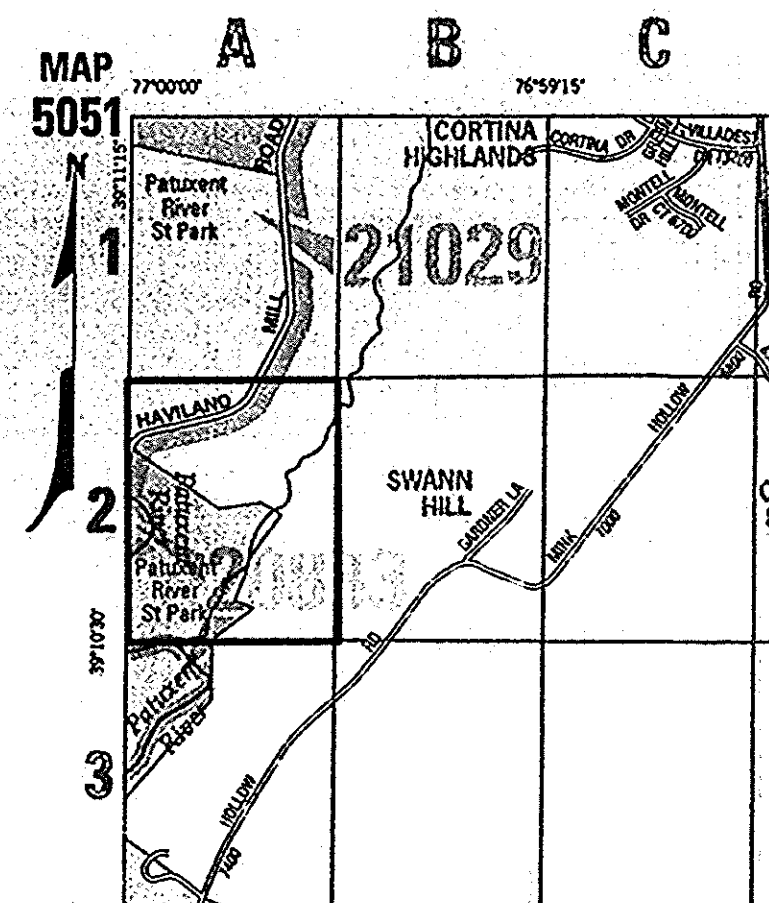
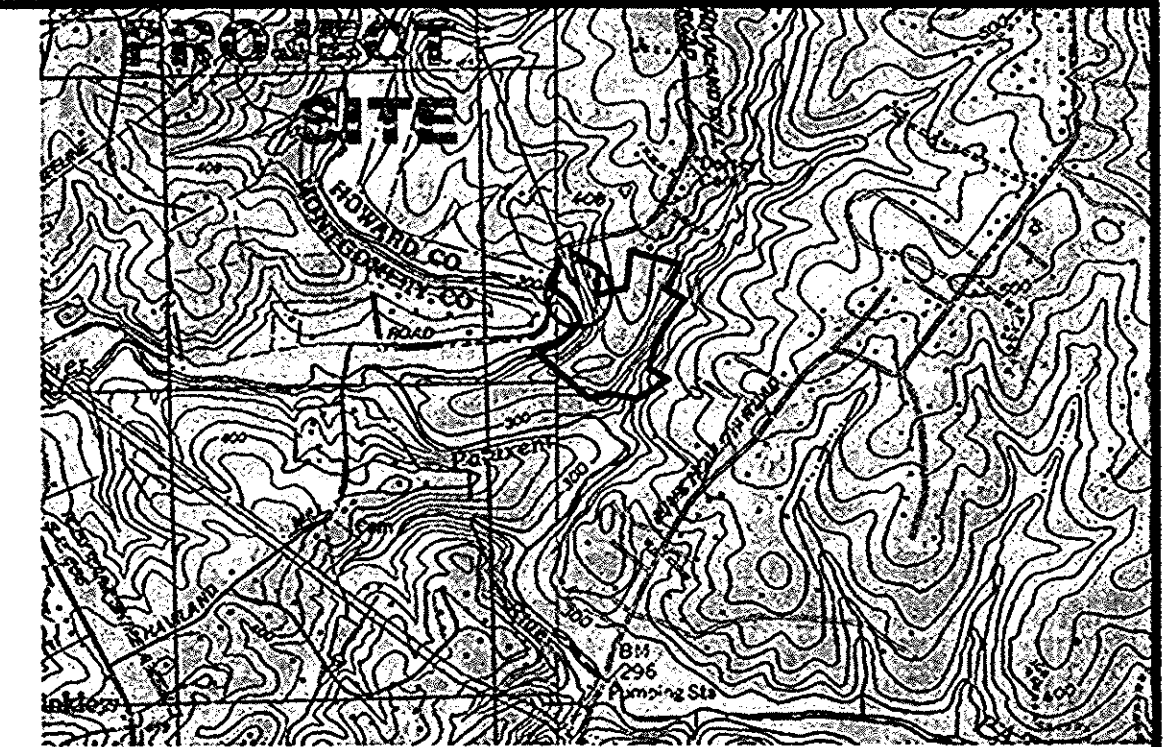


HAVILAND MILL TRAIL

HOWARD COUNTY MARYLAND

PROJECT #HC1001
SEPTEMBER 11, 2014
LAST REVISED
JANUARY 12, 2015



ADC MAP #5051-A2

SITE DATA

OWNER/APPLICANT: HOWARD COUNTY, MD
DEPT. OF PARKS & RECREATION
3430 COURT HOUSE DR.
ELLCOT CITY, MD 21043

LOT AREA - 1,457,404 S.F. (33.46 A.C.)
NUMBER OF LOTS - 1
WATER SUPPLY - N/A
SEWER - N/A
TAX MAP - HAVILAND MILL ROAD
DEED REF. 0000/0000
TAX PARCEL ID - 0040-0001-0526

ZONING CLASSIFICATION - RR-DEO - RURAL
RESIDENTIAL

LOT ADDRESS - 6971 HAVILAND MILL ROAD
CLARKSVILLE, MD 21029

WATERSHED DESIGNATION - PATUXENT RIVER - CLASS IV-P
(RECREATIONAL TROUT WATER / PUBLIC WATER SUPPLY)

PROJECT AREA - 1.92AC.
WETLAND AREA - 0.67AC.
FLOODPLAIN AREA - 0.72AC.
FOREST AREA - 0.00AC.
LIMIT OF DISTURBANCE - 0.49AC.
CONSERVATION AREA - 0.00AC.
IMPERVIOUS COVER - 0.16AC.
STEEP SLOPES >15% - 0.53AC.



AERIAL MAP
SCALE: 1"=500'

DRAWING INDEX

SHEET 1 OF 8	COVER SHEET
SHEET 2 OF 8	EXISTING FEATURES / DEMOLITION PLAN
SHEET 3 OF 8	SITE PLAN AND PROFILE
SHEET 4 OF 8	DETAILS
SHEET 5 OF 8	ESPC PLAN
SHEET 6 OF 8	ESPC PLAN NOTES AND DETAILS
SHEET 7 OF 8	PCSM PLANS
SHEET 8 OF 8	TRAILERAD PLAN AND DETAILS

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APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
Peter H. Chase 3-13-15
Chief, Development Engineering Division Date
Victor S. Swann 3-04-15
Chief, Division of Land Development Date



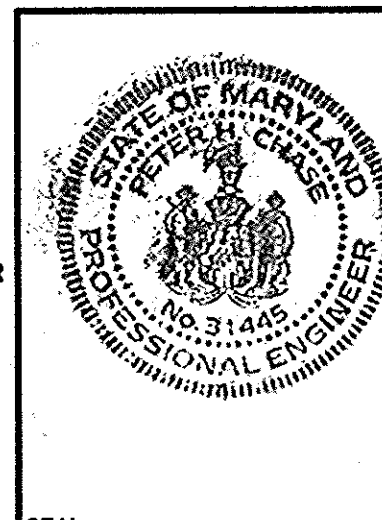
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OWNER/APPLICANT
HOWARD COUNTY RECREATION AND PARKS
7120 OAKLAND MILLS ROAD
COLUMBIA, MD 21406
410.313.4724

PROFESSIONAL ENGINEERS CERTIFICATION

I HEREBY CERTIFY THAT THIS PLAN HAS BEEN PREPARED BY ME OR UNDER MY IMMEDIATE SUPERVISION, AND IS CORRECT IN ITS DETAIL TO MY BEST KNOWLEDGE AND BELIEF.

Peter H. Chase 2/13/15
PETER H. CHASE, P.E. MARYLAND LIC# 31445
HANOVER ENGINEERING ASSOCIATES, INC.
252 BROODHEAD ROAD, SUITE 100
BETHLEHEM, PA 18017



REFER TO "HAVILAND MILL TRAIL - BOARDWALK DETAILS" PLANS AS PREPARED BY HANOVER ENGINEERING ASSOCIATES, INC., DATED 11-14-14 FOR BOARDWALK STRUCTURAL PLANS AND DETAILS.

PROJECT NARRATIVE:

THE HAVILAND MILL TRAIL PROJECT PROPOSES THE CONSTRUCTION OF A 1,250 FT WALKING TRAIL, LOCATED ON COUNTY PROPERTY. THE PROJECT LOCATION CURRENTLY EXISTS AS A PARTIALLY WOODED AND MEADOW AREA WITH A PORTION OF THE 100-YEAR FLOODPLAIN OF THE PATUXENT RIVER. IMPACTS TO THE EXISTING NATURAL AREAS WILL BE LIMITED IN SEVERAL WAYS, INCLUDING A REDUCED WALKING TRAIL WIDTH, THE USE OF STONE CRIB WALLS, BRIDGING OVER STREAMS AND BOARDWALKS OVER WETLANDS. THE ENVIRONMENTAL SITE DESIGN (ESD) IS ACHIEVED BY UTILIZATION OF NON-STRUCTURAL BMP'S, SPECIFICALLY THE DISCONNECTION OF NON-ROOFTOP RUNOFF. ADDITIONALLY, A MAJORITY OF THE TRAIL WILL BE CONSTRUCTED AS AN ELEVATED BOARDWALK, THEREFORE HAVING MINIMAL EFFECTS ON STORMWATER RUNOFF.

COVER SHEET ENVIRONMENTAL CONCEPT PLAN

HAVILAND MILL TRAIL

HOWARD COUNTY
MARYLAND

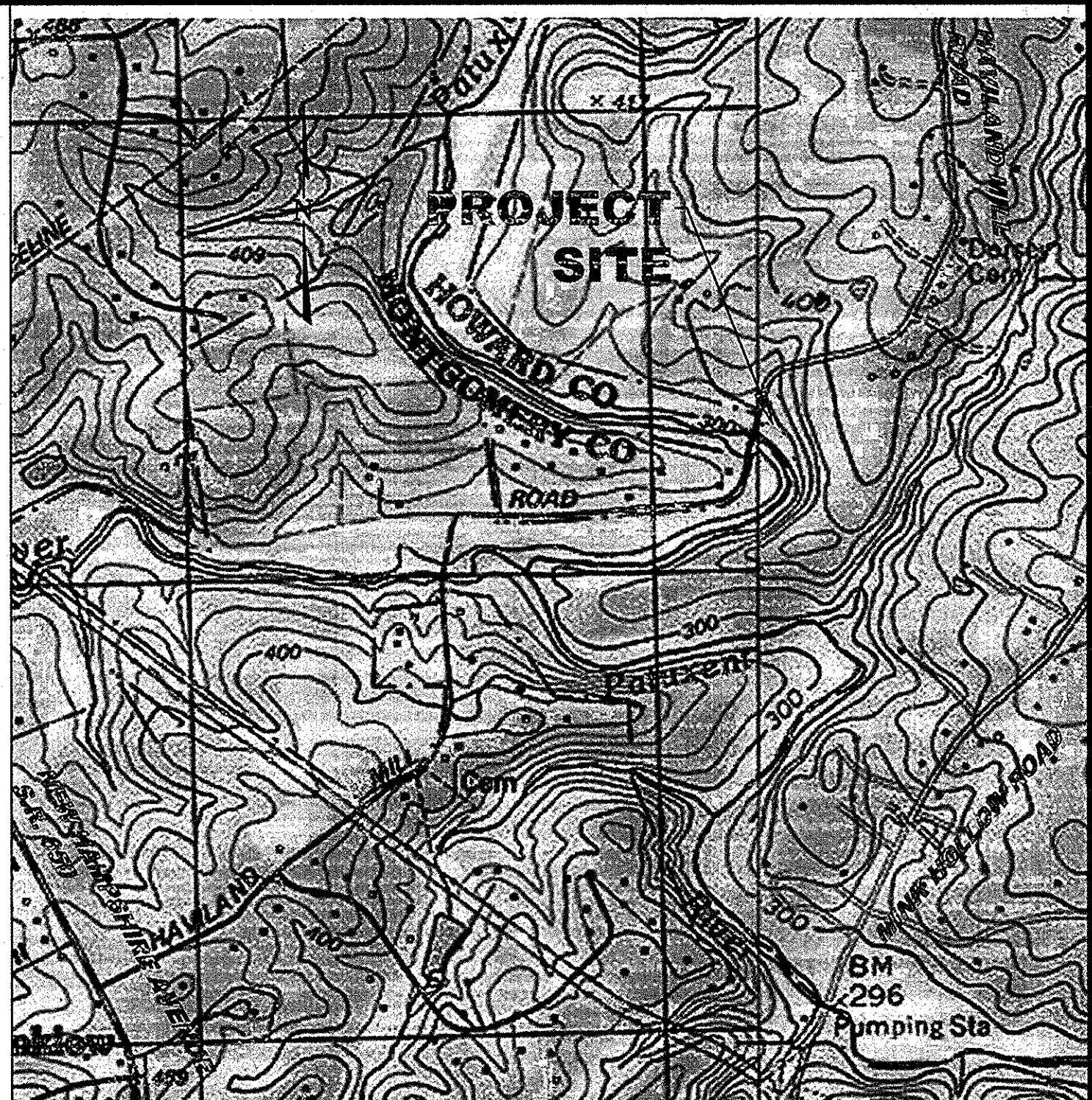
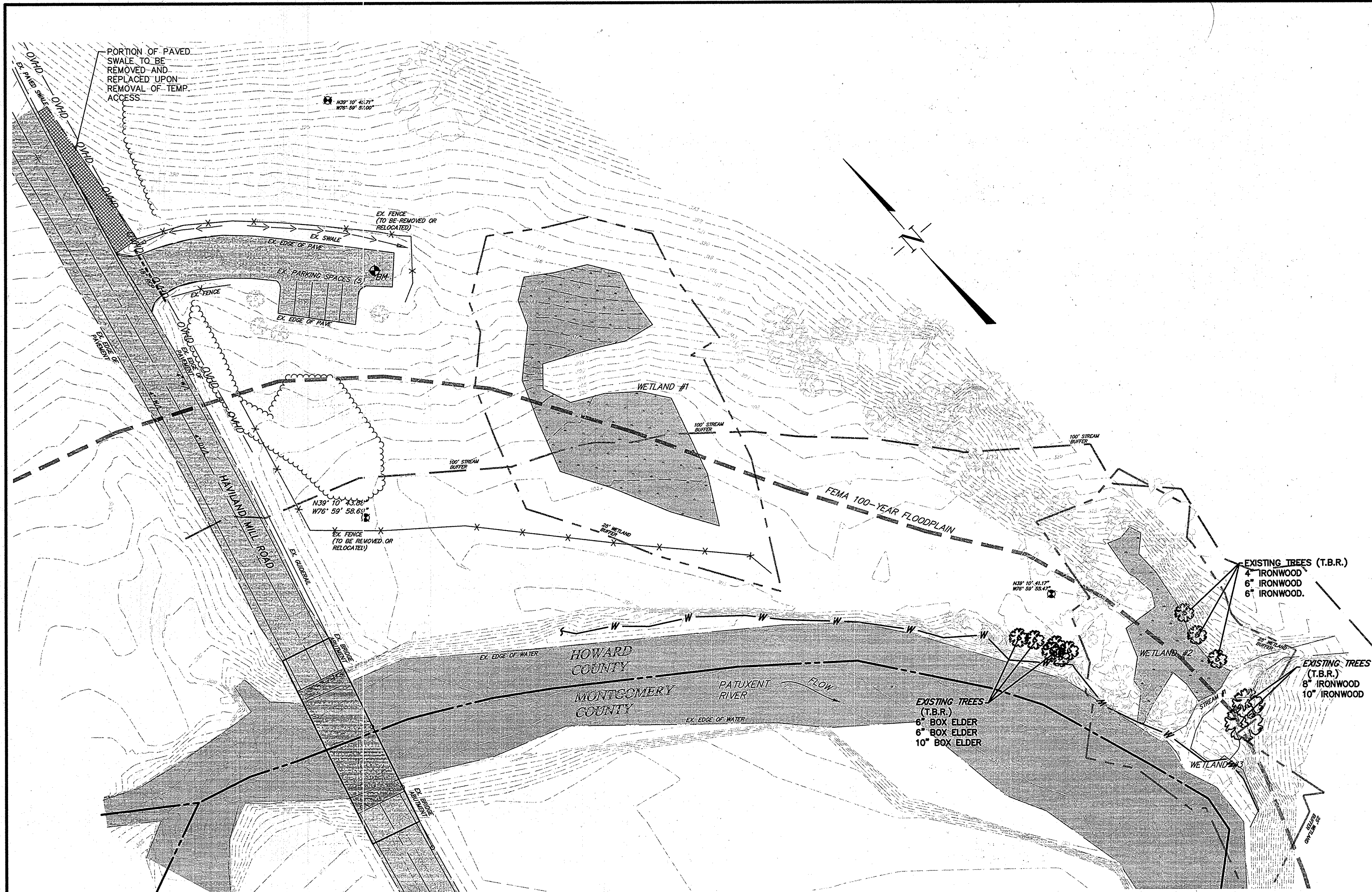
Hanover
Engineering Associates Inc

PROJECT NO.
HC1001
SHEET NO.
1 OF 8

252 Brodhead Road, Suite 100
Bethlehem, PA 18017-8944
610.691.5644
Fax 610.691.6968

NO.	REVISIONS	DATE
1	INTERNAL REVISIONS	10/17/14
2	HOWARD COUNTY COMMENTS	12/05/14
3	HOWARD COUNTY COMMENTS	01/12/15

EXISTING FEATURES LEGEND		PROPOSED FEATURES LEGEND	
—	STREAM / RIVER	—	BOARDWALK w/ HANDRAIL
—	100 YEAR FEMA FLOOD PLAIN	—	BRIDGE w/ HANDRAIL
—	25' WETLAND BUFFER	—	BOARDWALK w/ TOERAIL
—	100' STREAM BUFFER	—	CRUSHED STONE PATH
—	WETLANDS	—	ROCK CRIBBING WALL
—	CENTERLINE ROAD	—	CONTOURS
—	EASEMENT	—	TREES
—	FENCE	—	ORDINARY HIGH WATER MARK (FIELD DELINEATED)
—	EX. PAVING	—	PROP. FENCE



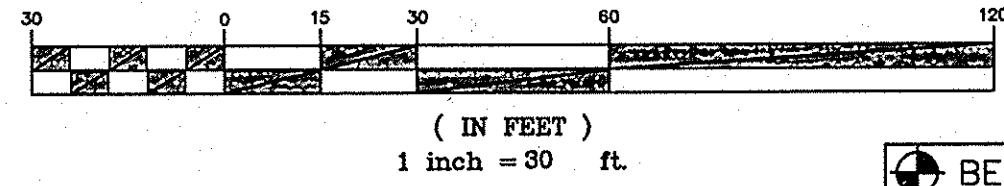
LOCATION MAP
CLARKSVILLE USGS QUADRANGLE
SCALE: 1"=1000'

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APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 Chief, Development Engineering Division *[Signature]* Date: 3-19-15
 Chief, Division of Land Development *[Signature]* Date: 3-09-15
 Director _____ Date _____

PLAN

GRAPHIC SCALE



OWNER/APPLICANT
HOWARD COUNTY RECREATION AND PARKS
 7120 OAKLAND MILLS ROAD
 COLUMBIA, MD 21406
 410.313.4724

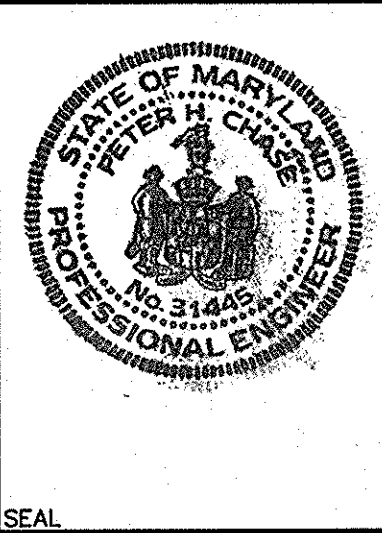
PENNTRAILS
 PENN TRAILS
 9 DOGWOOD DRIVE
 NEWVILLE, PA 17241
 717.486.4455

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	100 YEAR FEMA FLOOD PLAIN		BOARDWALK w/ TOERAIL
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	CENTERLINE ROAD		ORDINARY HIGH WATER MARK (FIELD DELINEATED)
	EASEMENT		PROP. FENCE
	FENCE		
	EX. PAVING		
	GRID MARK		
	GUIDE RAIL		
	STORM SEWER		
	CONTOURS		
	TREES		
	EX. TREE		

