signature]* PE NO. 15554 DATE: 4/13/18

PLOTTER: Wednesday, April 11, 2018 AT 04:54 PM
BY: davidcroy FOR
FILE: M:\2013\17133314\96-Drawings\DR-DE04-EllicottCity.dgn



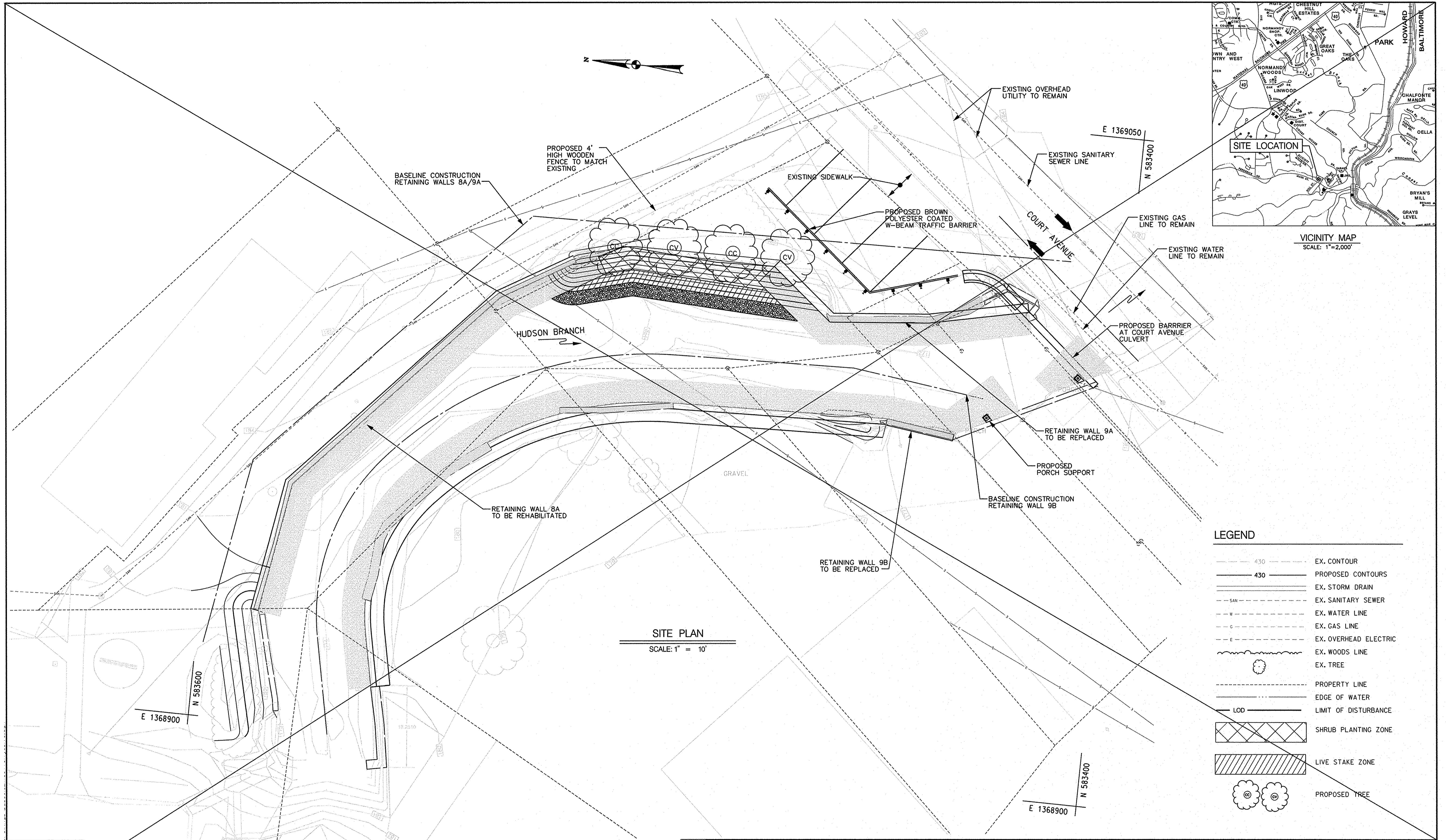
PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND LICENSE NO. 15554 EXPIRATION DATE: 10/09/2017



