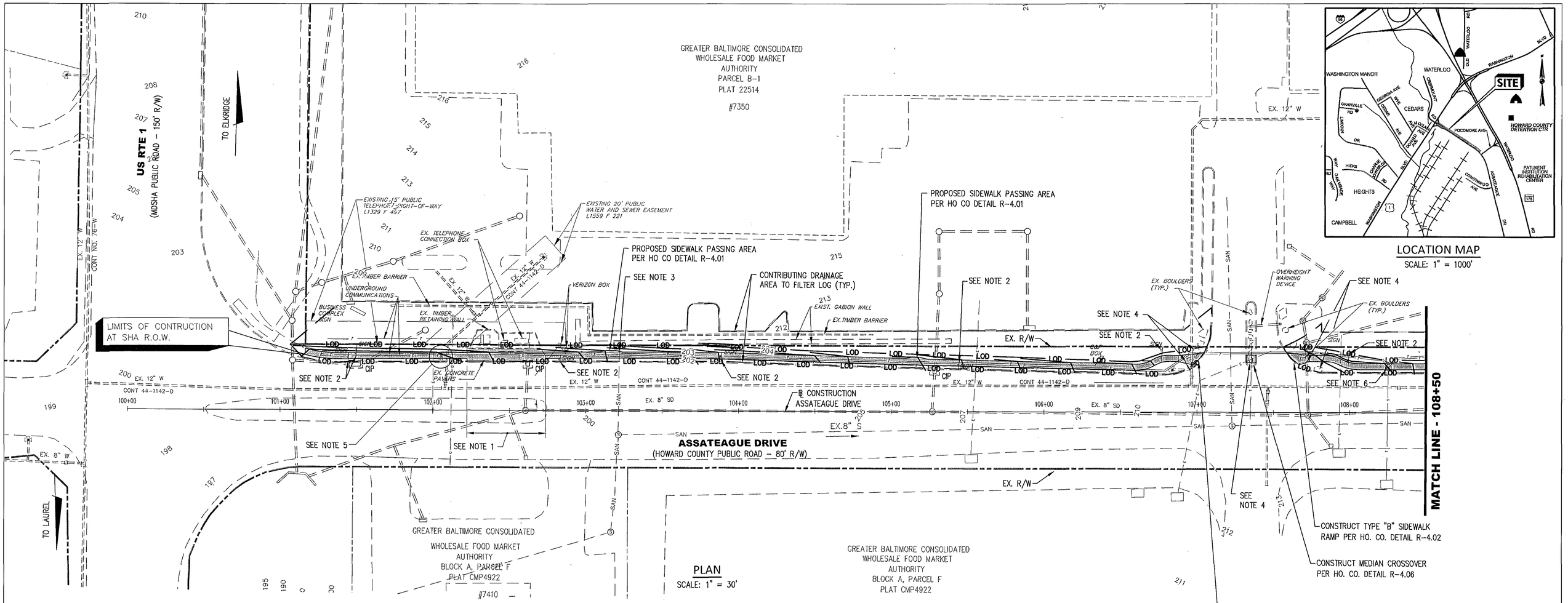


LOCATION MAP
SCALE: 1" = 1000'

PLAN
SCALE: 1" = 30'

The proposed bio-swale is not built because of utilities conflict

GENERAL NOTES

1. This contract shall be constructed under provisions of the Maryland Department of Transportation, State Highway Administration (S.H.A.) "Standard Specifications for Construction and Materials," dated July 2008, including all revisions thereof and additions thereto, except where noted otherwise; the Special Provisions included in the invitation for bids book; the Administration Book of Standards for Highways and incidental Structures; as well as the latest Howard County Design Manual Standards and Specifications & Details for Construction dated 2006 and revisions thereof and additions thereto.
2. Project Background: Location: Jessup, Maryland
   Tax Map: 43, Grid: 15
   Election District: 6
3. Traffic control devices, markings, and signing shall be in accordance with the latest edition of the Manual on Uniform Traffic Control Devices (MUTCD). The contractor shall take extreme caution not to disturb the existing vegetation outside the limits of disturbance.
4. Clearing shall be limited to the "Limit of Disturbance" as shown on the sediment and erosion control plan. Grading shall be done in such a manner as to provide positive drainage. Contractor shall seed and mulch all disturbed areas except as otherwise directed.
5. Soil stabilization shall conform to the "2011 Maryland Standards and Specifications for Soil Erosion and Sediment Control," dated 2011, published jointly by the MDE Water Management Administration, Natural Resources Soil Conservation Service, and Maryland Association of Soil Conservation Districts.
6. This drawing is based on Howard County provided GIS, on July 02, 2014.
7. A staging and stockpile area will be determined by the contractor and approved by the Howard County Engineer.
8. Any damage caused by the Contractor to existing public right-of-way, existing paving, existing curb and gutter, existing utilities, etc. shall be corrected at the Contractor's expense.
9. The existing utilities shown hereon are located from the best information available, but no guarantee is made to their accuracy. The approximate location of existing utilities are shown for the Contractor's information and convenience. The Contractor shall locate existing utilities to his/her own satisfaction and well in advance of any construction activities. Additionally, the Contractor shall take all necessary precautions to protect all existing utilities and maintain uninterrupted service. Test pitting of exist. utilities have been done by Ho. Co. information is available for contractor's use.