BENCHMARK FOR THIS PLAN
 VERTICAL DATUM = MAG NAIL SET IN SOUTH
 EAST END OF DRIVEWAY
 ELEV. = 314.17
 N39° 10' 44.85441639"
 W76° 59' 57.53215354"

PROFESSIONAL ENGINEERS CERTIFICATION
 I HEREBY CERTIFY THAT THIS PLAN HAS BEEN PREPARED BY ME OR UNDER MY IMMEDIATE SUPERVISION, AND IS CORRECT IN ITS DETAIL TO MY BEST KNOWLEDGE AND BELIEF.
[Signature] DATE: 3/23/15
 PETER H. CHASE, P.E. MARYLAND LIC# 31445
 HANOVER ENGINEERING ASSOCIATES, INC.
 252 BRODHEAD ROAD, SUITE 100
 BETHLEHEM, PA 18017



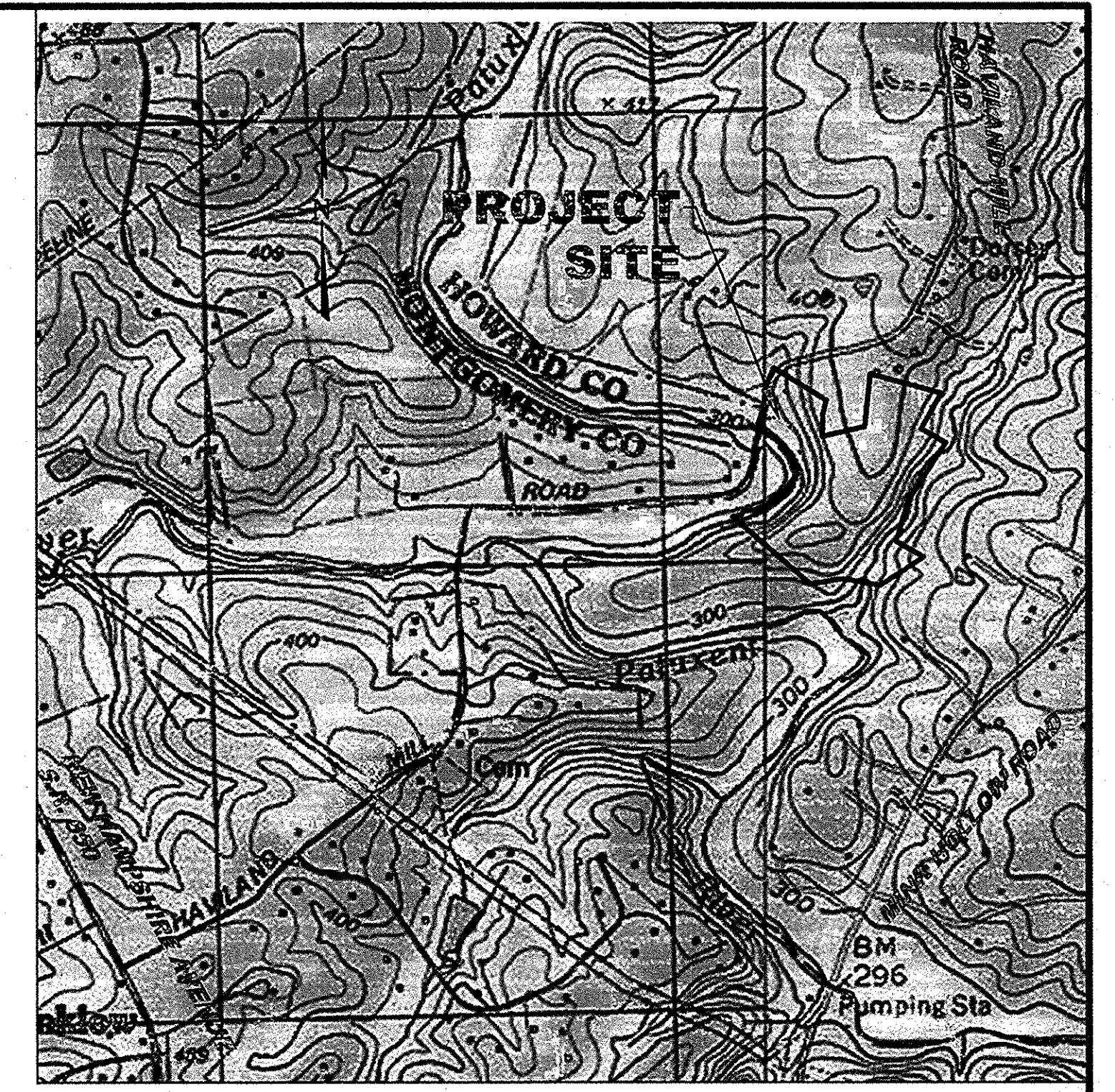
NO.	REVISIONS	DATE
1	INTERNAL REVISIONS	10/17/14
2	HOWARD COUNTY COMMENTS	12/05/14

EXISTING FEATURES / DEMOLITION PLAN
 ENVIRONMENTAL CONCEPT PLAN

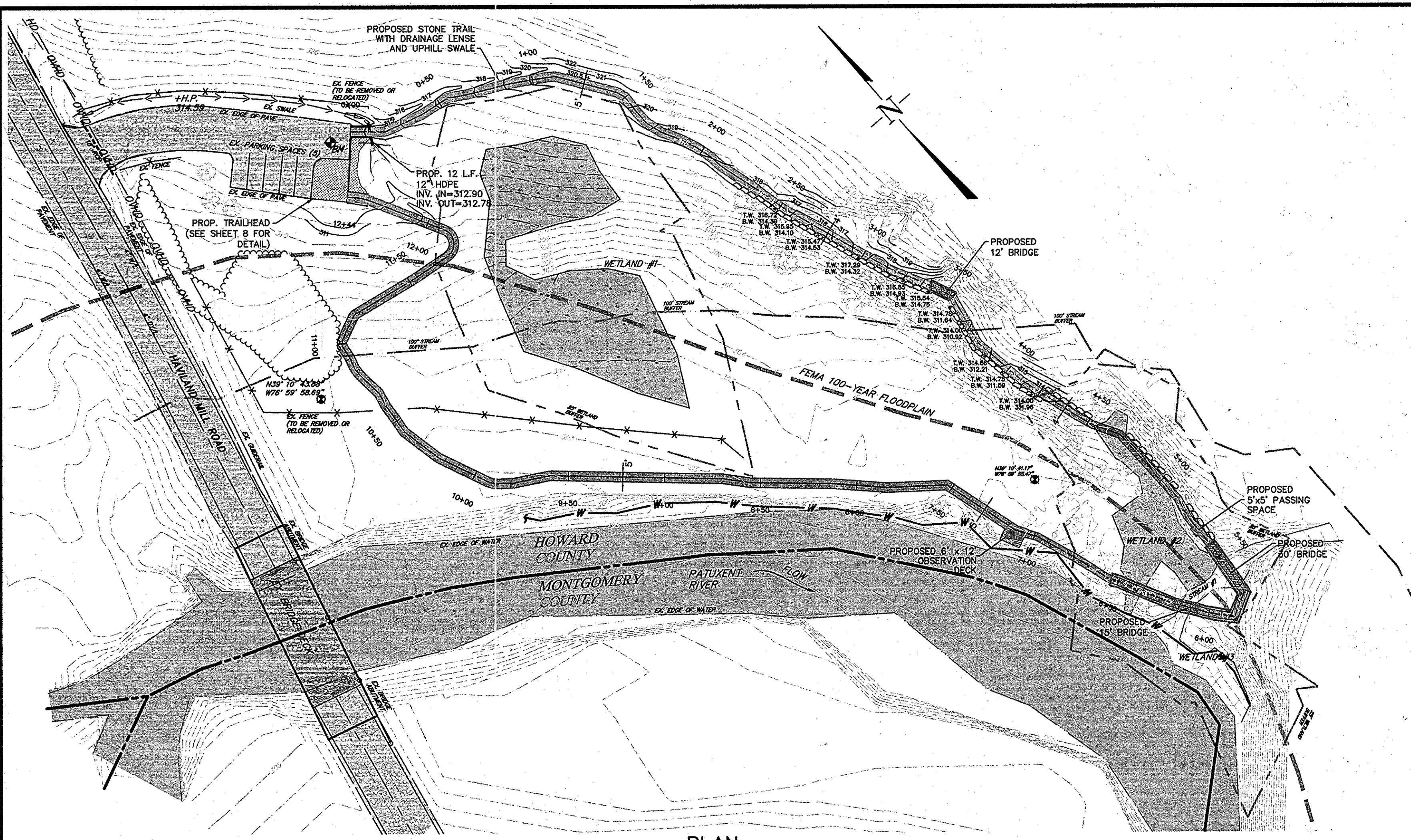
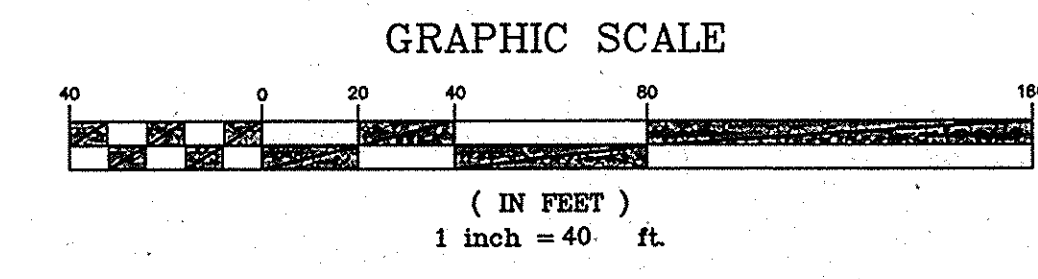
HAVLAND MILL TRAIL	
HOWARD COUNTY MARYLAND	PROJECT NO. HC1001
Hanover Engineering Associates Inc	SHEET NO. 2 OF 8
	252 Brodhead Road, Suite 100 Bethlehem, PA 18017-8944 610.691.5644 Fax 610.691.6968

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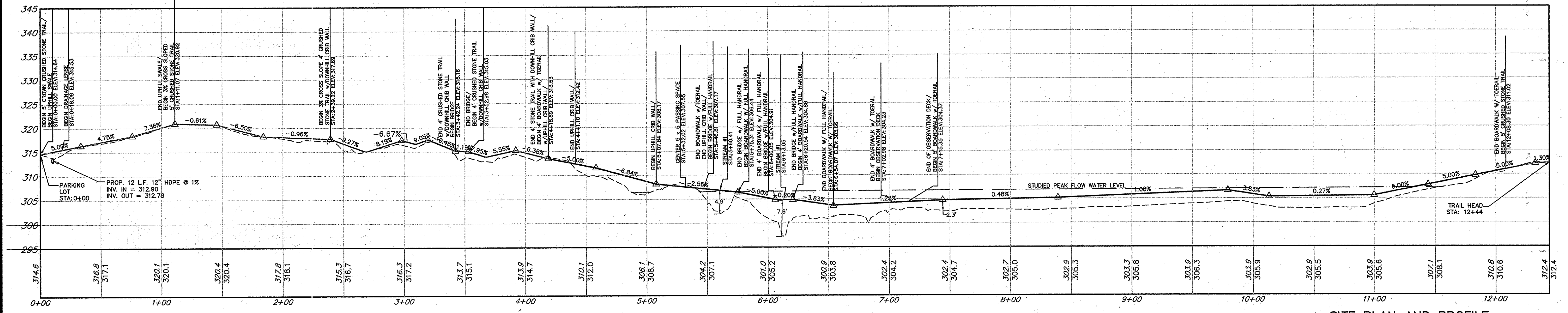
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 Chief, Development Engineering Division 3-13-15
 Chief, Division of Land Development 3-09-15
 Director _____ Date _____



OWNER/APPLICANT
HOWARD COUNTY RECREATION AND PARKS
 7120 OAKLAND MILLS ROAD
 COLUMBIA, MD 21406
 410.313.4724



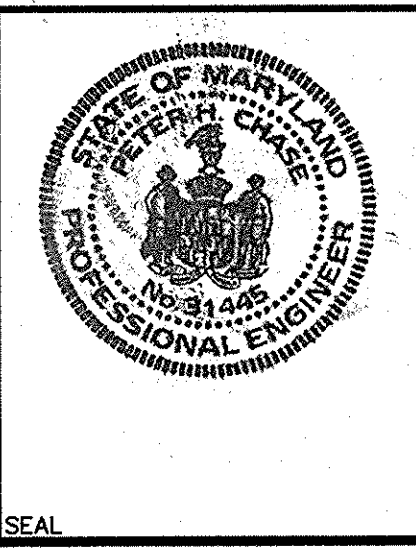
PLAN



PROFILE
 SCALE: 1"=10' VERT.
 1"=40' HORZ.

EXISTING FEATURES LEGEND		PROPOSED FEATURES LEGEND	
	STREAM / RIVER		BOARDWALK w/ HANDRAIL
	100 YEAR FEMA FLOOD PLAIN		BRIDGE w/ HANDRAIL
	25' WETLAND BUFFER		BOARDWALK w/ TOERAIL
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	STORM SEWER		
	CONTOURS		
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	ORDINARY HIGH WATER MARK (FIELD DELINEATED)		

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 PETER H. CHASE, P.E. MARYLAND LIC# 31445
 HANOVER ENGINEERING ASSOCIATES, INC.
 252 BROODHEAD ROAD, SUITE 100
 BETHLEHEM, PA 18017
 DATE 2/23/15



NO.	REVISIONS	DATE
1	INTERNAL REVISIONS	10/17/14
2	HOWARD COUNTY COMMENTS	12/05/14

SITE PLAN AND PROFILE ENVIRONMENTAL CONCEPT PLAN

HAVLAND MILL TRAIL

HOWARD COUNTY MARYLAND

DRAWN BY: JDC CHECKED BY: JER DATE: 9-11-2014 SCALE: AS NOTED	PROJECT NO. HC1001 SHEET NO. 3 OF 8
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Hanover
Engineering Associates Inc

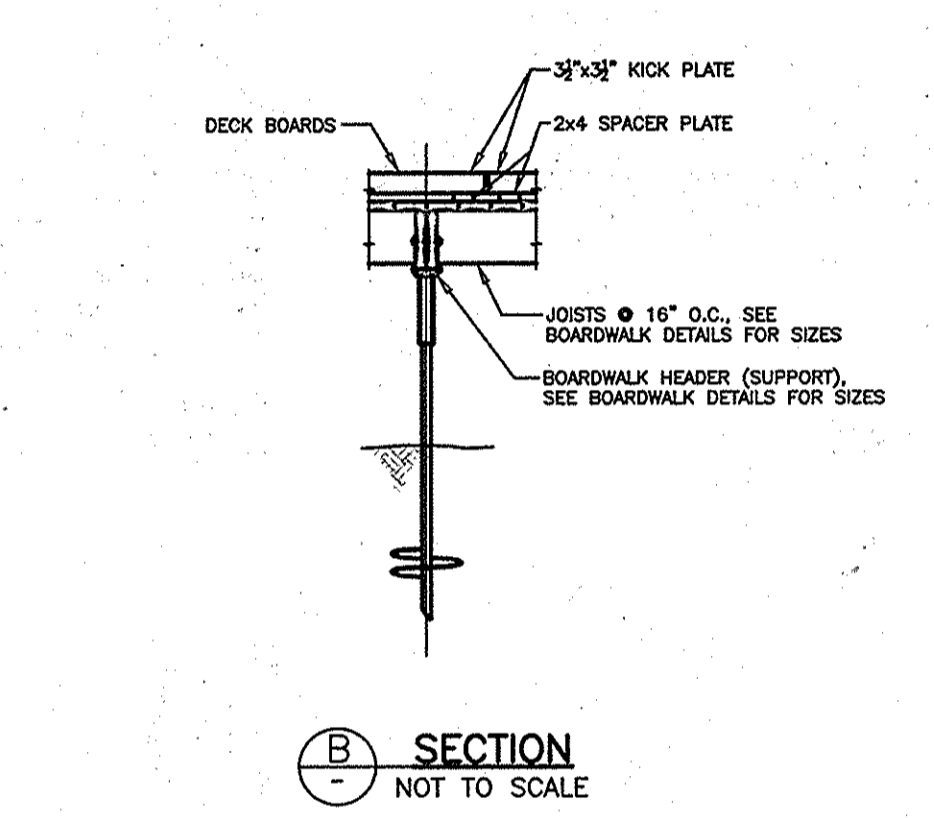
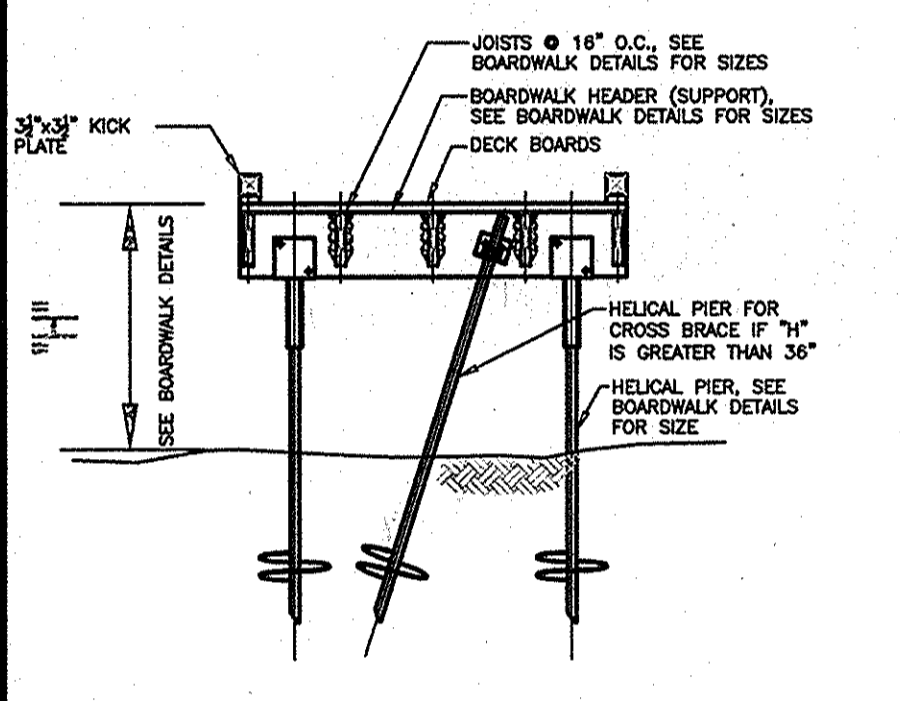
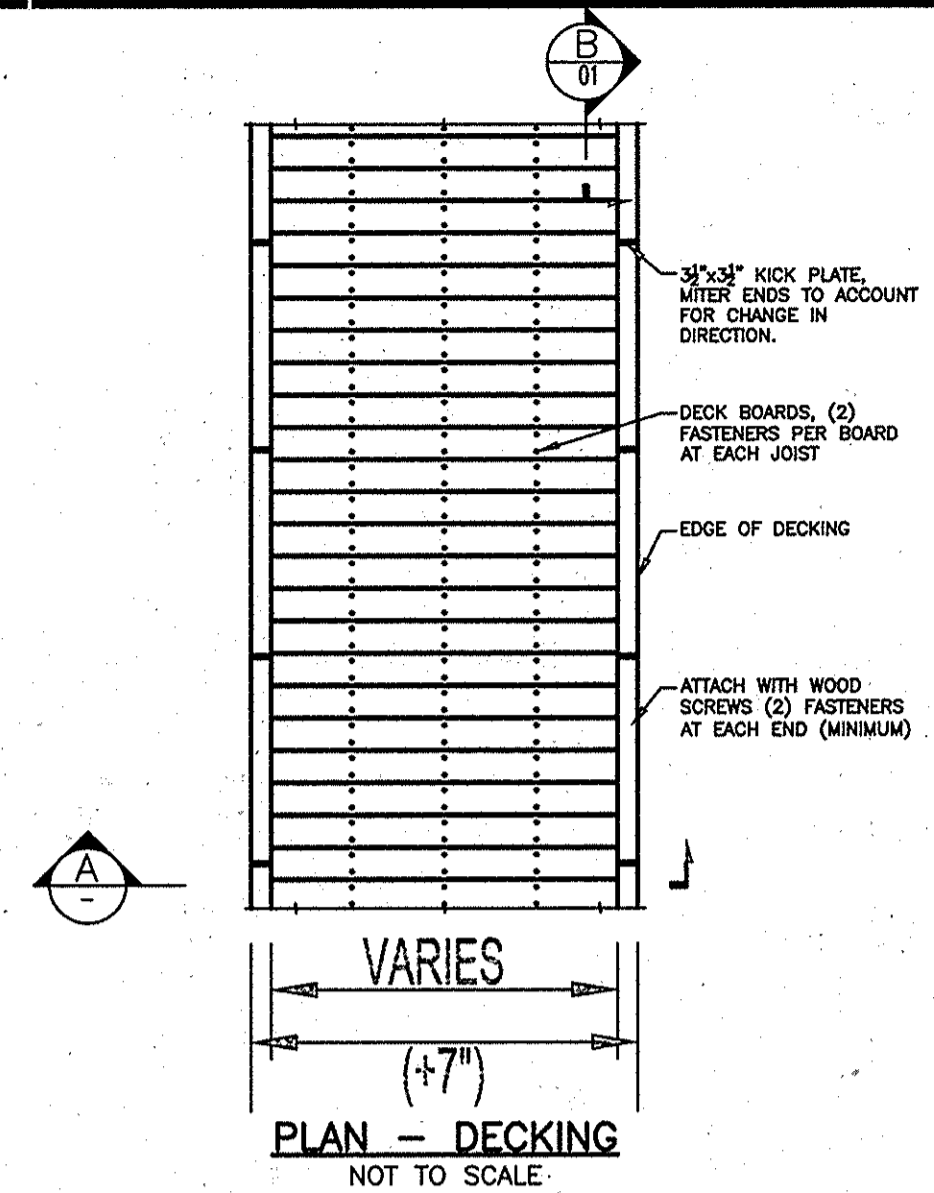
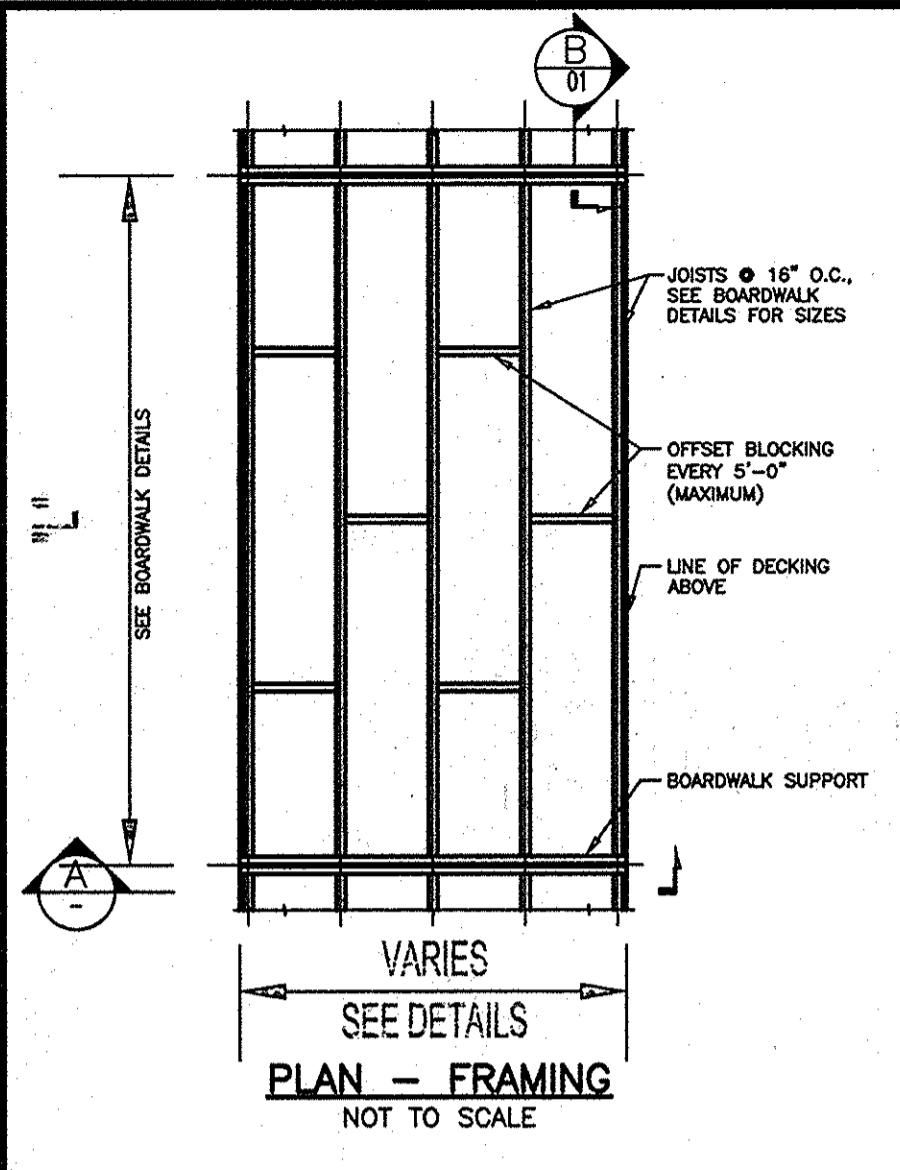
252 Broodhead Road, Suite 100
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 610.691.5644
 Fax 610.691.6968