REVISIONS				DATE
NO.	DATE	DESCRIPTION	BY	SCALE
1	12/11/17	AS-BUILT	DRC	AS SHOWN
				DESIGNED BY
				RDL
				DRAWN BY
				DRC

**COURT AVENUE
TRAFFIC BARRIER
SECTIONS AND DETAILS**

DRAWING NO. **TB-2**
SHEET 20 OF 22
KCI JOB NUMBER
1713331496

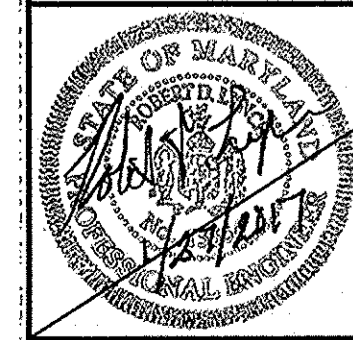


LEGEND

---	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
---		SHRUB PLANTING ZONE
---		LIVE STAKE ZONE
---		PROPOSED TREE

SITE PLAN
SCALE: 1" = 10'

VICINITY MAP
SCALE: 1"=2,000'



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: 10/06/2017

KCI
TECHNOLOGIES

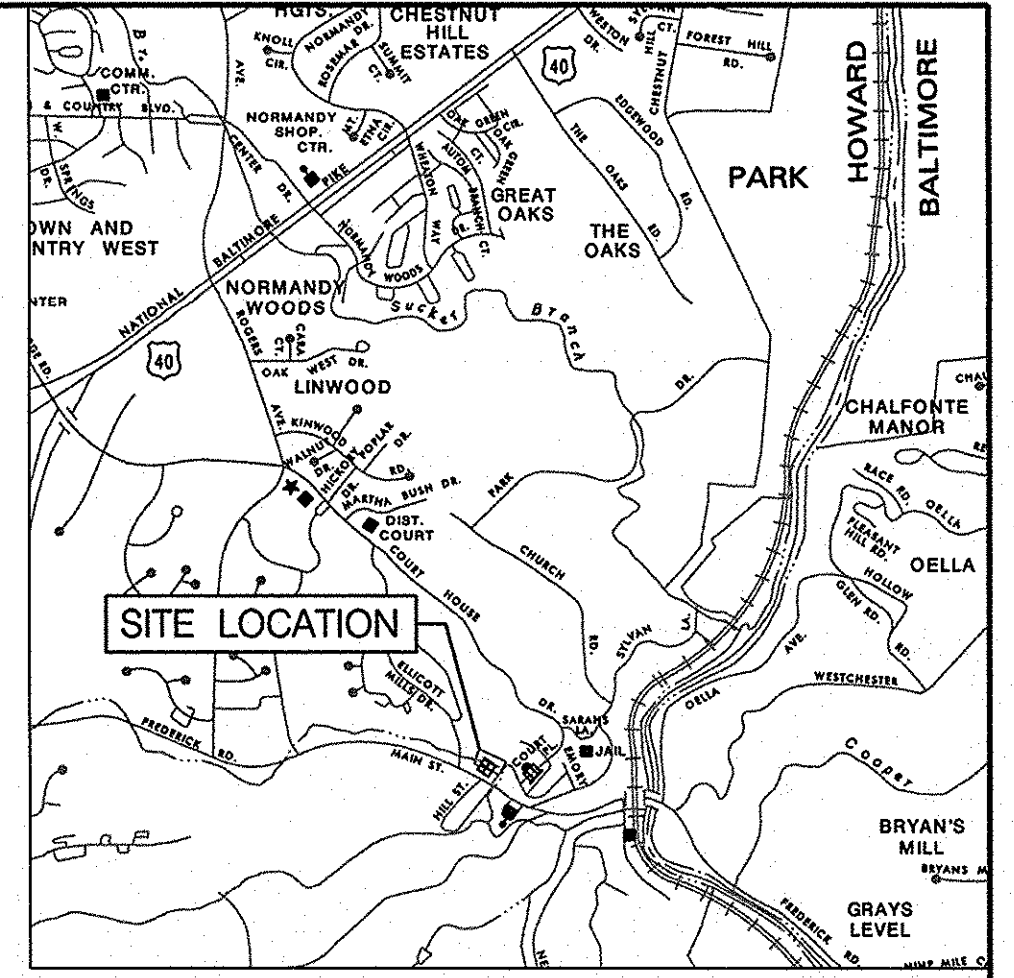
ENGINEERS
PLANNERS
SCIENTISTS
CONSTRUCTION MANAGERS

REVISIONS				DATE
NO.	DATE	DESCRIPTION	BY	DATE
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				SCALE AS SHOWN
				DESIGNED BY
				DRAWN BY