~~CONSTRUCT BIO-SWALE~~
~~STA. 101+16 TO STA. 101+96, LT. (1) - 80 L.F.~~
~~STA. 102+80 TO STA. 106+81, LT. (2)(3) - 401 L.F.~~

~~(1) CONNECT UNDERDRAIN INTO REAR OF INLET, STA. 101+50, LT. AND GROUT IN PLACE.~~
~~(2) (1) CONNECT UNDERDRAIN INTO REAR OF INLET, STA. 102+62, LT. AND GROUT IN PLACE. PROVIDE SOLID 6" DIA. PVC PIPE FROM BIO-SWALE UNDERDRAIN TO INLET PROVIDING MAXIMUM CLEARANCE OVER EX. CONDUIT.~~
~~(3) CONNECT UNDERDRAIN INTO REAR OF INLET, STA. 105+28, LT. AND GROUT IN PLACE.~~

INSTALL CURB INLET PROTECTION
STA. 101+48, LT. - 1 EA.
STA. 102+62, LT. - 1 EA.
STA. 105+29, LT. - 1 EA.

CONSTRUCT 7" REINFORCED CONCRETE ENTRANCE
STA. 102+22 TO STA. 102+73.5, LT. - 412 S.F.
(SEE NOTE 1)

INSTALL DETECTABLE WARNING SURFACE
STA. 107+00.5, LT. - 10 S.F.
STA. 107+33.5, LT. - 10 S.F.
STA. 107+37, LT. - 10 S.F
STA. 107+63, LT. - 10 S.F

CONSTRUCT CONCRETE SIDEWALK (4" THICKNESS)
STA. 101+16 TO STA. 102+22, LT. - 424 S.F.
STA. 102+73.5 TO STA. 107+04, LT. - 1,692 S.F. (1)
STA. 107+32 TO STA. 107+38, LT. - 33.5 S.F (2)
STA. 107+58.5 TO STA. 108+50, LT. - 380 S.F (1)

(1) INCLUDES CONSTRUCTION OF TYPE 'B' SIDEWALK RAMP AND CURB TRANSITIONS.
(2) INCLUDES CONSTRUCTION OF CURB TRANSITION.

LEGEND

- PROPOSED CONCRETE SIDEWALK
- T — EXISITING UNDERGROUND TELEPHONE
- E — EXISTING UNDERGROUND ELECTRIC
- EX. 8" SD — EXISITNG STORM DRAIN
- EX. 12" W — EXISTING WATER LINE
- CIP — CURB INLET PROTECTION
- LOD — LIMIT OF DISTURBANCE
- DRAINAGE AREA

NOTES:

1. CONSTRUCT 7" REINFORCED CONCRETE ACCESS ENTRANCE FROM BACK OF CURB IN TO EXIST. UTILITY SLAB IN AREA FOR ACCESS TO UTILITY BOXES (REFER TO DETAIL R-602 FOR ADDITIONAL INFORMATION.
2. EXISTING SIGN TO BE REMOVED AND RELOCATED PER DIRECTION FROM HOWARD COUNTY ENGINEER.
3. EXISTING SANITARY HOUSE CONNECTION TO BE ADJUSTED.
4. EXISTING LANDSCAPE BOULDERS TO BE RELOCATED PER DIRECTION FROM HOWARD COUNTY ENGINEER.
5. SIDEWALK ALIGNMENT TO BE ADJUSTED TO PASS BEHIND BACK OF FIRE HYDRANT.
6. ADJUST EXIST. MANHOLE FRAME & COVER TO SIDEWALK CONTOUR.