PENNTAILS
 PENN TRAILS
 9 DOGWOOD DRIVE
 NEWVILLE, PA 17241
 717.486.4455

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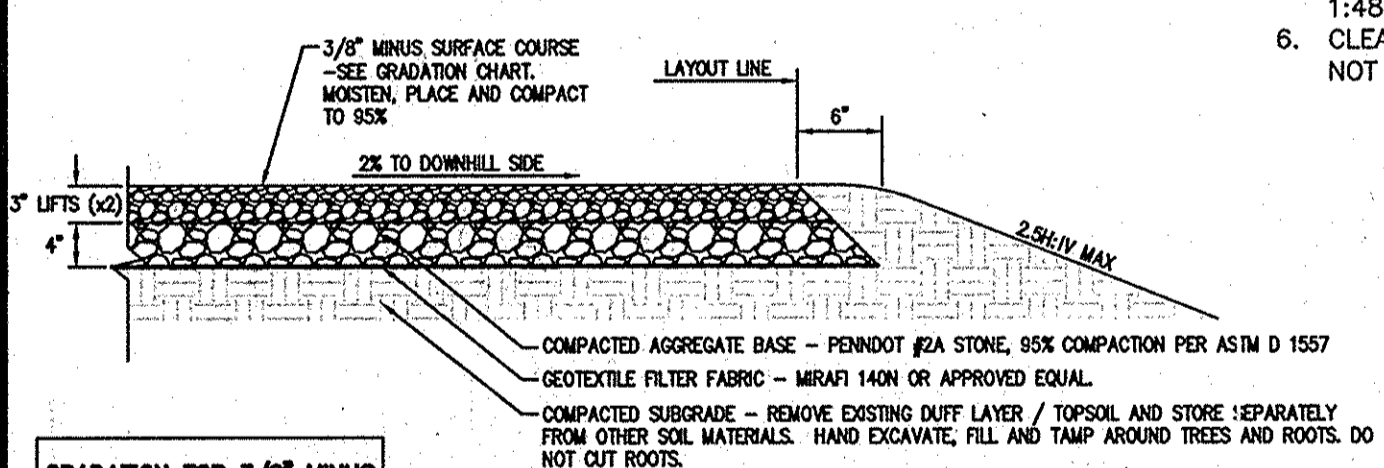
OWNER/APPLICANT
HOWARD COUNTY
RECREATION AND PARKS
 7120 OAKLAND MILLS ROAD
 COLUMBIA, MD 21406
 410.313.4724

APPROVED: *D.P.L.* 3-13-15
 CHIEF, DEP. DATE
W. St. ... 3-09-15
 CHIEF, DLD DATE



GENERAL NOTES:
 1. SEE BOARDWALK DETAIL DRAWINGS FOR LUMBER SPECIFICATIONS.
 2. PLACE DECKING WITH GROWTH RINGS FACING DOWN TO HELP PREVENT CUPPING.

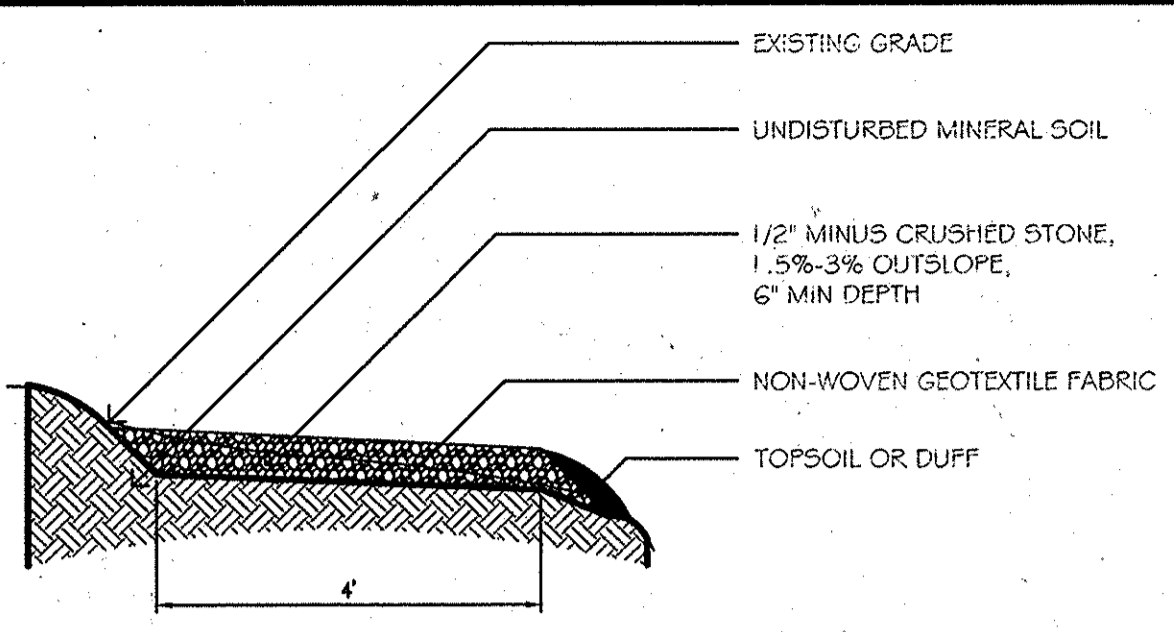
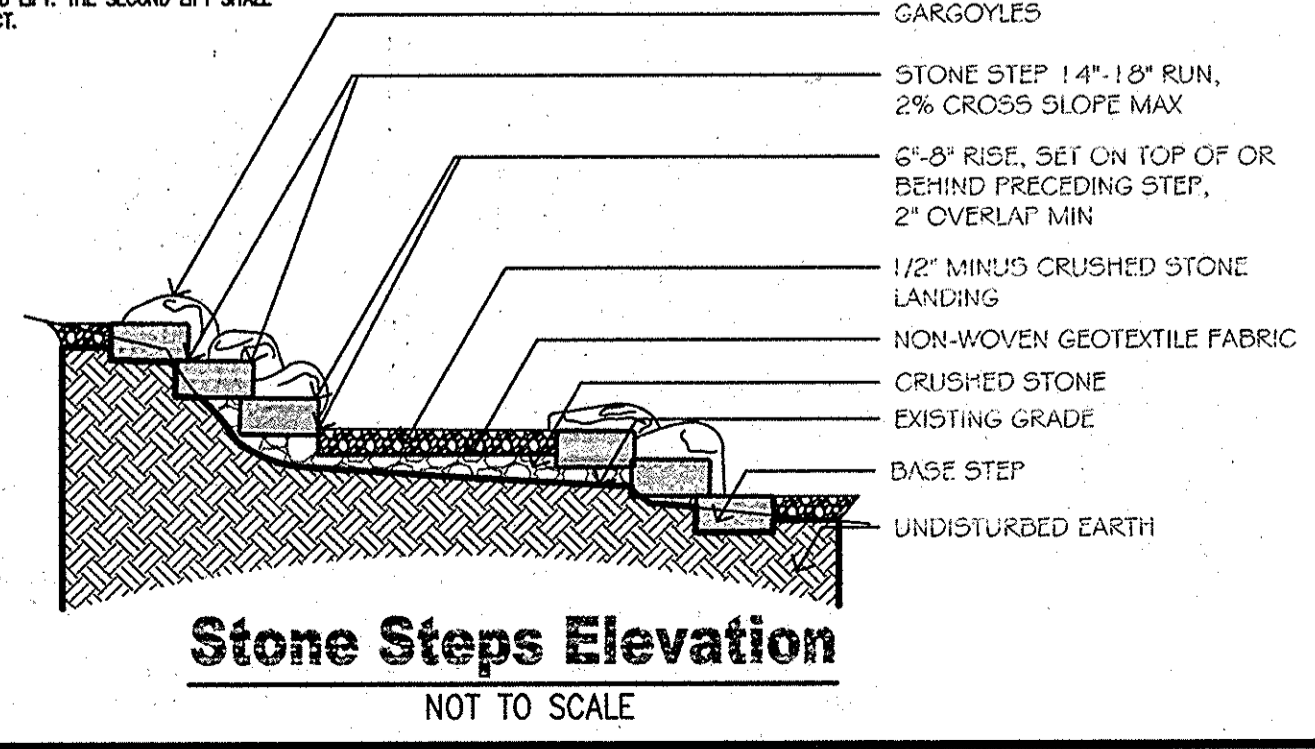
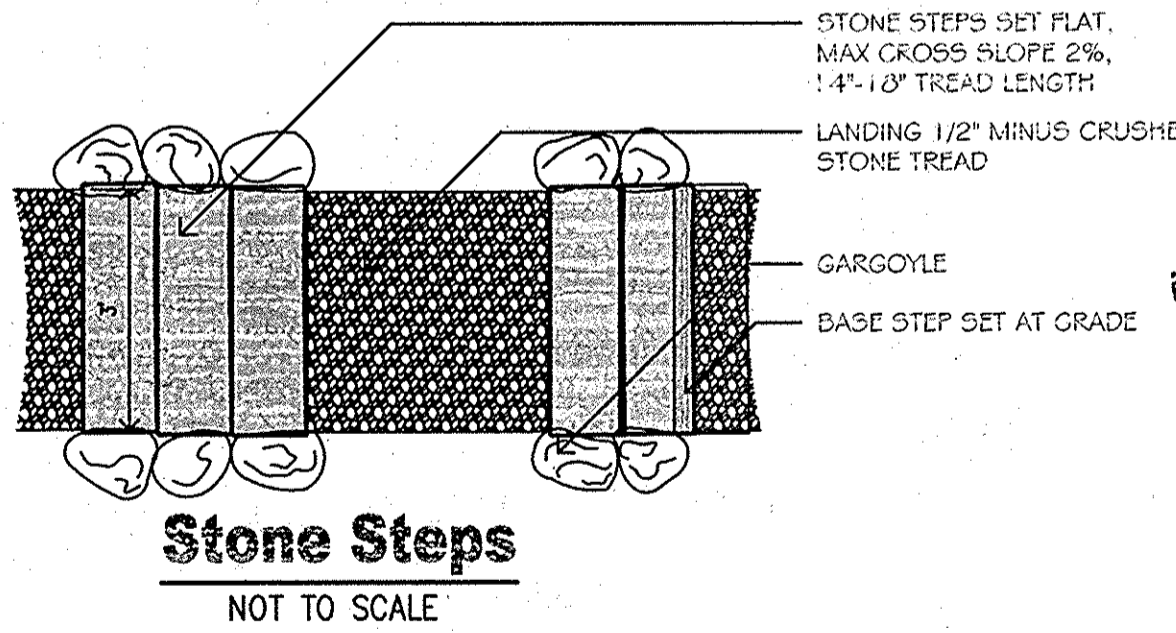
TECHNICAL SPECIFICATIONS:
 1. SPACES AND OPENINGS IN BOARDWALK DECK, BETWEEN BOARD SURFACES, SHALL NOT ALLOW THE PASSAGE OF A SPHERE MORE THAN 1/4 INCH (6.4 MM) HIGH (ADA 303.2).
 2. CHANGES IN LEVEL OF 1/4 INCH (6.4 MM) HIGH MAXIMUM SHALL BE PERMITTED TO BE VERTICAL (ADA 303.2).
 3. CHANGES IN LEVEL BETWEEN 1/4 INCH (6.4 MM) HIGH MINIMUM AND 1/2 INCH (13 MM) HIGH MAXIMUM SHALL BE BEVELED WITH A SLOPE NOT STEEPER THAN 1:2 (ADA 303.2).
 4. MAXIMUM RUNNING SLOPE OF BOARDWALK WITH A SLOPE NOT STEEPER THAN 1:20 (5 PERCENT) (ADA 403.2).
 5. MAXIMUM CROSS SLOPE OF BOARDWALK SHALL NOT EXCEED 1:48 (2 PERCENT) (ADA 403.3).
 6. CLEAR WIDTH OF 60 INCHES (1525 MM) OR GREATER SHALL NOT REQUIRE PASSING SPACES (ADA 403.5.3).



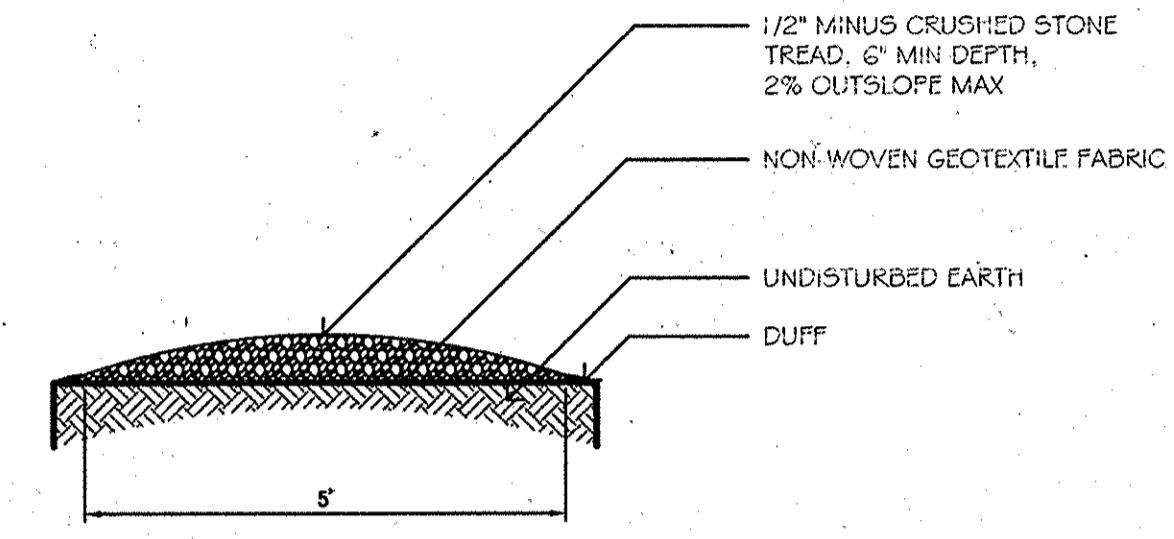
GRADATION FOR 3/8" MINUS

SIEVE SIZE	PERCENT PASSING
3/8"	100
#4	90-100
#8	55-80
#16	40-70
#30	25-50
#60	9-15

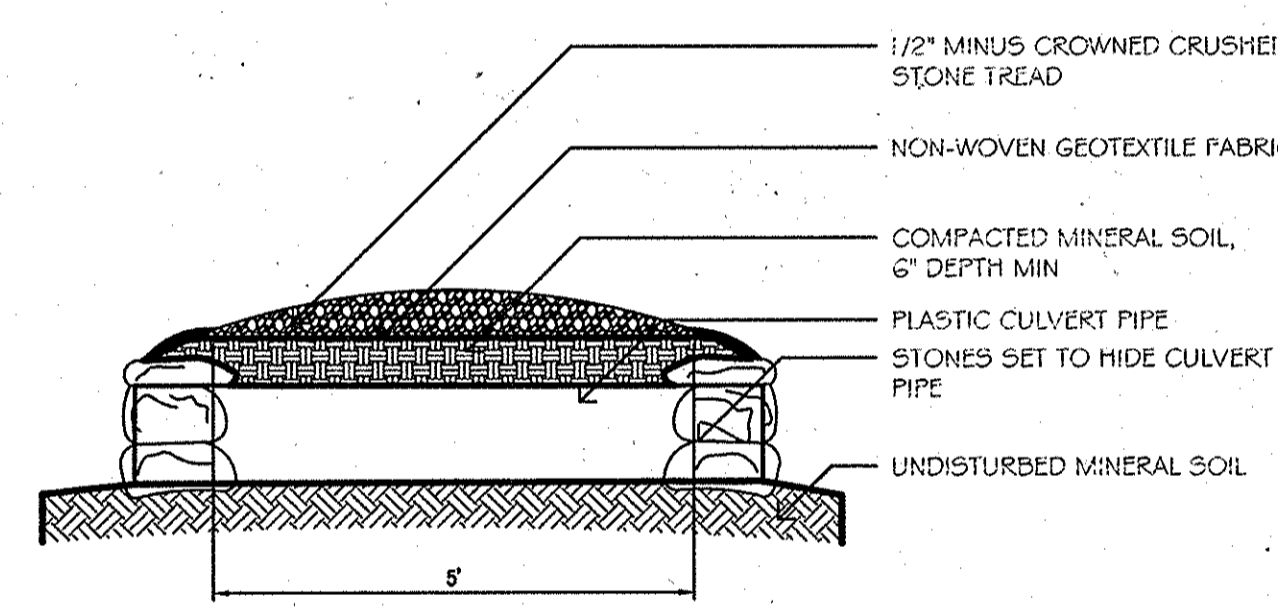
General Notes:
 1. AGGREGATE SHALL BE MOIST, NOT DRY. DO NOT APPLY OR COMPACT MATERIAL THAT IS WITHOUT MOISTURE.
 2. DO NOT SOAK THE MATERIAL OR APPLY MATERIAL THAT IS WET. IF MATERIAL STICKS TO PLATE TAMPER, ALLOW TO DRY ENOUGH SO THAT STICKING DOES NOT OCCUR.
 3. USE TAMP AND SPREAD METHOD TO APPLY LOOSE MATERIAL ON TRAIL.
 4. DO NOT OVERWORK/OVER-RUN THE AGGREGATE, WHICH MAY CAUSE SIZE SEGREGATION.
 5. APPLY TWO (2) 3" LIFTS, COMPACTING THE FIRST LIFT TO 90% BEFORE ADDING THE SECOND LIFT. THE SECOND LIFT SHALL ALSO BE COMPACTED TO 90%. USE POWERED STEEL PLATE VIBRATORY TAMPER TO COMPACT.