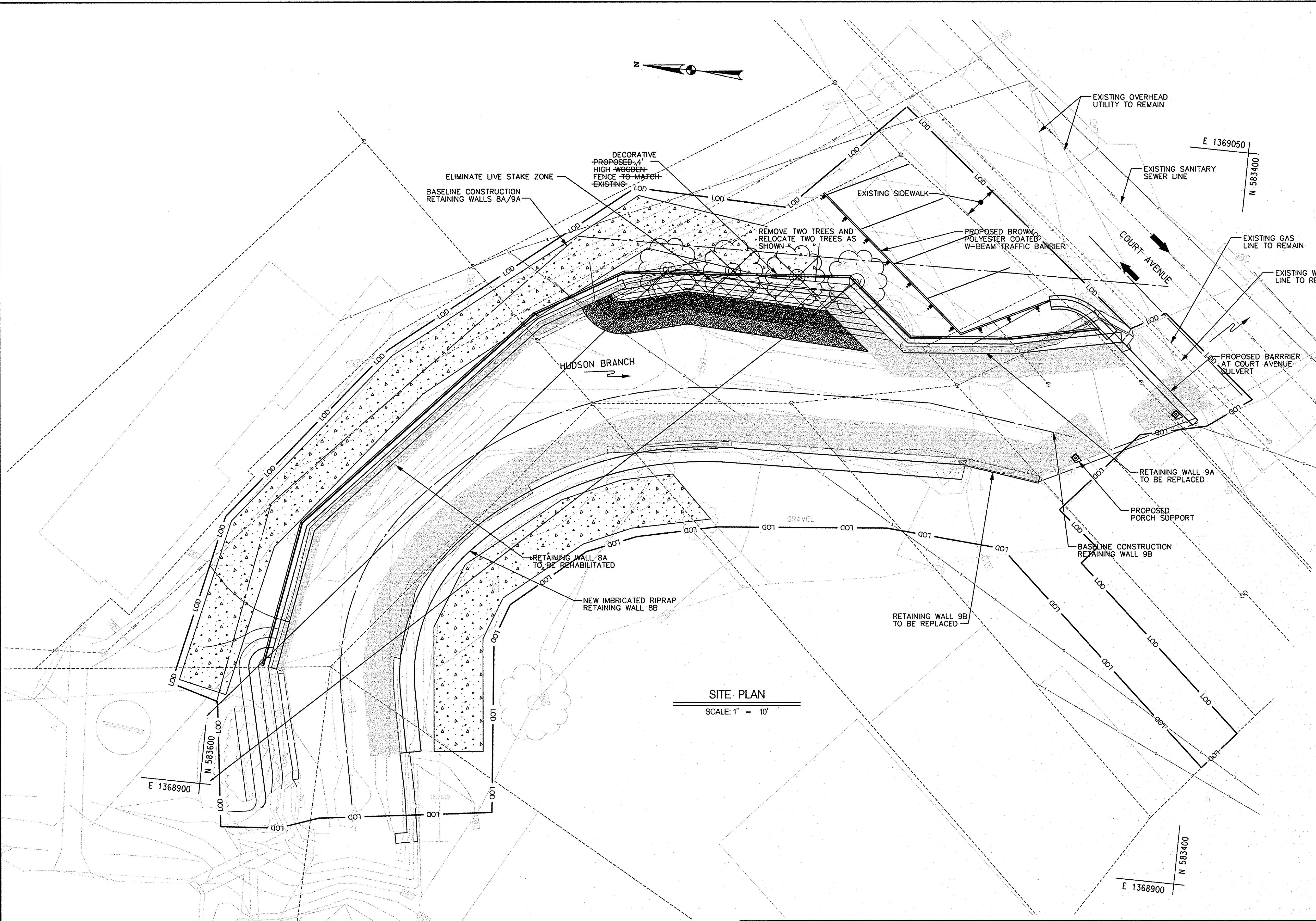
HOWARD COUNTY
ELLICOTT CITY RETAINING WALLS
8A, 9A, AND 9B
LANDSCAPE PLAN

DRAWING NO. KCI JOB NUMBER 1713331496

SHEET 21 OF 22



VICINITY MAP
SCALE: 1"=2,000'