AS-BUILT NOTE: AS-BUILT INFORMATION SHOWN ON THIS PLAN REFLECTS REMOVAL OF BIO-SWALE CONSTRUCTION.

PROFESSIONAL CERTIFICATION

GREGORY W. FILAR, P.E. DATE: 6/9/16

I HEREBY CERTIFY THAT THESE DOCUMENTS ARE PREPARED OR APPROVED BY ME, AND THAT I AM DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND. LICENSE NO. 20762, EXPIRATION: 3/8/2017.

OWNER / DEVELOPER CERTIFICATION

"I/We certify that all development and/or construction will be done according to these plans, and that any responsible personnel involved in the construction project will have a Certificate of Attendence at a Department of the Environment Approved Training Program for the Control of Sediment and Erosion before beginning project. I also authorize periodic on-site inspections by the Howard Soil Conservation District."

Steve Shaver — Steve.Shaver — 6/16/15
Signature of Owner/Developer — Print name below signature — Date

ENGINEER CERTIFICATION

"I certify that this plan for erosion and sediment control represents a practical and workable plan based on my personal knowledge of the site conditions. This Plan was prepared in accordance with the requirements of the Howard Soil Conservation District."

Signature of Engineer — 6/15/15 Date
Gregory W. Filar

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — 6/18/15 DATE
CHIEF, BUREAU OF HIGHWAYS — 6/18/2015 DATE
CHIEF, BUREAU OF ENGINEERING — 6/16/15 DATE
CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION — 6/16/15 DATE

GPI — GREENMAN-PEDERSEN, INC.
ENGINEERS, ARCHITECTS, PLANNERS, CONSTRUCTION ENGINEERS & INSPECTORS
10977 GUILFORD RD., ANNAPOLIS JUNCTION, MD. 20701
WASH. (301) 470-2772 BALT. (410) 880-3055
FAX: (301) 490-2649 www.gpinet.com

DES: GWF/JRW					
DRN: JRW					
CHK: GWF					
DATE: MAY 2015	BY	NO.	REVISION	DATE	

PEDESTRIAN SIDEWALK
GRADING, EROSION & SEDIMENT
CONTROL PLAN

600' SCALE MAP NO. _____ BLOCK NO. _____

DESIGN OF PEDESTRIAN SIDEWALK
NORTH SIDE ASSATAGUE DRIVE
FROM US RTE 1 TO POCOMOKE AVE
CAPITAL PROJECT K-5061
ELECTION DISTRICT NO. 6
JESSUP, MARYLAND