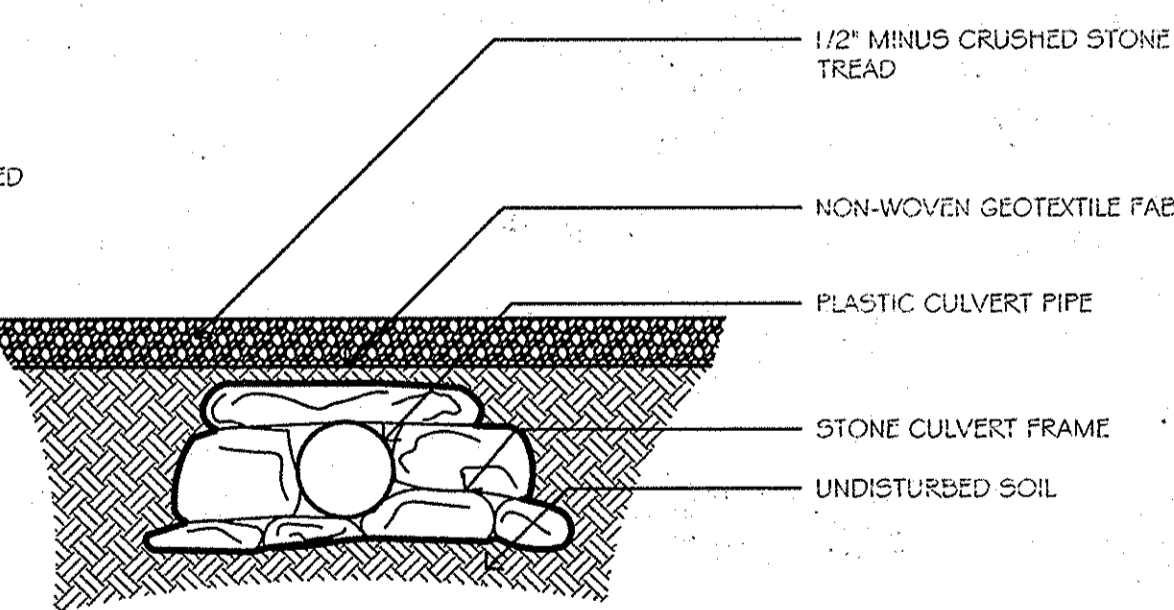
Full Bench Crushed Stone Trail
NOT TO SCALE



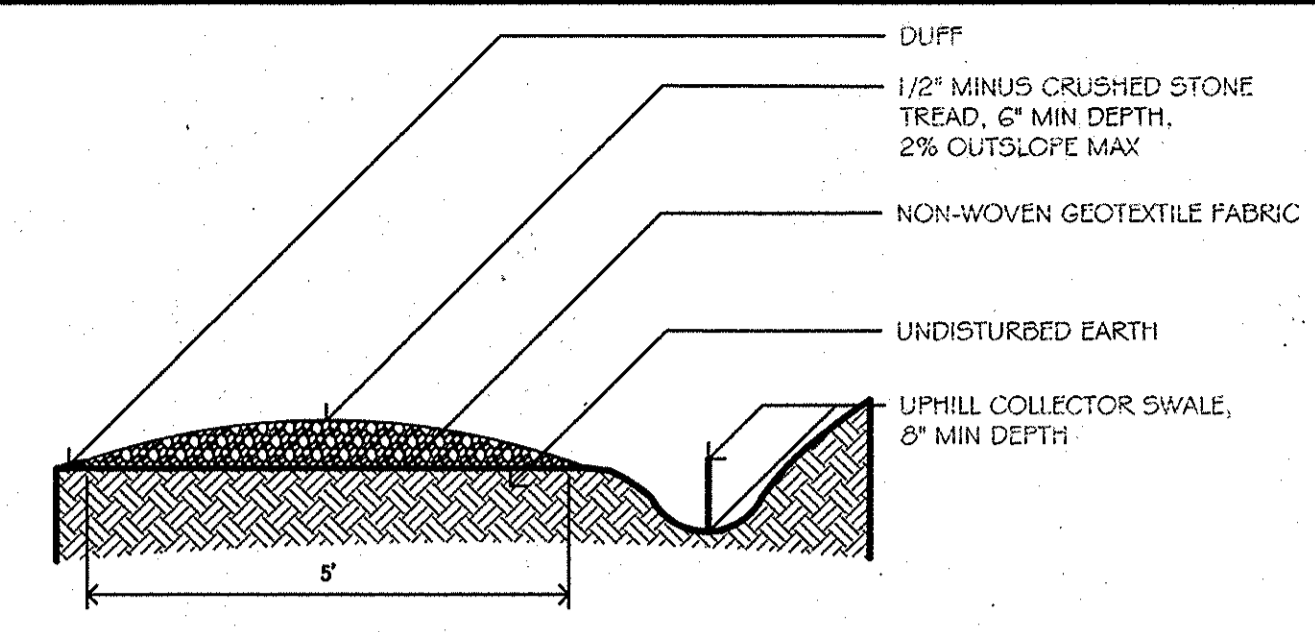
Crowned Crushed Stone Trail
NOT TO SCALE



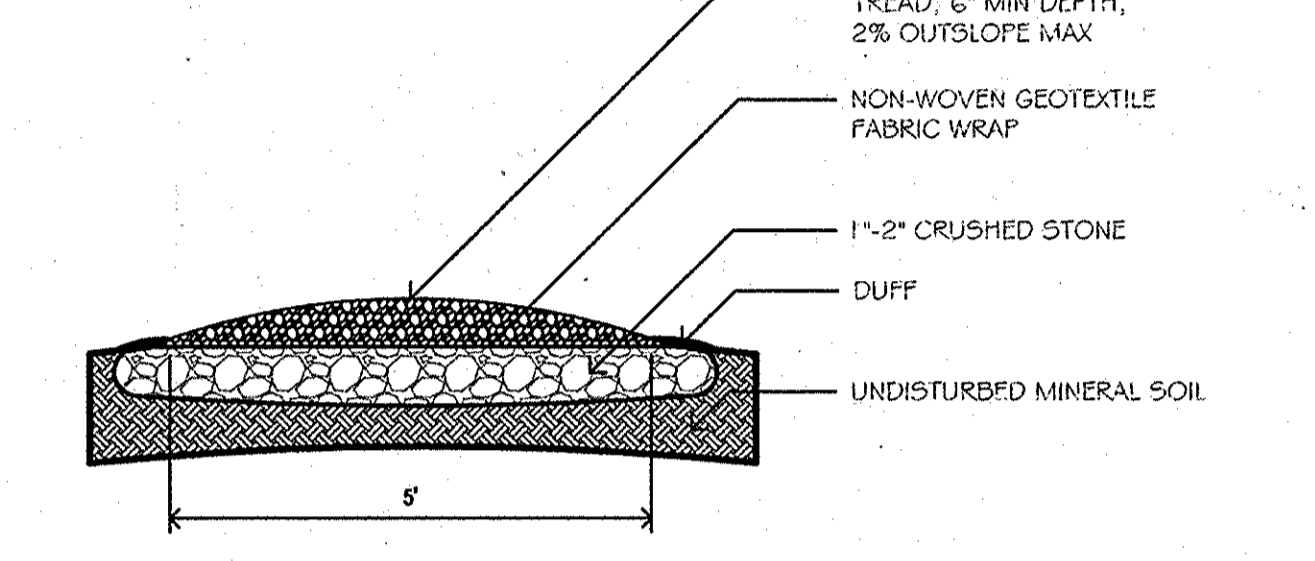
Culvert Pipe w/ Crowned Tread
NOT TO SCALE



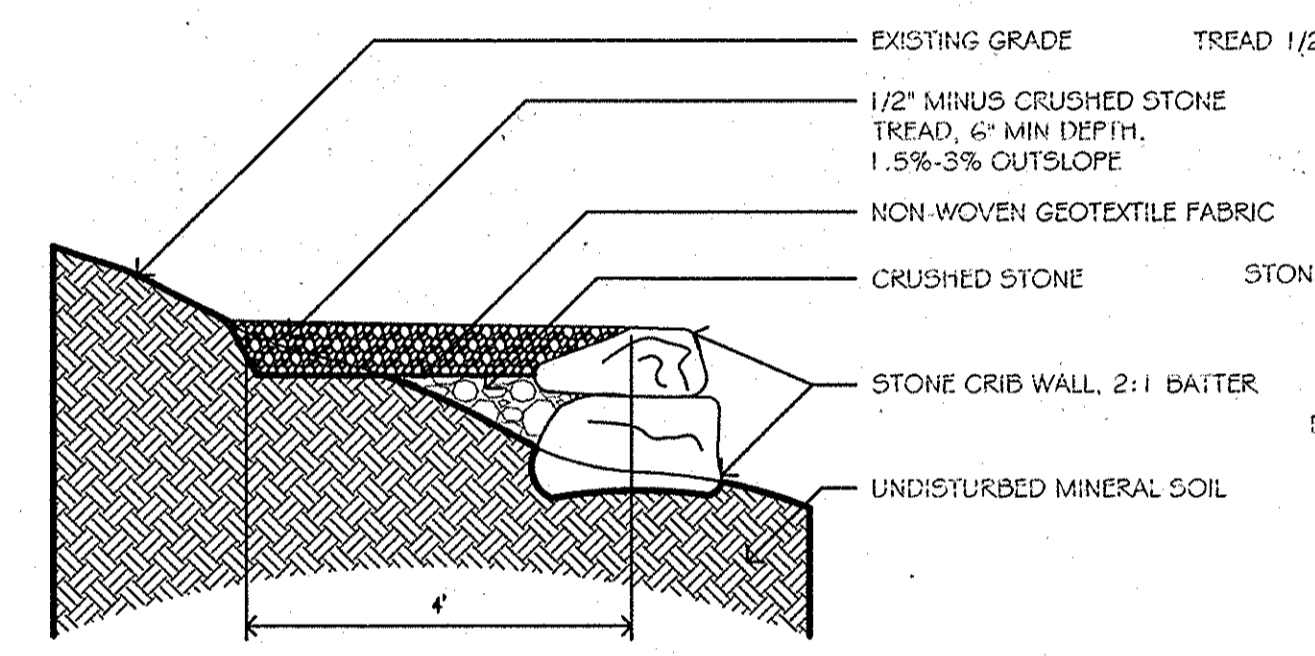
Culvert Detail Side View
NOT TO SCALE



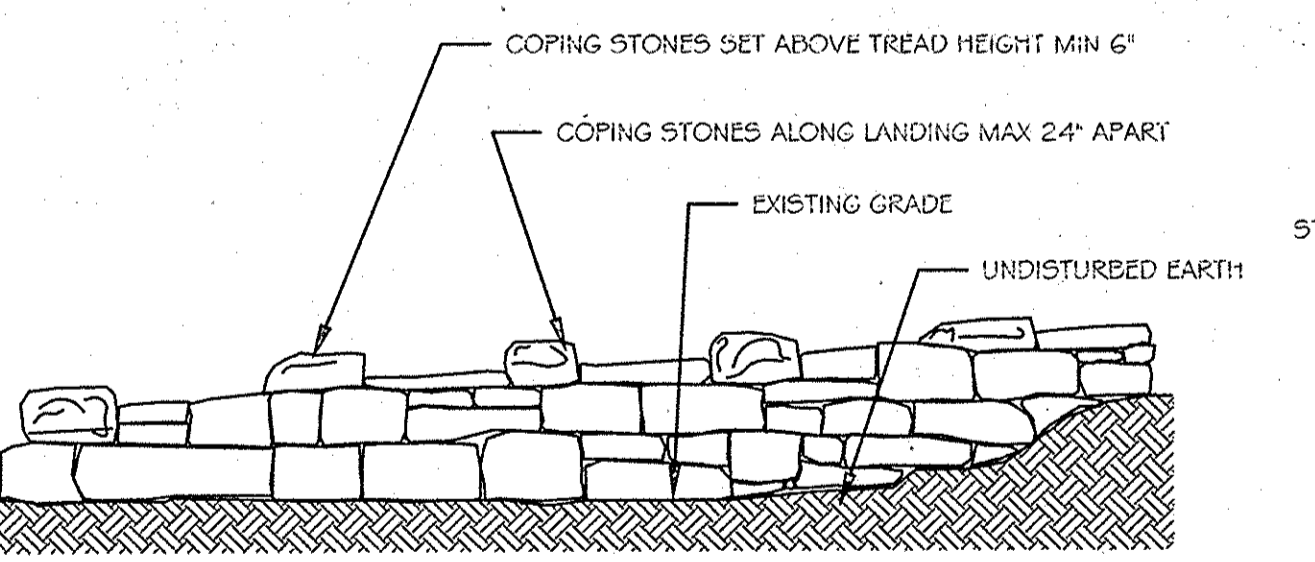
Crowned Tread w/ Uphill Swale
NOT TO SCALE



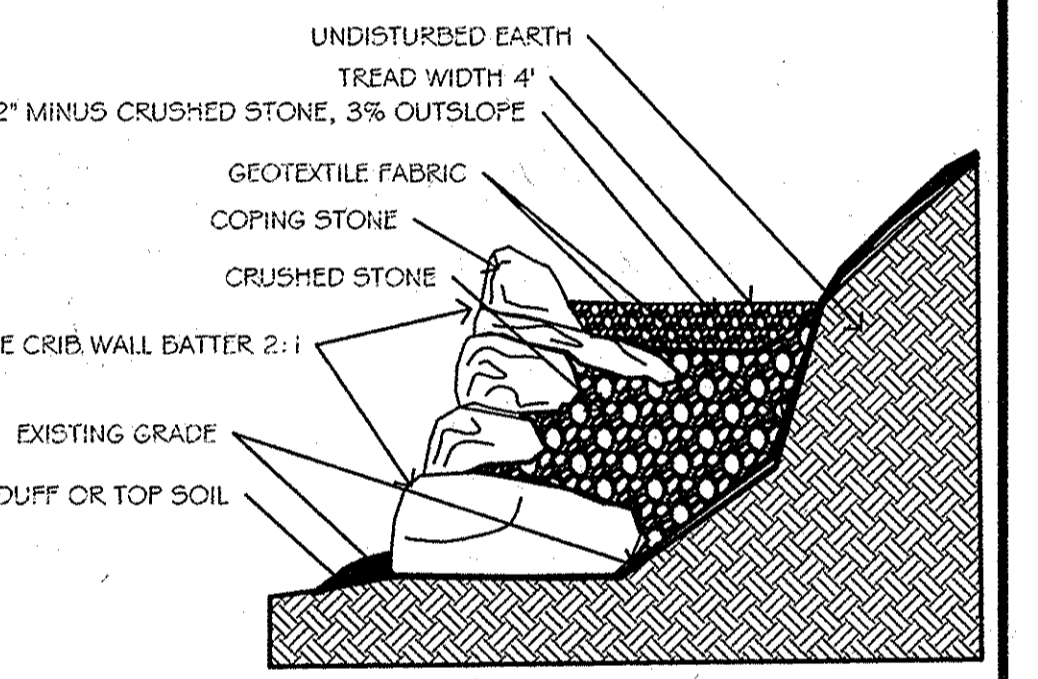
Crowned Trail w/ Drainage Lense
NOT TO SCALE



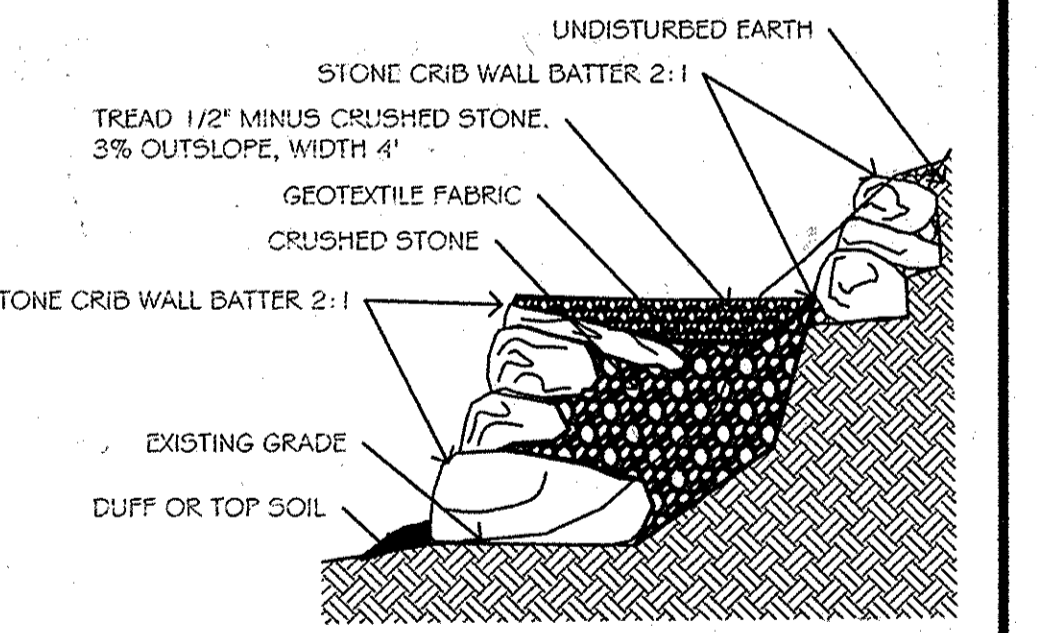
Crushed Stone Tread w/ Cribwall
NOT TO SCALE



Crib Wall Elevation
NOT TO SCALE



Stone Crib Wall
NOT TO SCALE



Uphill and Downhill Stone Crib Wall
NOT TO SCALE

TAHAWUS TRAILS LLC
PENNTAILS
 PENN TRAILS
 9 DOGWOOD DRIVE
 NEWVILLE, PA 17241
 717.486.4455

PROFESSIONAL ENGINEERS CERTIFICATION
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 PETER H. CHASE, P.E. MARYLAND LIC# 31445 DATE 3/23/15
 HANOVER ENGINEERING ASSOCIATES, INC.
 252 BRODHEAD ROAD, SUITE 100
 BETHLEHEM, PA 18017

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NO.	REVISIONS	DATE
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2	HOWARD COUNTY COMMENTS	12/05/14