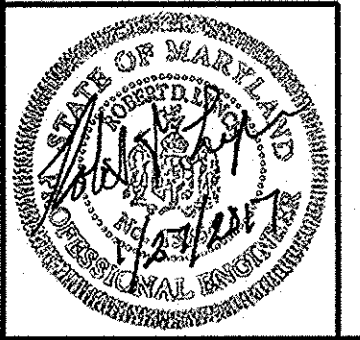


SITE PLAN
SCALE: 1" = 10'

LEGEND


--- 430 ---	EX. CONTOUR
— 430 —	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
---	LIMIT OF DISTURBANCE
▨	SHRUB PLANTING ZONE
▩	LIVE STAKE ZONE
⊙	PROPOSED TREE

PLOTTED: Wednesday, April 11, 2018 AT 04:54 PM
 BY: david.clayton
 FILE: M:\2015\17133314_96\Drawings\PL\5001_EllcottCity_Site.dgn

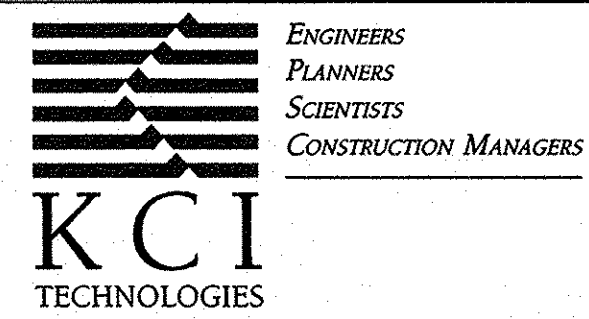


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AS-BUILT CERTIFICATION
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 SIGNATURE

15554 PE NO.
 4/13/18 DATE



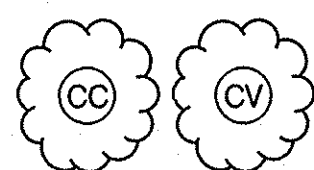
REVISIONS		DATE
NO.	DATE	DESCRIPTION
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	12/11/17	AS-BUILT

BY	DATE
DRC	12/2016
DRC	SCALE AS SHOWN
DESIGNED BY	
DRAWN BY	

**HOWARD COUNTY
 ELLICOTT CITY RETAINING WALLS
 8A, 8B, 9A, AND 9B
 LANDSCAPE PLAN**

DRAWING NO. SHEET 21A OF 22
 KCI JOB NUMBER 1713331496

PLANT SCHEDULE



Trees					
Qty	Botanical Name	Common Name	Size	Form	Spacing/Rate
1	Cercis canadensis (CC)	Eastern redbud	5' height	Container	10' O.C.
1	Chioanthus virginicus (CV)	White Fringetree	5' height	Container	10' O.C.

Note: Trees are not to be planted in the Geocell material. Plant at top of bank.