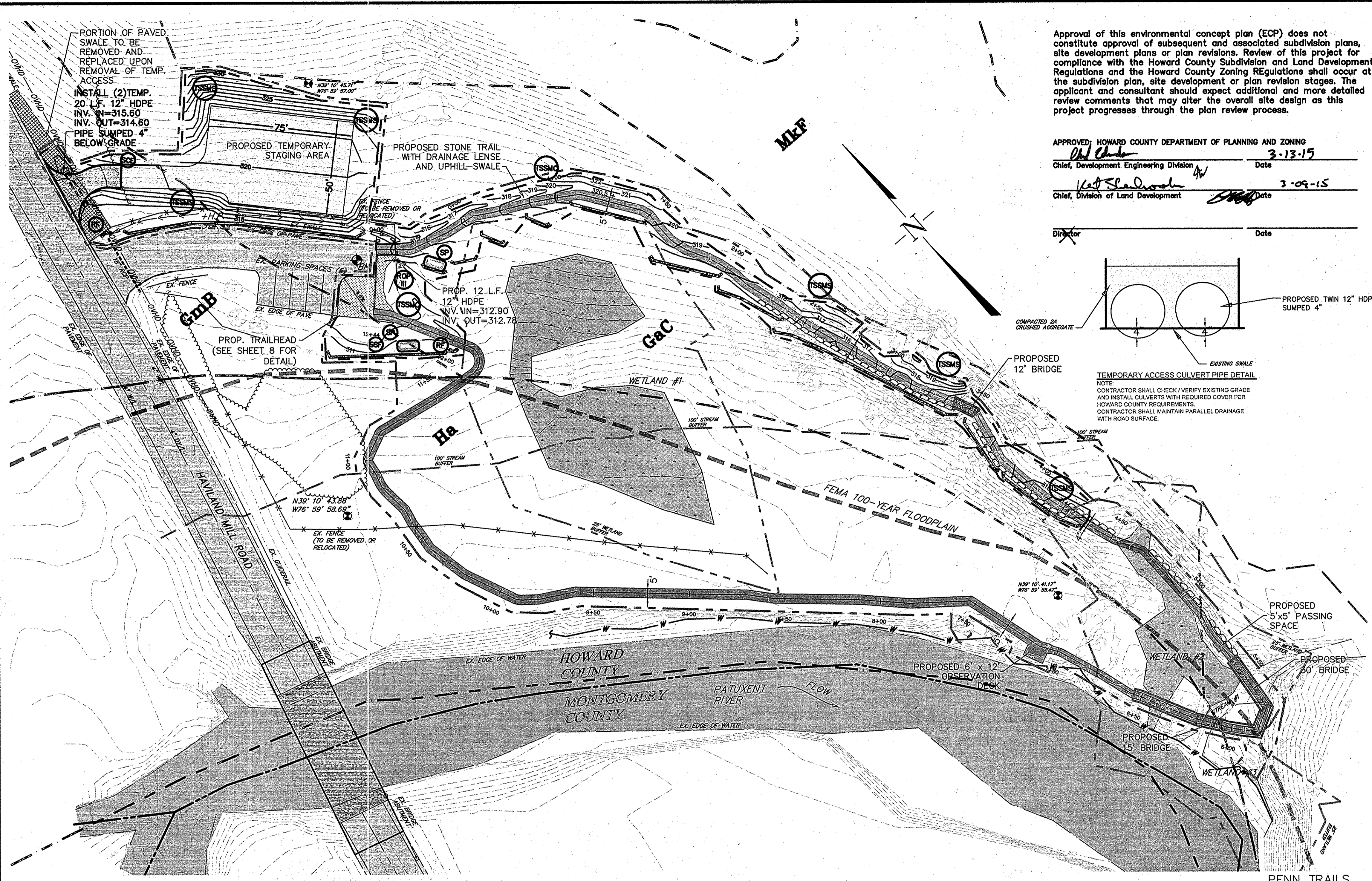
DETAILS ENVIRONMENTAL CONCEPT PLAN
HAVILAND MILL TRAIL

HOWARD COUNTY
 MARYLAND

Hanover Engineering Associates Inc

252 Brodhead Road, Suite 100
 Bethlehem, PA 18017-8944
 610.691.5644
 Fax 610.691.6968

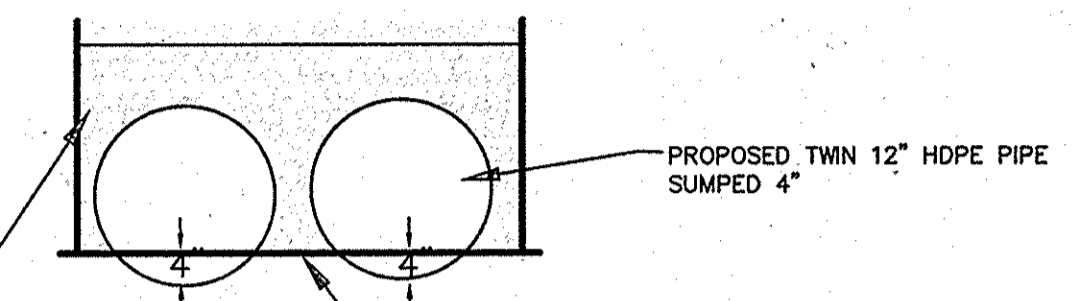
PROJECT NO. HC1001
 SHEET NO. 4 OF 8
 DATE: 9-11-2014
 SCALE: 1" = 40'



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APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 Chief, Development Engineering Division *[Signature]* Date **3-13-15**
 Chief, Division of Land Development *[Signature]* Date **3-09-15**

Director _____ Date _____



PROPOSED TWIN 12" HDPE PIPE SUMPED 4"
 TEMPORARY ACCESS CULVERT PIPE DETAIL
 NOTE: CONTRACTOR SHALL CHECK / VERIFY EXISTING GRADE AND INSTALL CULVERTS WITH REQUIRED COVER PER HOWARD COUNTY REQUIREMENTS. CONTRACTOR SHALL MAINTAIN PARALLEL DRAINAGE WITH ROAD SURFACE.

**HOWARD SOIL CONSERVATION DISTRICT
 STANDARD SEDIMENT CONTROL NOTES**

- A minimum of 48 hours notice must be given to the Howard County Department of Inspections, Licenses and Permits, Sediment Control Division prior to the start of any construction (313-1855).
- All vegetative and structural practices are to be installed according to the provisions of this plan and are to be in conformance with the most current MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL and revisions thereto.
- Following initial soil disturbance or re-disturbance, permanent or temporary stabilization shall be completed within: a) 3 calendar days for all perimeter sediment control structures, dikes, perimeter slopes and all slopes greater than 3:1, b) 7 days as to all other disturbed or graded areas on the project site.
- 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 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 done when recommended seeding dates do not allow for proper germination and establishment of grasses.
- All sediment control structures are to remain in place and are to be maintained in operative condition until permission for their removal has been obtained from the Howard County Sediment Control Inspector.
- Site Analysis:

Total Area of Site	1,920	Acres
Area Disturbed	0,450	Acres
Area to be roofed or paved	0,000	Acres
Area to be vegetative stabilized	0,156	Acres
Total Cut	397.24	Cu. Yds.
Total Fill	316.08	Cu. Yds.

 Offsite waste/borrow are location _____
- Any sediment control practice that 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 Howard County Sediment Control Inspector.
- On all sites with disturbed areas in excess of 2 acres, approval of the inspection agency shall be requested upon completion of installation of perimeter erosion and sediment controls, but before proceeding with any other earth disturbance or grading. Other building or grading inspection approvals may not be authorized until this initial approval by the inspection agency is made.
- Trenches for the construction of utilities, is limited to three pipe lengths or that which shall be back-filled and stabilized by the end of each workday, whichever is shorter.
- Any changes or revisions to the sequence of construction must be reviewed and approved by the plan approval authority prior to proceeding with construction.
- 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 is stabilized and approved by the enforcement authority. Unless otherwise specified and approved by the approval authority, no more than 30 acres cumulatively may be disturbed at a given time.

SEQUENCE OF CONSTRUCTION

Construction is scheduled to begin in the Fall of 2014. The Erosion and Sediment Control Plans and Narrative must be available on site at all times during earth disturbance.

- At least 7 days before starting any earth disturbance activities, the operator shall invite all contractors involved in those activities, the landowner, all appropriate municipal officials, the erosion and sediment control plan preparer (610-691-6644) to an on-site meeting.
- Temporary and permanent seeding shall be in accordance with requirements listed and as noted in the project narrative and as listed on the detail sheets. Silt fence shall be installed downslope of all topsoil stockpiles as indicated in the Topsoil Stockpile detail.
 - Topsoil pile locations may be adjusted to fit the contractor schedule as long as the silt fence is placed down slope of the pile locations.
 - Prior to any seeding and lime and fertilizer application, a soil test shall be performed to determine the pH factor. Additional lime and fertilizer may be required.
- All disturbed areas should be immediately stabilized if earth disturbance/construction has ceased.
- Clear and grub areas of the site that are to be disturbed.
- Topsoil should be stripped and stockpiled prior to all earthwork. Only strip the amount of topsoil necessary to perform earthwork, no area shall remain unstabilized and shall be stabilized immediately if disturbance has ceased.
- Place the stabilized construction entrance at location show on the plan. This shall be the only approved site entrance. All Construction vehicles must use this entrance to enter and exit the site. On a daily basis, the Contractor must inspect and clean off any sediment that is tracked onto existing roads.
- Install super silt fence as indicated on the plans and details.
- Construct temporary access road (w/ temporary culvert) and staging area. Construction Equipment and vehicles shall be stored at this location.
- If underground water is encountered, a pumped water filter bag shall be utilized.
- Remove and/or relocate existing site features as indicated on the Existing Features / Demolition plan. Contractor shall review this with owner prior to construction.
- Begin rough grading the site, which includes trail head, crushed stone trail, and drainage swale. Fill should be compacted in layers so as to minimize sliding, slumping and erosion of soil. All newly graded areas are to be stabilized immediately. Slopes greater than 3:1 shall be sodded or shall be stabilized with jute matting prior to seeding. Rock filters and culverts shall be installed as indicated on the plans.
- Inspection - all erosion control facilities shall be inspected after every runoff event and on a weekly basis, any necessary repairs must be made immediately. Under each detail is the required maintenance and inspection of each BMP.
- Upon completion of proposed improvements, the temporary staging area and temporary access (w/ temporary culvert) shall be removed and restored to existing condition.
- After the site is stabilized, remove the rock construction entrance, silt fence, construction protection fencing, and any remaining inlet protection. Immediately stabilize any areas disturbed by the removal of the erosion and sediment pollution controls.
- An area shall be considered to have achieved final stabilization when it has a minimum uniform 70% perennial vegetative cover or other permanent non-vegetative cover with a density sufficient to resist accelerated surface erosion and subsurface characteristics sufficient to resist sliding or other movements.

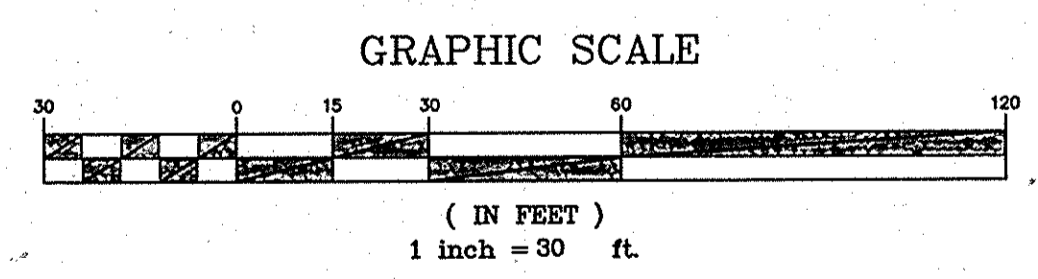
RECEIVING WATERS:
 PATUXENT RIVER (IV-P)

OWNER/APPLICANT
 HOWARD COUNTY RECREATION AND PARKS
 7120 OAKLAND MILLS ROAD
 COLUMBIA, MD 21406
 410.313.4724

PROJECT AREA - 83,638 S.F.
 LIMIT OF DISTURBANCE - 21,348 S.F.

SOIL TYPES LoB
GaC Galia loam, 8 to 15 percent slopes
GmB Glenville silt loam, 3 to 8 percent slopes
Ha Habboro-Codorus silt loams, 0 to 3 percent slopes
McF Manor-Brinklow complex, 25 to 65 percent slopes, very rocky

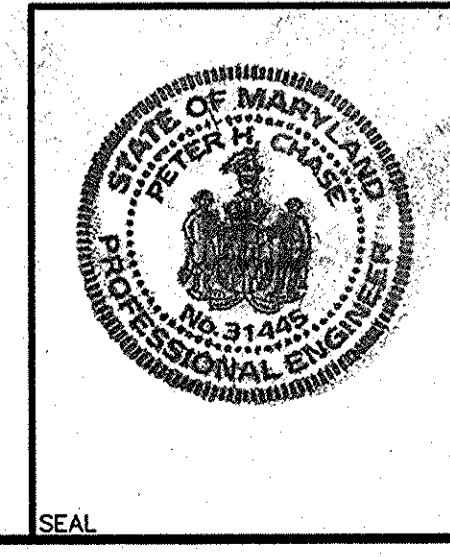
BENCHMARK FOR THIS PLAN
 VERTICAL DATUM = MAG NAIL SET IN SOUTH EAST END OF DRIVEWAY
 ELEV. = 314.17
 N39° 10' 43.88" W76° 59' 58.69"
 N39° 10' 44.85441639" W76° 59' 57.53215354"



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PENNTRAILS
 9 DOGWOOD DRIVE
 NEWVILLE, PA 17241
 717.486.4455

PROFESSIONAL ENGINEERS CERTIFICATION
 I HEREBY CERTIFY THAT THIS PLAN HAS BEEN PREPARED BY ME OR UNDER MY IMMEDIATE SUPERVISION, AND IS CORRECT IN ITS DETAIL TO MY BEST KNOWLEDGE AND BELIEF.
[Signature] DATE **2/29/15**
 PETER H. CHASE, P.E. MARYLAND LIC# 31445
 HANOVER ENGINEERING ASSOCIATES, INC.
 252 BRODHEAD ROAD, SUITE 100
 BETHLEHEM, PA 18017



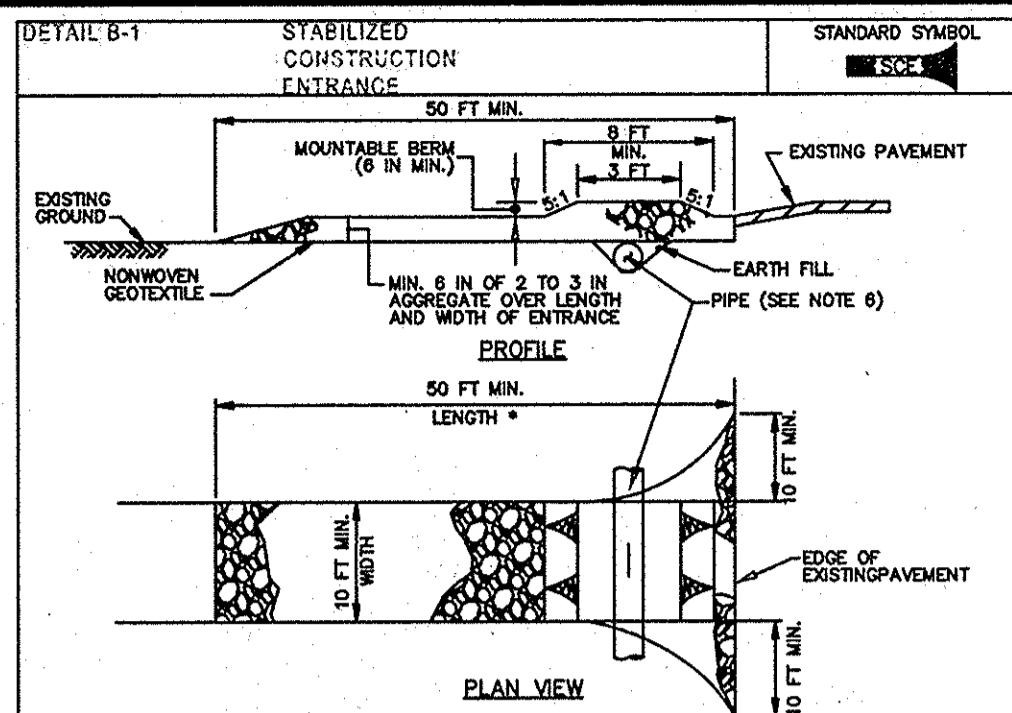
NO.	REVISIONS	DATE
1	INTERNAL REVISIONS	10/17/14
2	HOWARD COUNTY COMMENTS	12/05/14

**ESPC PLAN
 ENVIRONMENTAL CONCEPT PLAN**

HAVLAND MILL TRAIL

HOWARD COUNTY MARYLAND	PROJECT NO. HC1001
Hanover Engineering Associates Inc	SHEET NO. 5 OF 8
252 Brodhead Road, Suite 100 Bethlehem, PA 18017-8944 610.691.5644 Fax 610.691.6968	

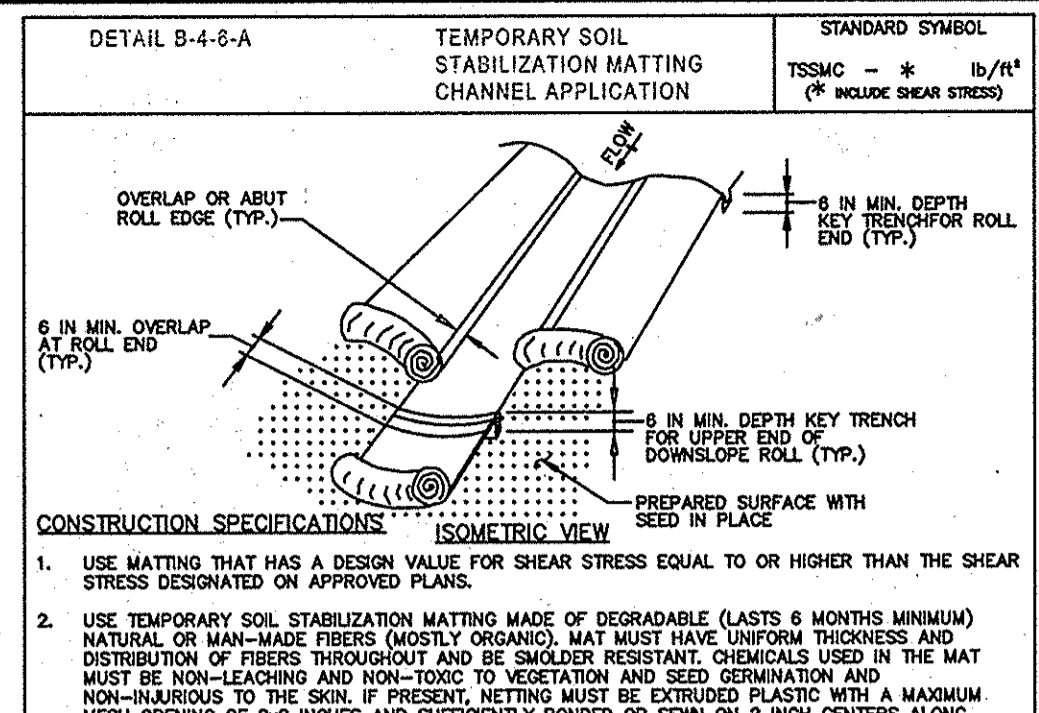
EXISTING FEATURES LEGEND	PROPOSED FEATURES LEGEND	EROSION AND SEDIMENT POLLUTION CONTROL LEGEND
STREAM / RIVER 100 YEAR FEMA FLOOD PLAIN 25' WETLAND BUFFER 100' STREAM BUFFER WETLANDS CENTERLINE ROAD EASEMENT FENCE EX. PAVING	GRID MARK GUIDE RAIL STORM SEWER CONTOURS TREES ORDINARY HIGH WATER MARK (FIELD DELINEATED) PROP. FENCE	TOPSOIL STOCKPILE (SP) STABILIZED CONSTRUCTION ENTRANCE (SCE) SUPER FILTER FABRIC (SFF) LIMIT OF DISTURBANCE PROJECT AREA ROCK OUTFALL PROTECTION (ROP) ROCK FILTER (RF) CHANNEL EROSION CONTROL MATTING (TSSMC) SLOPE EROSION CONTROL MATTING (TSSMS)



CONSTRUCTION SPECIFICATIONS

- PLACE STABILIZED CONSTRUCTION ENTRANCE IN ACCORDANCE WITH THE APPROVED PLAN. VEHICLES MUST TRAVEL OVER THE ENTIRE LENGTH OF THE SEE. USE MINIMUM LENGTH OF 50 FEET (40 FEET FOR SINGLE RESERVE LOT). USE MINIMUM WIDTH OF 10 FEET. PLACE SEE 10 FEET MINIMUM AT THE EXISTING ROAD TO PROVIDE A TURNING RADIUS.
- PIPE ALL SURFACE WATER FLOWING TO OR DIVERTED TOWARD THE SEE UNDER THE ENTRANCE. MAINTAIN POSITIVE DRAINAGE PROFILE PIPE INSTALLED THROUGH THE SEE WITH A MOUNTAIN BERM WITH 2:1 SLOPES AND A MINIMUM OF 12 INCHES OF STONE OVER THE PIPE. PROVIDE PIPE AS SPECIFIED ON APPROVED PLAN. WHEN THE SEE IS LOCATED AT A HIGH SPOT AND HAS NO DRAINAGE TO CONVEY, A PIPE IS NOT NECESSARY. A MOUNTAIN BERM IS REQUIRED WHEN SEE IS NOT LOCATED AT A HIGH SPOT.
- PREPARE SUBGRADE AND PLACE NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS.
- PLACE CRUSHED AGGREGATE (2 TO 3 INCHES IN SIZE) OR EQUIVALENT RECYCLED CONCRETE (WITHOUT REBAR) AT LEAST 6 INCHES DEEP OVER THE LENGTH AND WIDTH OF THE SEE.
- MAINTAIN ENTRANCE IN A CONDITION THAT MINIMIZES TRACKING OF SEDIMENT, AND STONE OR MAKE OTHER REPAIRS AS CONDITIONS DEMAND TO MAINTAIN CLEAR SURFACE, MOUNTAIN BERM, AND SPECIFIED DRAINAGE. IMMEDIATELY REMOVE STONE AND/OR SEDIMENT SPILLED, DROPPED, OR TRACKED ONTO ADJACENT ROADWAY BY VACUUMING, SCRAPING, AND/OR SWEEPING. WASHING ROADWAY TO REMOVE MUD TRACKED ONTO PAVEMENT IS NOT ACCEPTABLE UNLESS WASH WATER IS DIRECTED TO AN APPROVED SEDIMENT CONTROL PRACTICE.

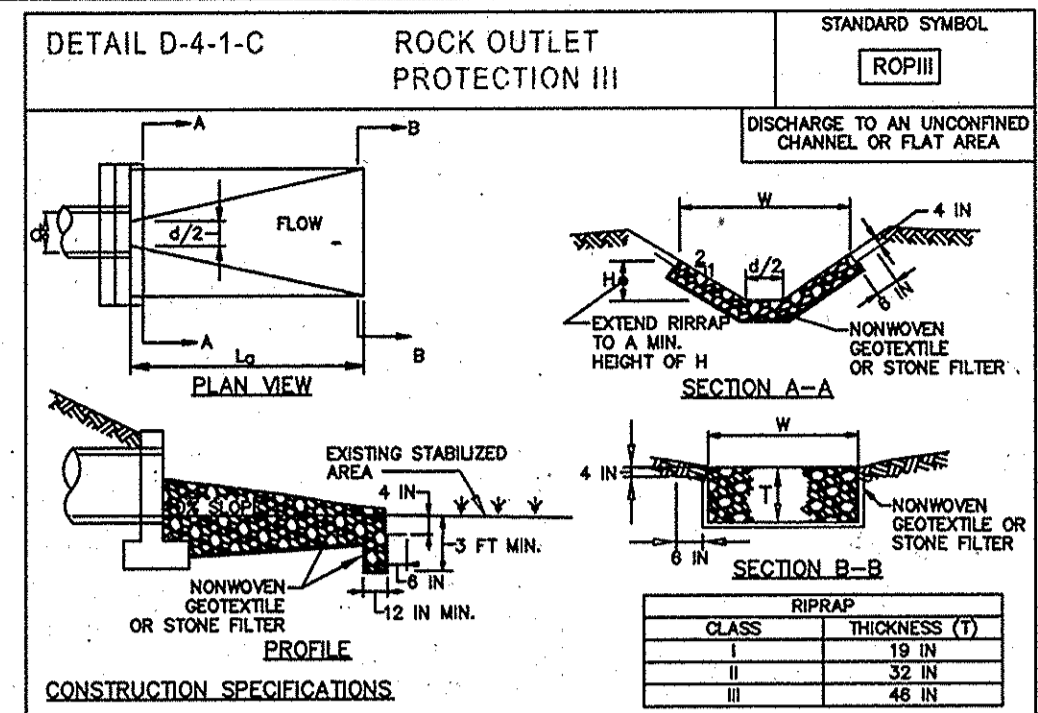
MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL
U.S. DEPARTMENT OF AGRICULTURE 2011 MARYLAND DEPARTMENT OF ENVIRONMENTAL NATURAL RESOURCES CONSERVATION SERVICE WATER MANAGEMENT ADMINISTRATION



CONSTRUCTION SPECIFICATIONS

- USE MATTING THAT HAS A DESIGN VALUE FOR SHEAR STRESS EQUAL TO OR HIGHER THAN THE SHEAR STRESS DESIGNATED ON APPROVED PLANS.
- USE TEMPORARY SOIL STABILIZATION MATTING MADE OF DEGRADABLE (LASTS 6 MONTHS MINIMUM) NATURAL OR MAN-MADE FIBERS (MOSTLY ORGANIC). MAT MUST HAVE UNIFORM THICKNESS AND DISTRIBUTION OF FIBERS THROUGHOUT AND BE SMOOTHER RESISTANT. CHEMICALS USED IN THE MAT MUST BE NON-LEACHING AND NON-TOXIC TO VEGETATION AND SEED GERMINATION AND NON-INJURIOUS TO THE SOIL. IF PRESENT, MATTING MUST BE EXTRUDED PLASTIC WITH A MAXIMUM MESH OPENING OF 2/2 INCHES AND SUFFICIENTLY BONDED OR SEWN ON 2 INCH CENTERS ALONG LONGITUDINAL AXIS OF THE MATERIAL TO PREVENT SEPARATION OF THE NET FROM THE PARENT MATERIAL.
- SECURE MATTING USING STEEL STAPLES, WOOD STAKES, OR BIODEGRADABLE EQUIVALENT. STAPLES MUST BE "U" OR "T" SHAPED STEEL WIRE HAVING A MINIMUM GAUGE OF NO. 11 AND NO. 8 RESPECTIVELY. "U" SHAPED STAPLES MUST AVERAGE 1 TO 1.5 INCHES WIDE AND BE A MINIMUM OF 6 INCHES LONG. "T" SHAPED STAPLES MUST HAVE A MINIMUM 5 INCH MAIN LEG, A MINIMUM 1 INCH SECONDARY LEG, AND A MINIMUM 4 INCH HEAD. WOOD STAKES MUST BE ROUND-SAWN HARDWOOD, 12 TO 24 INCHES IN LENGTH, 1 1/2 INCH IN CROSS SECTION, AND WEDGE SHAPED AT THE BOTTOM.
- PERFORM FINAL GRADING, TOPSOIL APPLICATION, SEEDBED PREPARATION, AND PERMANENT SEEDING IN ACCORDANCE WITH SPECIFICATIONS. PLACE MATTING WITHIN 48 HOURS OF COMPLETING SEEDING OPERATIONS UNLESS END OF WORKDAY STABILIZATION IS SPECIFIED ON THE APPROVED EROSION AND SEDIMENT CONTROL PLAN.
- UNROLL MATTING IN DIRECTION OF WATER FLOW, CENTERING THE FIRST ROLL ON THE CHANNEL. CENTERLINE WORK FROM CENTER OF CHANNEL OUTWARD WHEN UNROLLING ROLLS. LAY MAT SMOOTHLY AND FIRMLY ON THE SEEDED SURFACE. AVOID STRETCHING THE MATTING.
- KEY-IN UPSTREAM END OF EACH MAT ROLL BY DIGGING A 4 INCH (MINIMUM) TRENCH AT THE UPSTREAM END OF THE MATTING. PLACE THE ROLL END IN THE TRENCH, STAPLING THE MAT IN PLACE, REPLACING THE EXCAVATED MATERIAL, AND TAMPING TO SECURE THE MAT END.
- OVERLAP OR ABUT THE ROLL EDGES PER MANUFACTURER RECOMMENDATIONS. OVERLAP ROLL ENDS BY 6 INCHES (MINIMUM), WITH THE UPSTREAM MAT OVERLAPPING ON TOP OF THE NEXT DOWNSTREAM MAT.
- STAPLE/STAKE MAT IN A STAGGERED PATTERN ON 4 FOOT (MAXIMUM) CENTERS THROUGHOUT AND 2 FOOT (MAXIMUM) CENTERS ALONG SEAMS, JOINTS, AND ROLL ENDS.
- ESTABLISH AND MAINTAIN VEGETATION SO THAT REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT ARE CONTINUOUSLY MET IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.

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



CONSTRUCTION SPECIFICATIONS

- RIPRAP AND STONE MUST CONFORM TO THE SPECIFIED CLASS.
- USE NONWOVEN GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS, AND PROTECT FROM PUNCTURING, CUTTING, OR TEARING. REPAIR ANY DAMAGE OTHER THAN AN OCCASIONAL SMALL HOLE BY PLACING ANOTHER PIECE OF GEOTEXTILE OVER THE DAMAGED PART OR BY COMPLETELY REPLACING THE GEOTEXTILE. PROVIDE A MINIMUM OF ONE FOOT OVERLAP FOR ALL REPAIRS AND FOR JOINING TWO PIECES OF GEOTEXTILE TOGETHER.
- PREPARE THE SUBGRADE FOR GEOTEXTILE OR STONE FILTER (2 TO 1 1/2 INCH MINIMUM STONE FOR 8 INCH MINIMUM DEPTH) AND RIPRAP TO THE REQUIRED LINES AND GRADES. COMPACT ANY FILL REQUIRED IN THE SUBGRADE TO A DENSITY OF APPROXIMATELY THAT OF THE SUBSURROUNDING UNDISTURBED MATERIAL.
- EXTEND GEOTEXTILE AT LEAST 6 INCHES BEYOND EDGES OF RIPRAP AND EMBED AT LEAST 4 INCHES AT SIDES OF RIPRAP.
- CONSTRUCT RIPRAP OUTLET TO FULL COURSE THICKNESS IN ONE OPERATION AND IN SUCH A MANNER AS TO AVOID DISPLACEMENT OF UNDERLYING MATERIALS. PLACE STONE FOR RIPRAP OUTLET IN A MANNER THAT WILL ENSURE THAT IT IS REASONABLY HOMOGENEOUS WITH THE SMALLER STONES AND SPALLS FILLING THE VOIDS BETWEEN THE LARGER STONES. PLACE RIPRAP IN A MANNER TO PREVENT DAMAGE TO THE FILTER BLANKET OR GEOTEXTILE. HAND PLACE TO THE EXTENT NECESSARY.
- WHERE NO DOWNHILL IS USED, CONSTRUCT THE UPSTREAM END OF THE APRON SO THAT THE WIDTH IS TWO TIMES THE DIAMETER OF THE OUTLET PIPE, AND EXTEND THE STONE UNDER THE OUTLET BY A MINIMUM OF 18 INCHES.
- CONSTRUCT APRON WITH OR SLOPE ALONG ITS LENGTH AND WITHOUT OBSTRUCTIONS. PLACE STONE SO THAT IT BLENDS IN WITH EXISTING GROUND.
- MAINTAIN LINE, GRADE, AND CROSS SECTION. KEEP OUTLET FREE OF EROSION. REMOVE ACCUMULATED SEDIMENT AND DEBRIS. AFTER HIGH FLOWS INSPECT FOR SCOUR AND RIPRAP DISLODGED RIPRAP. MAKE NECESSARY REPAIRS IMMEDIATELY.

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

TABLE 15
Plant Tolerances of Soil Limitation Factors

Species	Growth Habit	Tolerates				Minimum Seed Specifications ^a			
		Wet Soil	Dry Site	Low Fertility	Acid Soil (pH 5.5-7)	Purity (%)	Ready Germ (%)	Hard Seed (%)	Total Seed (1,000)
Warm-Season Grasses									
Deergrass	bunch	yes	yes	yes	yes	95	75	75	250
Wheating fescue	bunch	no	yes	yes	yes	97	75	75	1,500
Stylograss	bunch	yes	yes	yes	yes	85	75	75	300
Big bluestem	bunch	no	yes	yes	yes	95	75	75	150
Cool-Season Grasses									
Tall fescue	sod	yes	no	yes	no	95	60	60	227
Redtop	sod	yes	yes	yes	yes	92	80	80	5,000
Fine fescue	sod	no	no	yes	no	95	80	80	400
Perennial ryegrass	bunch	no	no	no	no	85	75	75	227
Annual ryegrass	bunch	no	no	yes	no	95	85	85	227
Kentucky bluegrass	sod	no	no	no	no	95	70	70	2,000
Freeport carpetgrass	sod	yes	yes	yes	yes	95	80	80	654
Orchardgrass	bunch	yes	yes	yes	yes	95	80	80	1,232
Timothy	sod	yes	yes	yes	yes	95	80	80	1,232
Smooth bromegrass	sod	no	yes	yes	no	95	60	60	136
Legumes^b									
Crownvetch	sod	no	yes	yes	no	98	40	30	120
Electronia trifida ^c	bunch	yes	no	yes	yes	98	60	20	400
Flupaea	sod	no	no	yes	yes	98	55	20	75
Sorrel lespedeza	bunch	no	yes	yes	yes	98	60	20	60
Cercara	sod	no	no	yes	no	98	65	25	13
Winter wheat	bunch	no	no	no	no	98	85	85	15
Winter vetch	bunch	no	no	no	no	98	85	85	18
Spring vetch	bunch	no	no	no	no	98	65	65	13
Sundangrass	bunch	no	yes	no	no	98	65	65	55
Japanese millet	bunch	yes	no	yes	yes	98	60	60	75

^a Growth habit refers to the ability of the species to either form a dense sod by vegetative means (stolons, rhizomes, or roots) or result in a bunch or tuft growth habit. If seeded heavily enough, bunch-forming species can produce a very dense stand. This is sometimes called a sod, but not in the sense of a sod formed by vegetative means.

^b Once established, plants may grow at a somewhat lower pH, but cover generally is only adequate at pH 6.0 or above.

^c Minimum seed rate is 100 lb/acre, and seedlings to be used for revegetation purposes should be equal or exceed these standards. Thus, seedlings grown at a germination rate of 85% or better. Commercially, rates of 85% germination seed and 20% hard seed. Commercially available seed is equal or exceed minimum seed rate. Remember that disturbed sites are adverse for plant establishment. Heavy germination rates do not guarantee success in the field. The germination test and that would be expected if conditions are favorable. If germination is rapid when planted. The opposite of ready germination is dormant seed, of which that seed is one type.

^d Smoothgrass seed is sold only on the basis of pure live seed (PLS).

^e Seed specific to the manufacturer. Inoculant suitable for green peas and sweet peas is satisfactory for flupaea.

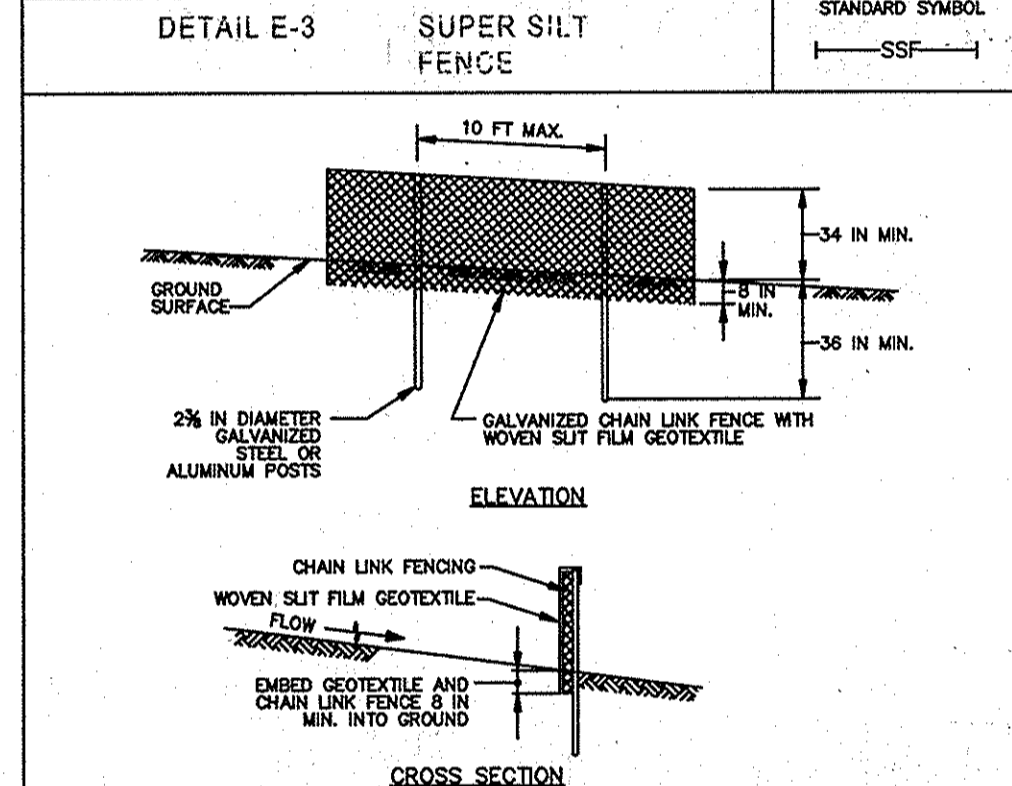
^f Seedbed telen is applied over the entire site, except in the extreme southeast white cover and root rot may injure plants.

Synthetic binders (chemical binders) may be used as recommended by the manufacturer to anchor mulch provided sufficient documentation is provided to show they are non-toxic to native plant and animal species.

Lightweight plastic, fiber, or paper nets may be stapled over the mulch according to manufacturer's recommendations.

TABLE 16
Mulch Application Rates

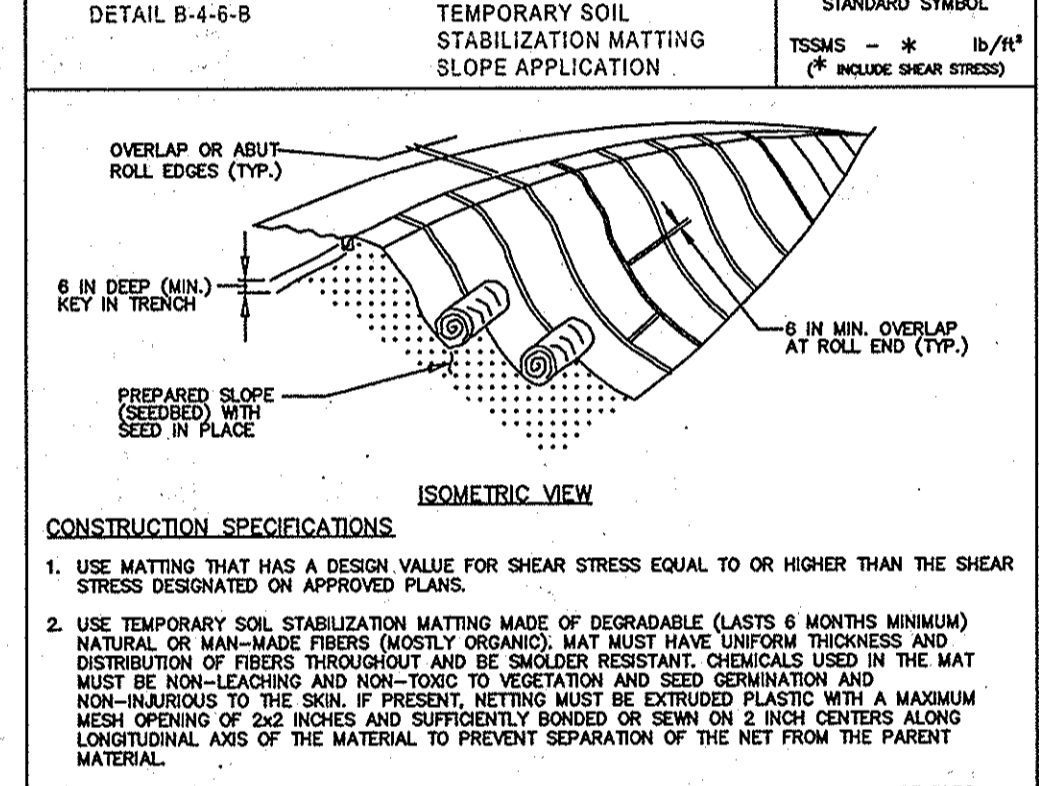
Mulch Type	Application Rate (Min.)			Notes
	Per Acre	Per 1,000 sq. ft.	Per 1,000 sq. yd.	
Straw	3 tons	140 lb.	1,240 lb.	Either wheat or oat straw, free of weeds, not chopped or finely broken
Hay	3 tons	140 lb.	1,240 lb.	Timothy, mixed clover and timothy or other native forage grasses
Wood Cellulose	1,500 lb.	35 lb.	310 lb.	Do not use alone in winter, during hot and dry weather or on steep slopes (≥ 3:1)
Wood	1,000 lb. Cellulose	25 lb.	210 lb.	When used over straw or hay
Wood Chips	4 - 6 tons	185 - 275 lb.	1,650 - 2,500 lb.	May prevent germination of grasses and legumes



CONSTRUCTION SPECIFICATIONS

- INSTALL 2 1/2 INCH DIAMETER GALVANIZED STEEL POSTS OF 0.095 INCH WALL THICKNESS AND SIX FOOT LENGTH SPACED NO FURTHER THAN 10 FEET APART. DRIVE THE POSTS A MINIMUM OF 36 INCHES INTO THE GROUND.
- FASTEN 9 GAUGE OR HEAVIER GALVANIZED CHAIN LINK FENCE (2 1/2 INCH MAXIMUM OPENING) 42 INCHES IN HEIGHT SECURELY TO THE FENCE POSTS WITH WIRE TIES OR HUG RINGS.
- FASTEN WOVEN SILT FILM GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS, SECURELY TO THE UPSLOPE SIDE OF CHAIN LINK FENCE WITH TIES SPACED EVERY 24 INCHES AT THE TOP AND MID SECTION. EMBED GEOTEXTILE AND CHAIN LINK FENCE A MINIMUM OF 8 INCHES INTO THE GROUND.
- WHERE ENDS OF THE GEOTEXTILE COME TOGETHER, THE ENDS SHALL BE OVERLAPPED BY 6 INCHES, FOLDED, AND STAPLED TO PREVENT SEDIMENT BY PASS.
- EXTEND BOTH ENDS OF THE SUPER SILT FENCE A MINIMUM OF FIVE HORIZONTAL FEET UPSLOPE AT 45 DEGREES TO THE MAIN FENCE ALIGNMENT TO PREVENT RUNOFF FROM GOING AROUND THE ENDS OF THE SUPER SILT FENCE.
- PROVIDE MANUFACTURER CERTIFICATION TO THE INSPECTION/FORFEITMENT AUTHORITY SHOWING THAT GEOTEXTILE USED MEETS THE REQUIREMENTS IN SECTION H-1 MATERIALS.
- REMOVE ACCUMULATED SEDIMENT AND DEBRIS WHEN BULGES DEVELOP IN FENCE OR WHEN SEDIMENT REACHES 20% OF FENCE HEIGHT. REPLACE GEOTEXTILE IF TORN. IF UNDERMINING OCCURS, REINSTALL CHAIN LINK FENCING AND GEOTEXTILE.