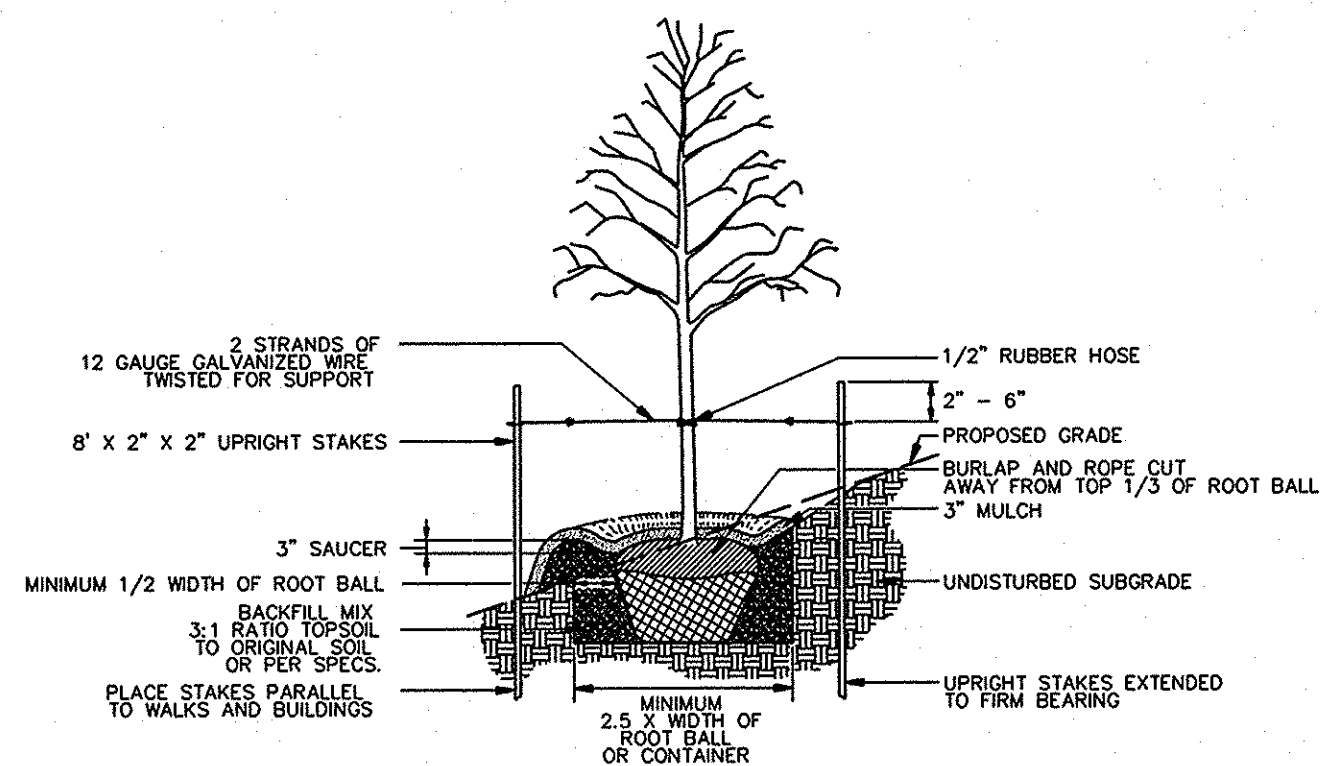


Shrubs (496 SF)					
Qty	Botanical Name	Common Name	Size	Form	Spacing/Rate
7	Cephalantus occidentalis	Common Buttonbush	3' height	Container	6' O.C.
7	Sambucus canadensis	Common Elderberry	3' height	Container	6' O.C.



Live Stake Zone (181 SF)					
Qty	Botanical Name	Common Name	Size	Form	Spacing/Rate
16	Salix nigra	Black Willow	3' length	Dormant stems	2' O.C.
16	Cornus sericea	Red Osier Dogwood	3' length	Dormant stems	2' O.C.
16	Cornus amomum	Silky Dogwood	3' length	Dormant stems	2' O.C.

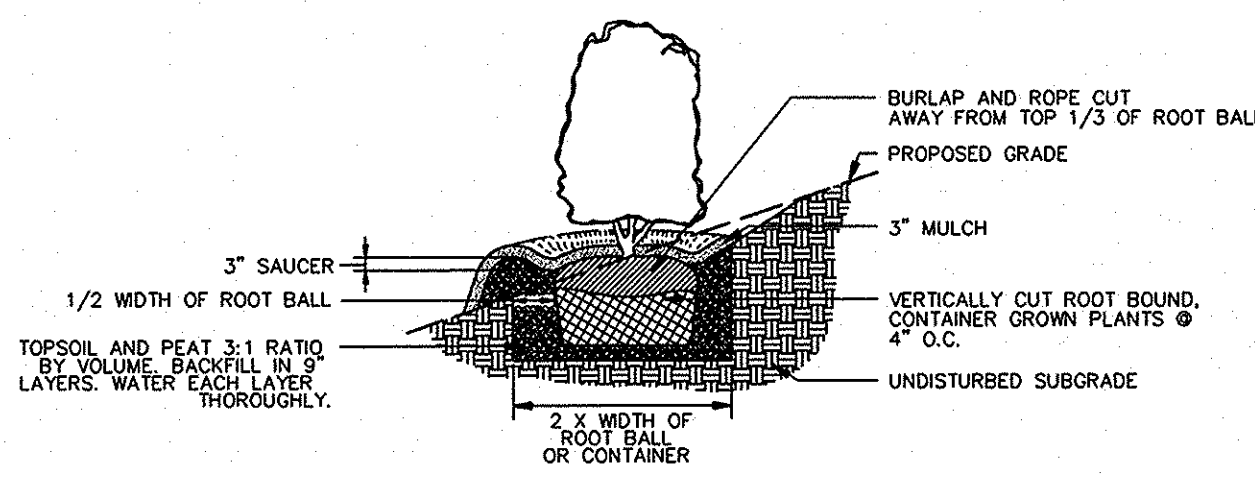
Note: Dormant stems must be planted between November 1 and April 30