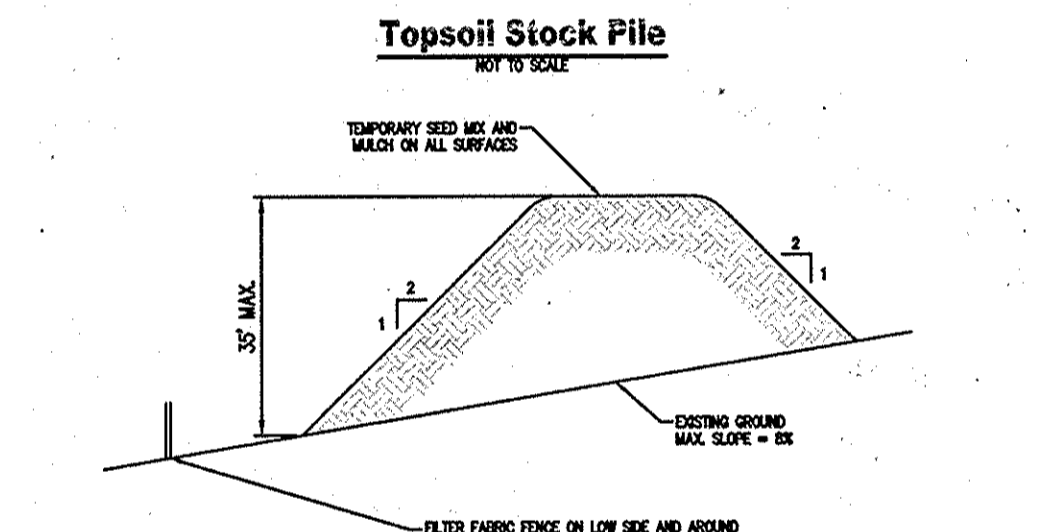
MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL
U.S. DEPARTMENT OF AGRICULTURE 2011 MARYLAND DEPARTMENT OF ENVIRONMENTAL NATURAL RESOURCES CONSERVATION SERVICE WATER MANAGEMENT ADMINISTRATION



CONSTRUCTION SPECIFICATIONS

- USE MATTING THAT HAS A DESIGN VALUE FOR SHEAR STRESS EQUAL TO OR HIGHER THAN THE SHEAR STRESS DESIGNATED ON APPROVED PLANS.
- USE TEMPORARY SOIL STABILIZATION MATTING MADE OF DEGRADABLE (LASTS 6 MONTHS MINIMUM) NATURAL OR MAN-MADE FIBERS (MOSTLY ORGANIC). MAT MUST HAVE UNIFORM THICKNESS AND DISTRIBUTION OF FIBERS THROUGHOUT AND BE SMOOTHER RESISTANT. CHEMICALS USED IN THE MAT MUST BE NON-LEACHING AND NON-TOXIC TO VEGETATION AND SEED GERMINATION AND NON-INJURIOUS TO THE SOIL. IF PRESENT, MATTING MUST BE EXTRUDED PLASTIC WITH A MAXIMUM MESH OPENING OF 2/2 INCHES AND SUFFICIENTLY BONDED OR SEWN ON 2 INCH CENTERS ALONG LONGITUDINAL AXIS OF THE MATERIAL TO PREVENT SEPARATION OF THE NET FROM THE PARENT MATERIAL.
- SECURE MATTING USING STEEL STAPLES, WOOD STAKES, OR BIODEGRADABLE EQUIVALENT. STAPLES MUST BE "U" OR "T" SHAPED STEEL WIRE HAVING A MINIMUM GAUGE OF NO. 11 AND NO. 8 RESPECTIVELY. "U" SHAPED STAPLES MUST AVERAGE 1 TO 1.5 INCHES WIDE AND BE A MINIMUM OF 6 INCHES LONG. "T" SHAPED STAPLES MUST HAVE A MINIMUM 5 INCH MAIN LEG, A MINIMUM 1 INCH SECONDARY LEG, AND A MINIMUM 4 INCH HEAD. WOOD STAKES MUST BE ROUND-SAWN HARDWOOD, 12 TO 24 INCHES IN LENGTH, 1 1/2 INCH IN CROSS SECTION, AND WEDGE SHAPED AT THE BOTTOM.
- PERFORM FINAL GRADING, TOPSOIL APPLICATION, SEEDBED PREPARATION, AND PERMANENT SEEDING IN ACCORDANCE WITH SPECIFICATIONS. PLACE MATTING WITHIN 48 HOURS OF COMPLETING SEEDING OPERATIONS UNLESS END OF WORKDAY STABILIZATION IS SPECIFIED ON THE APPROVED EROSION & SEDIMENT CONTROL PLAN.
- UNROLL MATTING DOWNHILL. LAY MAT SMOOTHLY AND FIRMLY UPON THE SEEDED SURFACE. AVOID STRETCHING THE MATTING.
- OVERLAP OR ABUT ROLL EDGES PER MANUFACTURER RECOMMENDATIONS. OVERLAP ROLL ENDS BY 6 INCHES (MINIMUM), WITH THE UPSLOPE MAT OVERLAPPING ON TOP OF THE DOWNHILL MAT.
- KEY IN THE UPSLOPE END OF EACH MAT ROLL BY DIGGING A TRENCH, PLACING THE MATTING ROLL END IN THE TRENCH, STAPLING THE MAT IN PLACE, REPLACING THE EXCAVATED MATERIAL, AND TAMPING TO SECURE THE MAT END IN THE KEY.
- STAPLE/STAKE MAT IN A STAGGERED PATTERN ON 4 FOOT (MAXIMUM) CENTERS THROUGHOUT AND 2 FOOT (MAXIMUM) CENTERS ALONG SEAMS, JOINTS, AND ROLL ENDS.
- ESTABLISH AND MAINTAIN VEGETATION SO THAT REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT ARE CONTINUOUSLY MET IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.

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



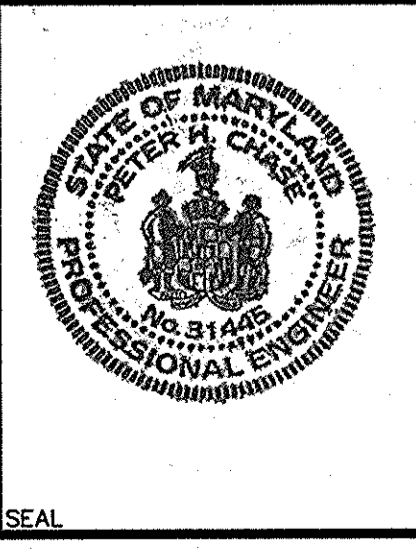
General Notes:

- STAPLE TOPSOIL OR EXCAVATED SOIL MATERIALS AT LOCATIONS SHOWN FOR EACH PILE OF STOCKPILE.
- PROFIT AND SEE CAPS SHALL NOT EXCEED MAXIMUM VALUES SHOWN ON DETAIL.
- REPLACE AND SEE CAPS SHALL NOT EXCEED MAXIMUM VALUES SHOWN ON DETAIL.
- REPAIR AND SEE CAPS SHALL NOT EXCEED MAXIMUM VALUES SHOWN ON DETAIL.
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APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 Chief, Development Engineering Division, Date: 3-13-15
 Chief, Division of Land Development, Date: 3-09-15
 Director, Date:

PROFESSIONAL ENGINEERS CERTIFICATION
 I HEREBY CERTIFY THAT THIS PLAN HAS BEEN PREPARED BY ME OR UNDER MY IMMEDIATE SUPERVISION, AND IS CORRECT IN ITS DETAIL TO MY BEST KNOWLEDGE AND BELIEF.
 PETER H. CHASE, P.E., MARYLAND LIC# 31445
 HANOVER ENGINEERING ASSOCIATES, INC.,
 252 BROADHEAD ROAD, SUITE 100
 BETHLEHEM, PA 18017



NO.	REVISIONS	DATE
1	INTERNAL REVISIONS	10/17/14
2	HOWARD COUNTY COMMENTS	12/05/14

ESPC PLAN NOTES AND DETAILS
ENVIRONMENTAL CONCEPT PLAN

HAVLAND MILL TRAIL

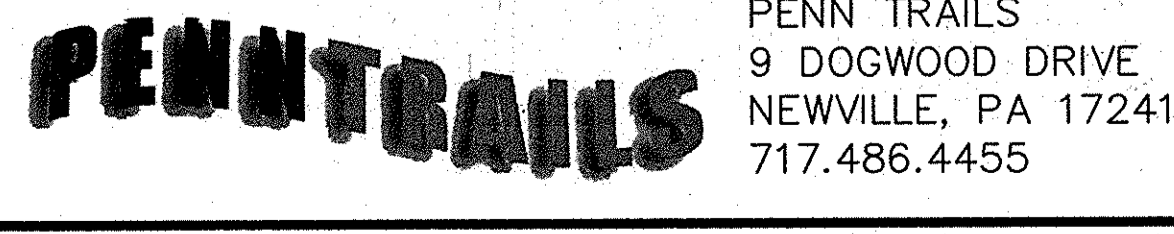
HOWARD COUNTY
MARYLAND

PROJECT NO. **HC1001**

CHECKED BY: JER
DATE: 9-11-14
SCALE: AS NOTED
SHEET NO. **6** OF **8**

Hanover
Engineering Associates Inc

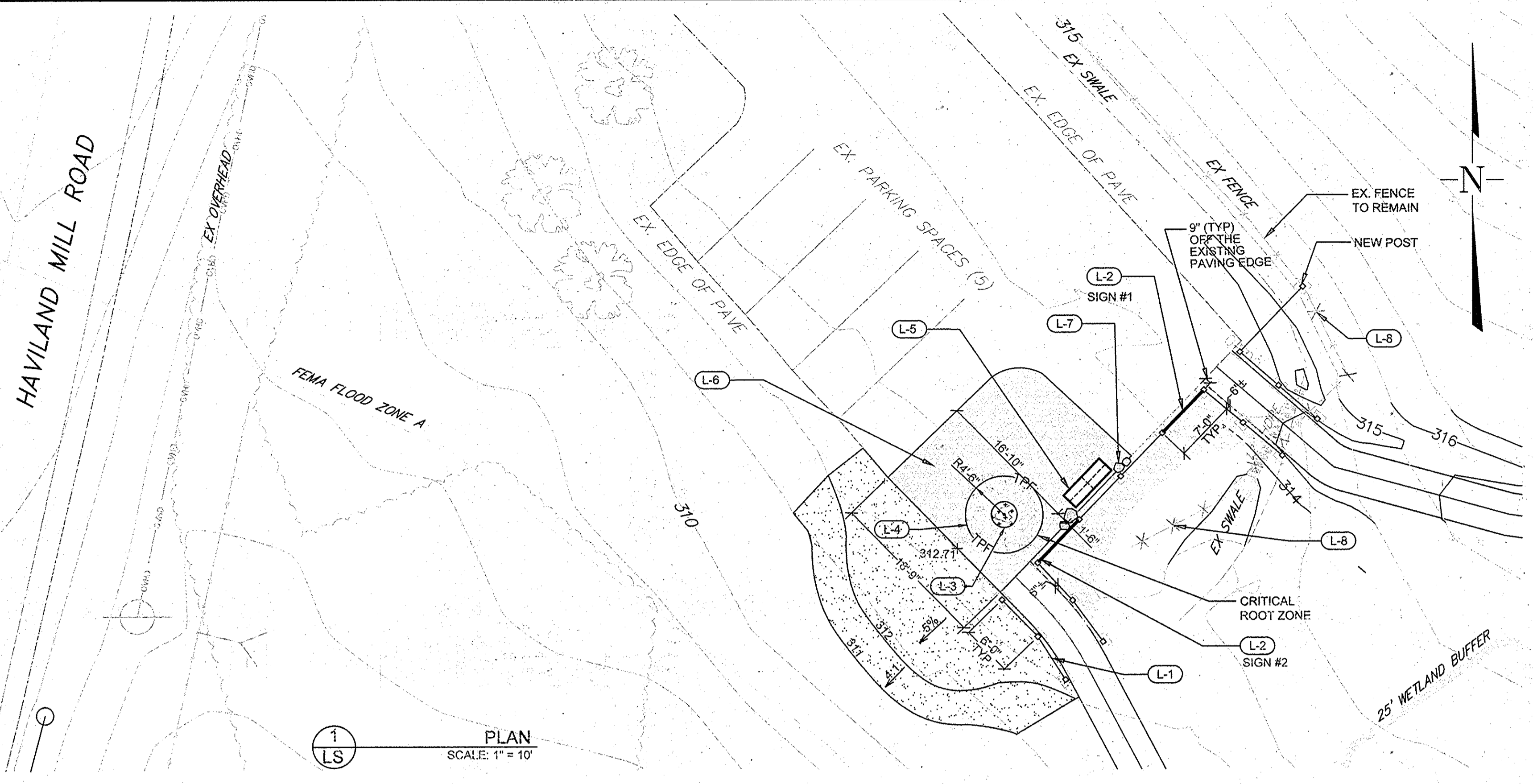
252 Brodhead Road, Suite 190
Bethlehem, PA 18017-8944
610.691.5644
Fax 610.691.6968



ALL BMP'S SHOULD BE INSPECTED AFTER EVERY RUNOFF EVENT AND ON A WEEKLY BASIS. ANY NECESSARY REPAIRS MUST BE MADE IMMEDIATELY.

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HAYLAND MILL ROAD



1 PLAN SCALE: 1" = 10'

PLANT SCHEDULE

SYMBOL/KEY	CONSTRUCTION ITEM	SIZE	SPACE	QUANTITY	DETAIL NO.
[Symbol]	RUDBECKIA FULGIDA VAR FULGIDA BLACK EYED SUSAN	1 GAL.	24" O.C.	100	2/LS THIS SHEET
[Symbol]	ECHINACEA PURPUREA 'WHITE SWAN' WHITE CONEFLOWER	1 GAL.	24" O.C.	100	
[Symbol]	LIRIOPE MUSCARI 'BIG BLUE' BIG BLUE LIRIOPE	1 GAL.	12" O.C.	8	
[Symbol]	TURFGRASS SEED ESTABLISHMENT			562 SF (63 SY)	

HARDSCAPE SCHEDULE

SYMBOL/KEY	CONSTRUCTION ITEM	QUANTITY	DETAIL NO.	REMARKS
L-1	SPLIT-RAIL FENCE	88 LF	3/LS THIS SHEET	
L-2	TRAIL SIGN	2	4/LS THIS SHEET	ATTACHED ON POST
L-3	STEEL EDGING	10 LF	5/LS THIS SHEET	
L-4	TREE PROTECTION FENCE	29 LF	6/LS THIS SHEET	
L-5	BENCH	1		BY OTHERS
L-6	CRUSHED STONE SURFACE	374 SF	CIVIL DWG SHEET #4	
L-7	RELOCATE STONE BOULDERS	4		EACH

DEMOLITION SCHEDULE

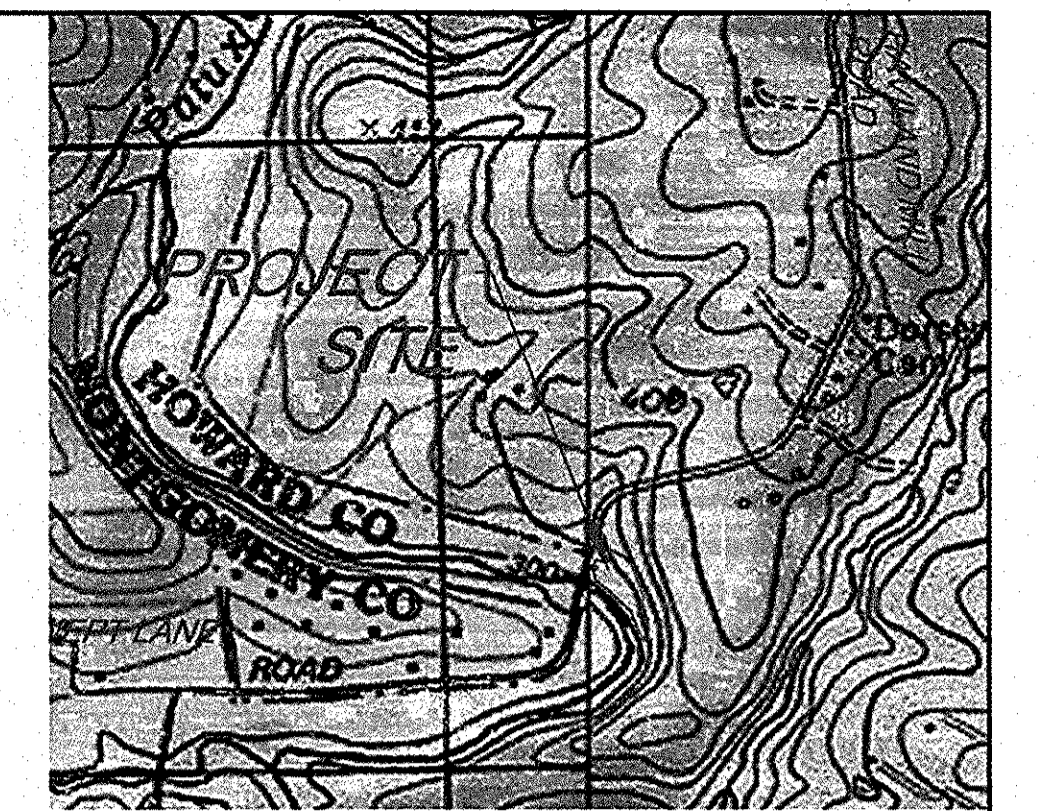
L-8	EX FENCE TO BE REMOVED			44 LF	
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WOODEN SPLIT FENCE POST LOCATIONS

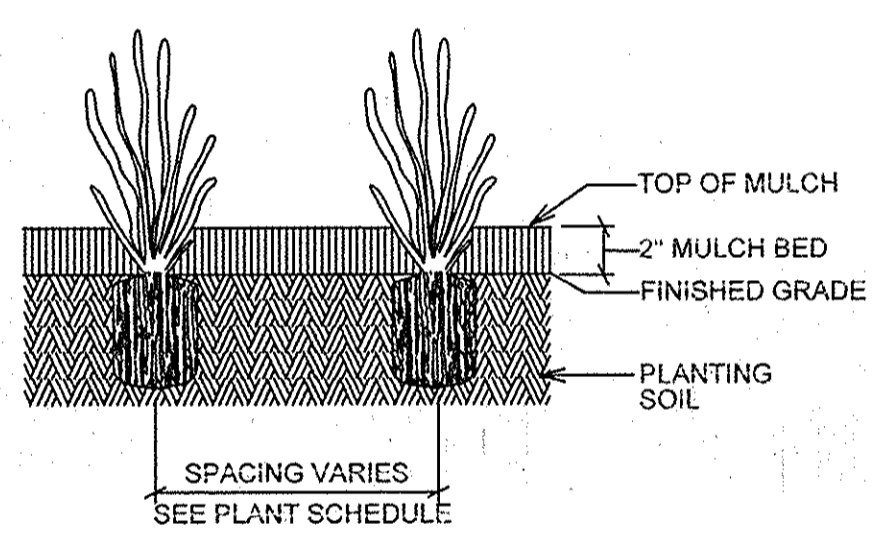
STA	OFFSET	DESCRIPTION
-0+00.09'	16.99' R	Center of Wooden Post
0+00.28'	10.30' R	Center of Wooden Post
0+00.64'	3.01' R	Center of Wooden Post
0+00.82'	3.10' L	Center of Wooden Post
0+01.47'	13.89' L	Center of Wooden Post
0+06.63'	2.96' R	Center of Wooden Post
0+06.92'	3.06' L	Center of Wooden Post
0+12.62'	2.89' R	Center of Wooden Post
0+12.92'	3.01' L	Center of Wooden Post
12+29.43'	2.92' L	Center of Wooden Post
12+31.19'	3.04' R	Center of Wooden Post
12+36.00'	2.89' L	Center of Wooden Post
12+36.66'	2.94' R	Center of Wooden Post
12+42.25'	2.99' L	Center of Wooden Post
12+42.47'	3.03' R	Center of Wooden Post
12+43.71'	10.02' R	Center of Wooden Post

TREE PROTECTION NOTES

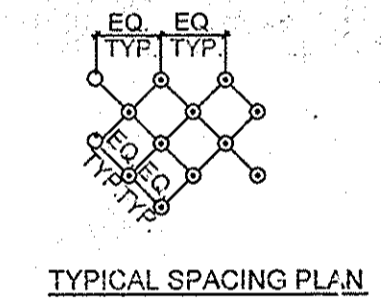
- INSTALL TREE PROTECTION FENCE (SEE DETAIL 5/LS-1) TO DEFINE TREE PROTECTION ZONE (TPZ) PRIOR TO THE START OF ALL CONSTRUCTION ACTIVITIES. TREE PROTECTION FENCE SHALL NOT BE REMOVED UNTIL ALL CONSTRUCTION IS COMPLETE.
- CONTRACTOR SHALL KEEP ALL EQUIPMENT AND PERSONNEL OUTSIDE OF TREE PROTECTION FENCE AND CRITICAL ROOT ZONE, UNLESS NECESSARY WORK IS BEING PERFORMED IN THIS AREA. FOR ALL WORK TO BE PERFORMED IN THE TPZ AND CRZ, CONTRACTOR SHALL USE EXTREME CAUTION UNDER THE SUPERVISION OF A CERTIFIED ARBORIST.
- IF TREE ROOT PRUNING IS DETERMINED TO BE NECESSARY DURING THE CONSTRUCTION, CONTRACTOR SHALL PERFORM THE WORK WITH EXTREME CAUTION UNDER THE SUPERVISION OF A CERTIFIED ARBORIST.
- TO KEEP GROUND UNDISTURBED, ALL WORK WITHIN THE TPZ AND CRZ SHALL BE PERFORMED ON TIMBER MATTING OR MULCH MATTING WITH GEOTEXTILE UNDERLAY UNDER THE DIRECTION OF A CERTIFIED ARBORIST.