SLOPE PLANTING DETAIL FOR TREES

B & B
NOT TO SCALE

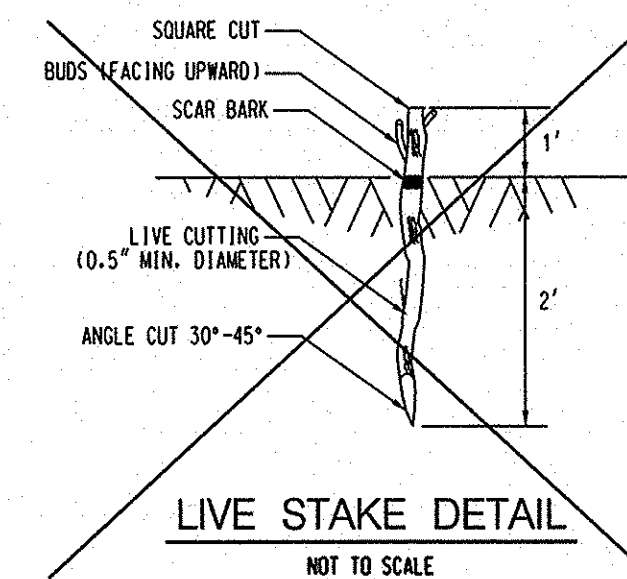
- NOTES:
1. OMIT STAKES FOR TREES IN THE RIPARIAN FOREST ZONE.
 2. FLOOD ALL PLANTS IN THE RIPARIAN FOREST ZONE AND LIVE STAKE ZONE TWICE WITHIN THE FIRST 24 HOURS.
 3. TREE SHELTERS SHALL BE ADDED TO ALL TREES.



SLOPE PLANTING DETAIL FOR SHRUBS

B & B AND CONTAINER GROWN
NOT TO SCALE


- NOTES:
1. FLOOD ALL PLANTS IN THE RIPARIAN FOREST ZONE AND LIVE STAKE ZONE TWICE WITHIN THE FIRST 24 HOURS.



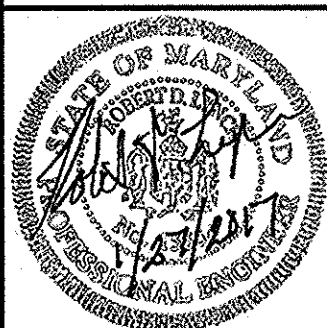
LIVE STAKE DETAIL

NOT TO SCALE

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 15554 4/13/18
 SIGNATURE PE NO. DATE

PLOTTED: Wednesday, April 11, 2018 AT 01:54 PM
BY: cecilia.coyne
FILE: M:\2013\17133314_96\Drawings\pl\001_EllcottCity.dgn



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KCI TECHNOLOGIES
ENGINEERS
PLANNERS
SCIENTISTS
CONSTRUCTION MANAGERS

REVISIONS				DATE
NO.	DATE	DESCRIPTION	BY	DATE
	12/11/17	AS-BUILT	DRC	12/2016
				SCALE N.T.S.
				DESIGNED BY
				DRAWN BY

**HOWARD COUNTY
ELLCOTT CITY RETAINING WALLS
8A, 8B, 9A, AND 9B
LANDSCAPE NOTES & DETAILS**

DRAWING NO.

SHEET 22 OF 22
KCT JOB NUMBER
1713331496