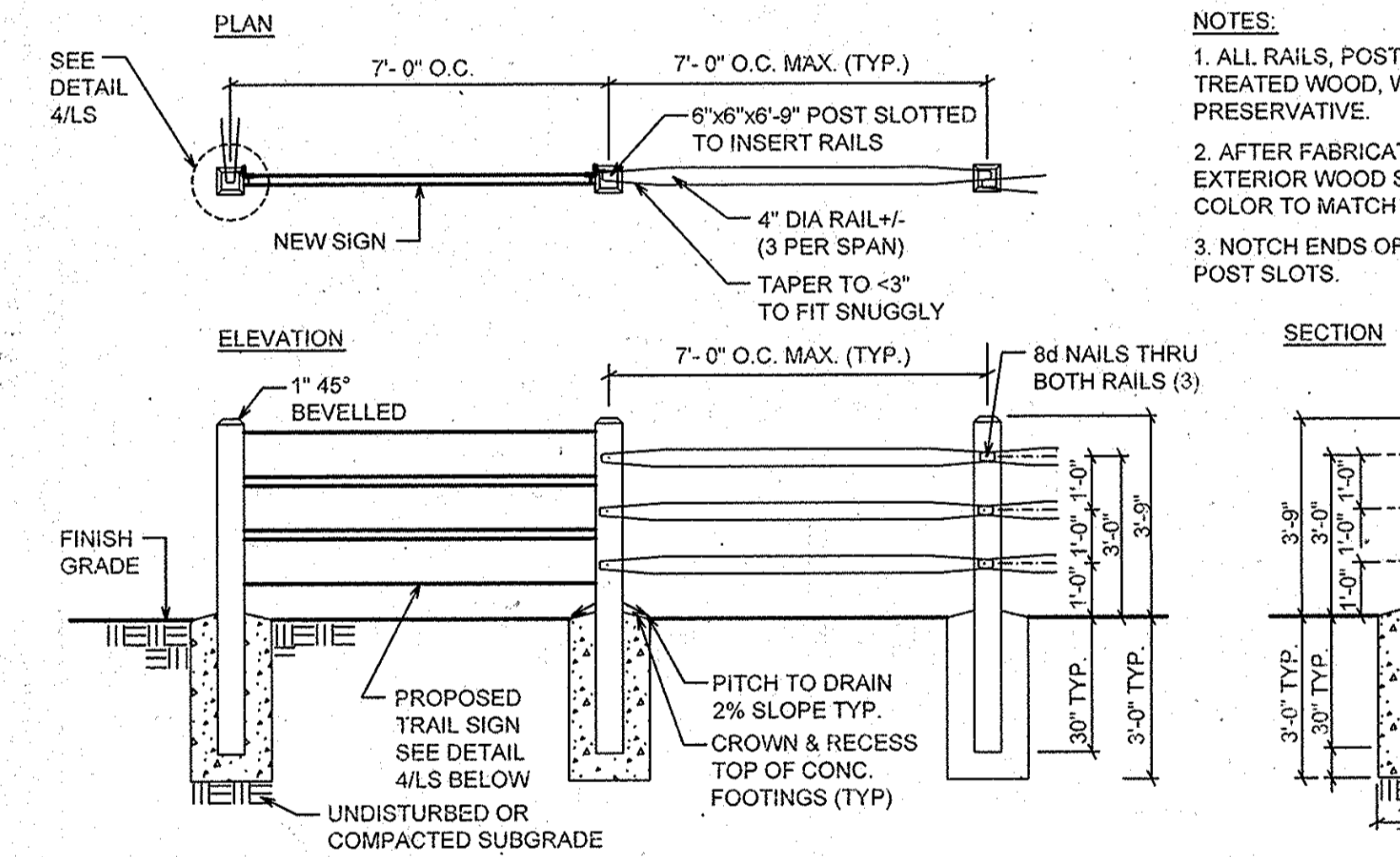
LOCATION MAP CLARKSVILLE USGS QUADRANGLE SCALE: 1" = 1000'



- NOTE:
- ENTIRE PEAT POT TO BE PLANTED INTACT.
 - NON-PEAT POT CONTAINERS TO BE REMOVED PRIOR TO PLANTING.



2 GROUNDCOVER AND PERENNIAL PLANTING DETAIL NOT TO SCALE

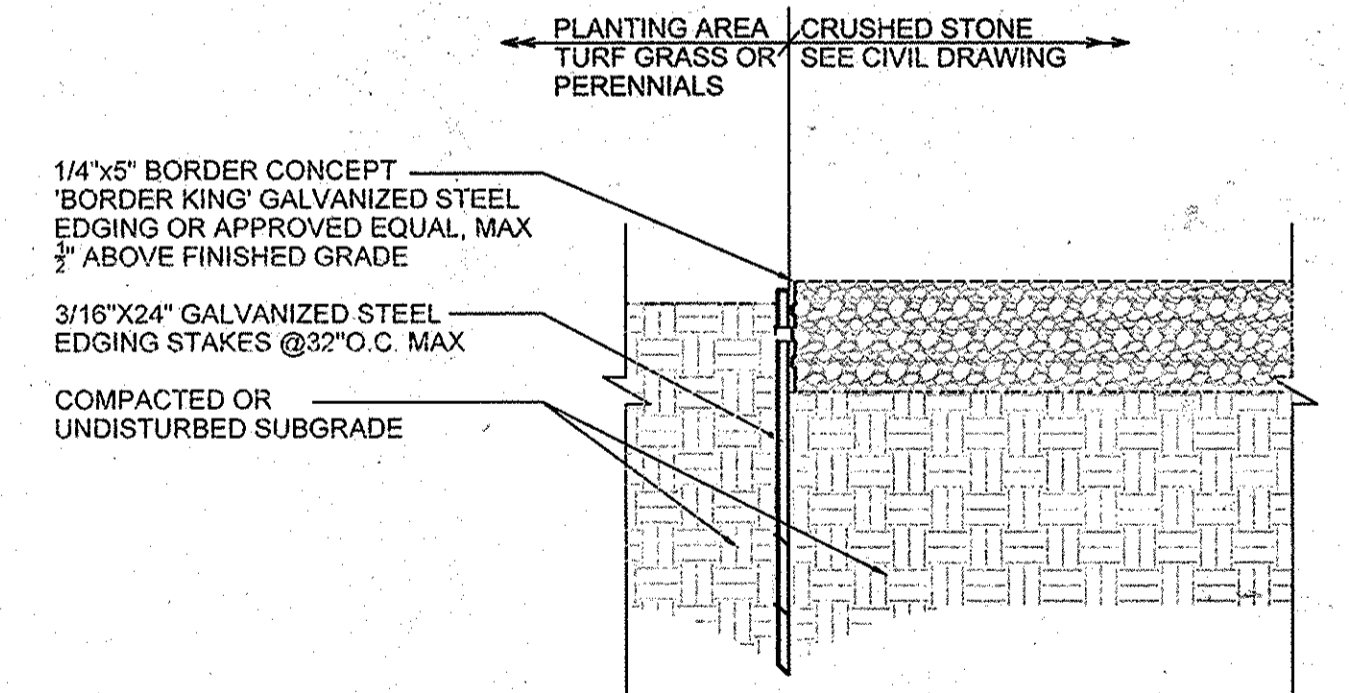


- NOTES:
- ALL RAILS, POSTS AND SIGNS TO BE PRESSURE TREATED WOOD, W/1 COAT CUPRINOL OR APPROVED PRESERVATIVE.
 - AFTER FABRICATION AND BEFORE ASSEMBLY APPLY EXTERIOR WOOD STAIN TO ALL WOOD MEMBERS. COLOR TO MATCH EXISTING FENCE.
 - NOTCH ENDS OF ALL RAILS TO SNUGGLY FIT INTO POST SLOTS.

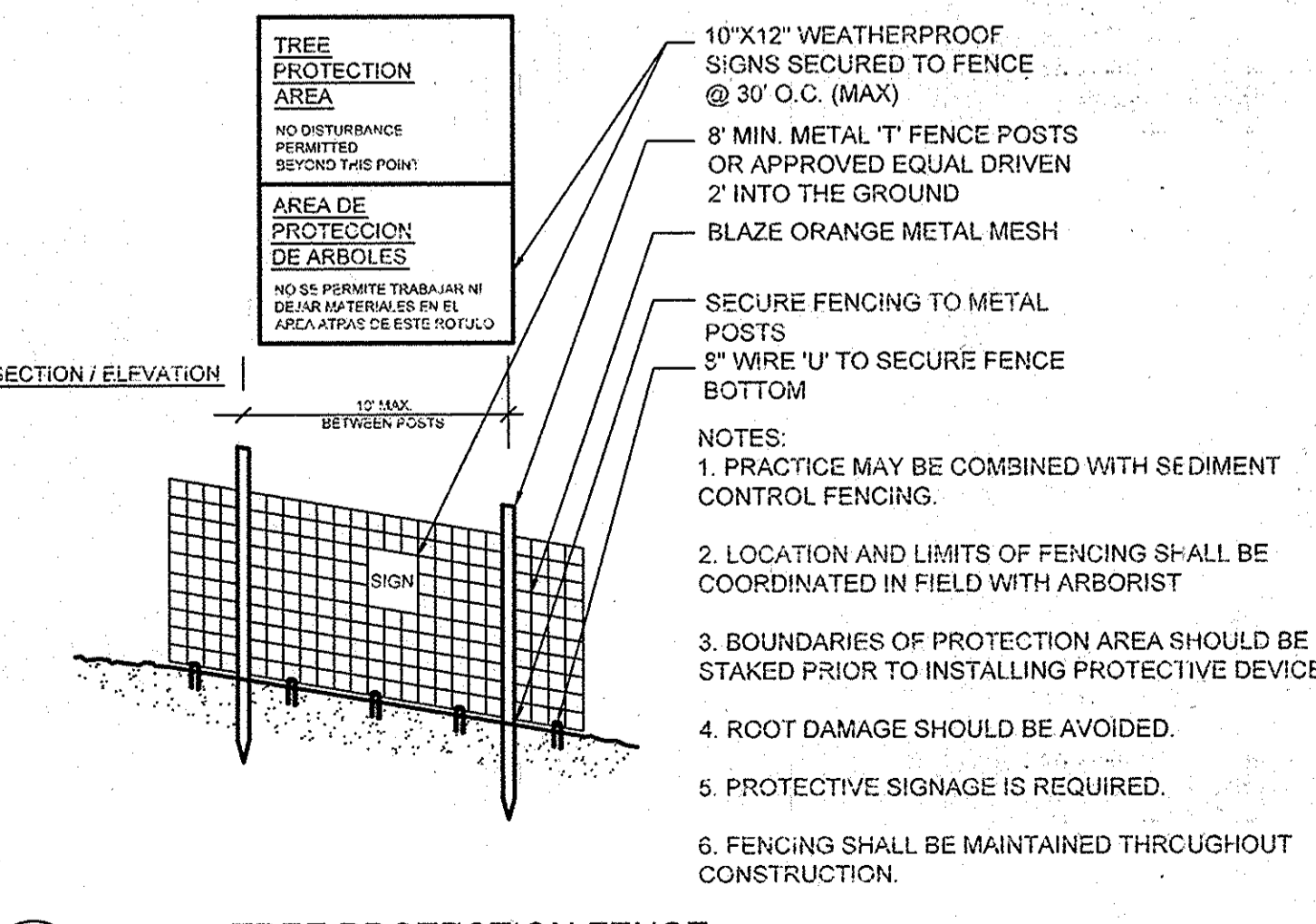
3 SPLIT-RAIL FENCE DETAILS SCALE: 1" = 3'

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APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 Chief, Development Engineering Division: [Signature] Date: 3/13/15
 Chief, Division of Land Development: [Signature] Date: 3/10/15
 Director: [Signature]

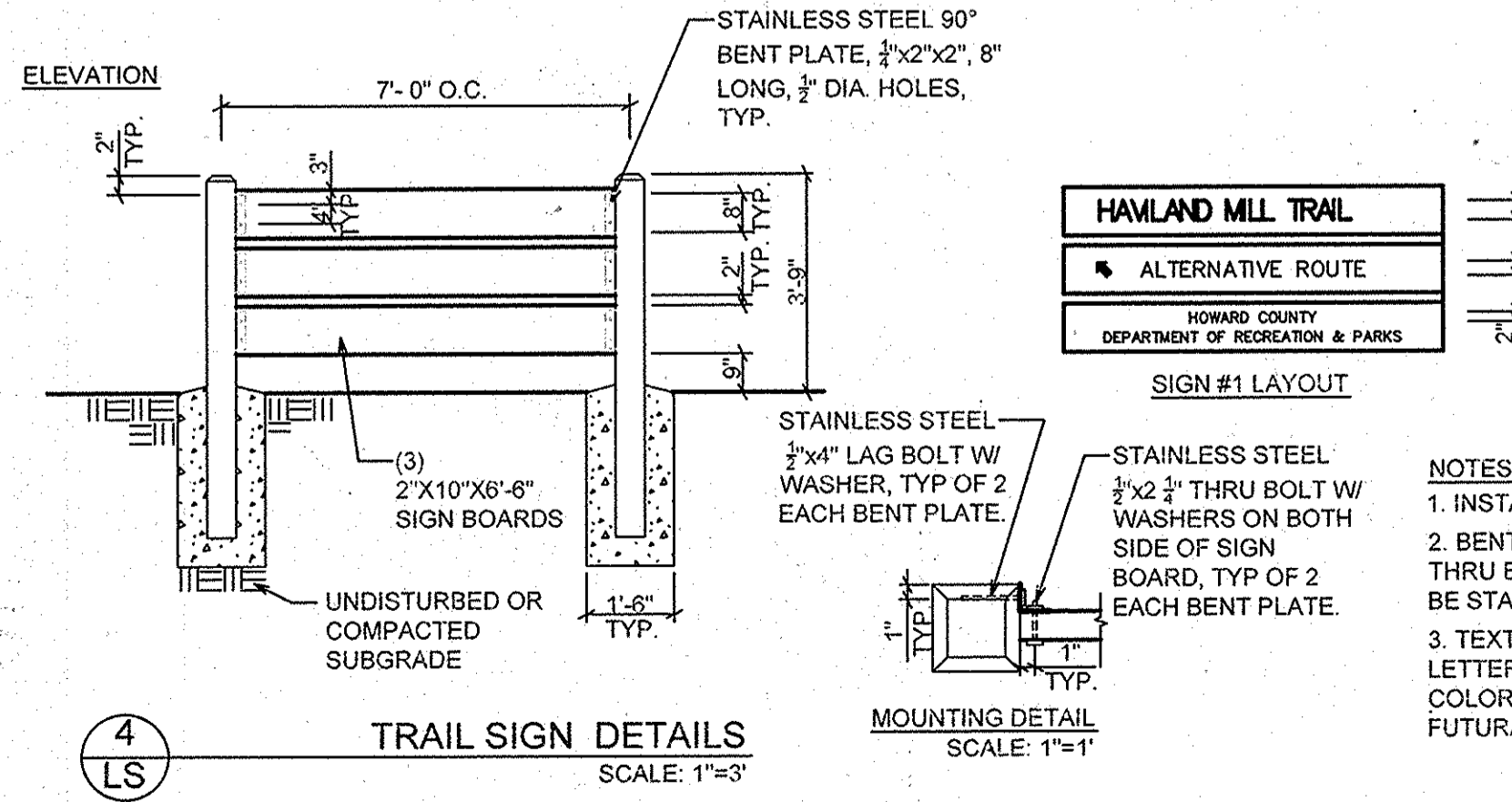


5 STEEL EDGING DETAIL NOT TO SCALE



- STANDARD SYMBOL TPF
- 10"X12" WEATHERPROOF SIGNS SECURED TO FENCE @ 30' O.C. (MAX)
- 8" MIN. METAL 'T' FENCE POSTS OR APPROVED EQUAL DRIVEN 2' INTO THE GROUND
- BLAZE ORANGE METAL MESH
- SECURE FENCING TO METAL POSTS
- 8" WIRE 'U' TO SECURE FENCE BOTTOM
- NOTES:
- PRACTICE MAY BE COMBINED WITH SEDIMENT CONTROL FENCING.
 - LOCATION AND LIMITS OF FENCING SHALL BE COORDINATED IN FIELD WITH ARBORIST
 - BOUNDARIES OF PROTECTION AREA SHOULD BE STAKED PRIOR TO INSTALLING PROTECTIVE DEVICE.
 - ROOT DAMAGE SHOULD BE AVOIDED.
 - PROTECTIVE SIGNAGE IS REQUIRED.
 - FENCING SHALL BE MAINTAINED THROUGHOUT CONSTRUCTION.

6 TREE PROTECTION FENCE NOT TO SCALE



- NOTES:
- INSTALL SIGN BOARD TO BE LEVEL.
 - BENT PLATES, LAG BOLTS WITH WASHERS, THRU BOLTS WITH WASHERS AND NUTS SHALL BE STAINLESS STEEL.
 - TEXT SHOULD BE CENTER JUSTIFIED, LETTERS SHALL BE ROUTED INTO SIGN BOARD, COLOR TO BE WHITE. FONT STYLE SHALL BE FUTURA.

4 TRAIL SIGN DETAILS SCALE: 1" = 3'

PROFESSIONAL LANDSCAPE ARCHITECT CERTIFICATION

I HEREBY CERTIFY THAT THIS PLAN HAS BEEN PREPARED BY ME OR UNDER MY IMMEDIATE SUPERVISION, AND IS CORRECT IN ITS DETAIL TO MY BEST KNOWLEDGE AND BELIEF.

LILING TIEN, RLA MARYLAND LIC# 1129 DATE: 12/05/14

NO.	REVISIONS	DATE
1	INTERNAL REVISIONS	10/17/14
2	INTERNAL REVISIONS	12/05/14



TRAILHEAD SITE AND LANDSCAPE PLAN AND DETAILS ENVIRONMENTAL CONCEPT PLAN

HAVLAND MILL TRAIL

HOWARD COUNTY MARYLAND

DATE: 09-11-2014
 SCALE: AS SHOWN

DRAWN BY: SZ
 CHECKED BY: LT
 SHEET NO. 8 OF 8

P.E.L.A. DESIGN, INC. LANDSCAPE ARCHITECTS
 7402 YORK RD, SUITE 201 TOWSON, MD 21284
 T: 410.296.3990
 E: EMAIL@PELADesign.NET

PENN TRAILS
 9 DOGWOOD DRIVE NEWVILLE, PA 17241
 T: 717.466.4455

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