SCALE: AS SHOWN

SHEET 1 OF 4

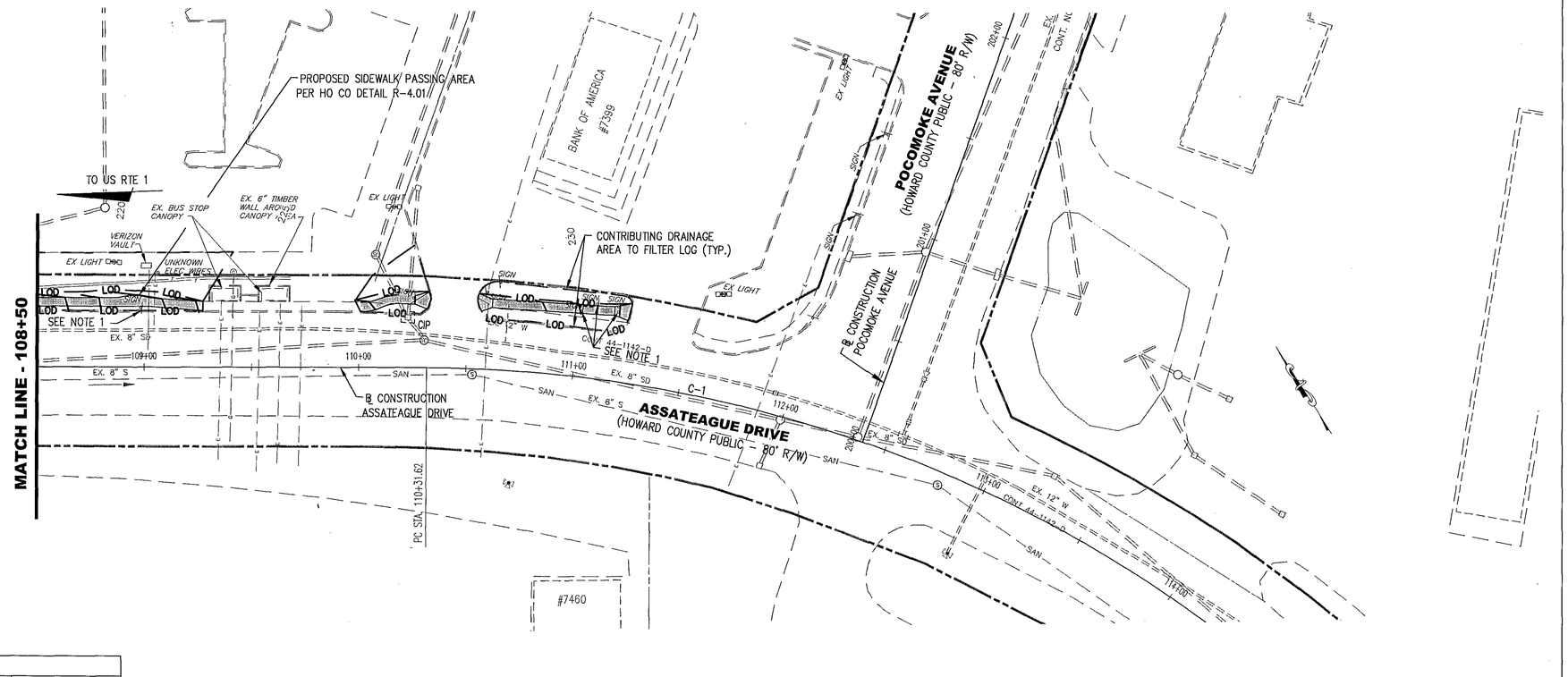
AS-BUILT 01/28/16 BY: GPI

LEGEND

- PROPOSED CONCRETE SIDEWALK
- T — EXISITING UNDERGROUND TELEPHONE
- E — EXISTING UNDERGROUND ELECTRIC
- EX. 8" SD — EXISITNG STORM DRAIN
- EX. 12" W — EXISTING WATER LINE
- CIP — CURB INLET PROTECTION
- LOD — LIMIT OF DISTURBANCE
- DRAINAGE AREA

NOTES:

1. EXISTING SIGN TO BE REMOVED AND RELOCATED PER DIRECTION FROM HOWARD COUNTY ENGINEER.



PLAN
SCALE: 1" = 30'

CURVE DATA								
CURVE	DELTA	Dc	RADIUS	TANGENT	LENGTH	EXTERNAL	CHORD BEARING	CHORD LENGTH
C-1	43°-01'-56"	9°-14'-29"	620.00'	244.43'	465.65'	46.44'	S 35°-43'-17" E	454.79'

BASELINE CONSTRUCTION CONTROL COORDINATES		
STATION	NORTHING	EASTING
POT STA. 100+00.00	547,358.4248	1,372,518.2527
PC STA. 110+31.62	546,800.1556	1,373,385.7684
PT STA. 114+97.28	546,430.9302	1,373,651.2939

REMOVE EXISTING SIDEWALK
STA. 110+01 TO STA. 110+33, LT. – 161 S.F.
STA. 110+53, TO STA. 111+22, LT. – 339 S.F.

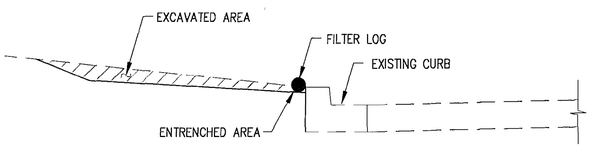
INSTALL DETECTABLE WARNING SURFACE
STA. 110+00, LT. – 10 S.F.
STA. 110+32, LT. – 10 S.F.
STA. 110+54, LT. – 10 S.F.
STA. 111+21, LT. – 10 S.F.

CONSTRUCT CONCRETE SIDEWALK (4" THICKNESS)
STA. 108+50 TO STA. 109+27.5, LT. – 323 S.F. (2)
STA. 110+01 TO STA. 110+33, LT. – 148 S.F. (1)(2)
STA. 110+53 TO STA. 111+22, LT. – 312 S.F (1)

(1) INCLUDES CONSTRUCTION OF TYPE 'B' SIDEWALK RAMP AND CURB TRANSITIONS.
(2) MEET EXISTING SIDEWALK FOR LINE AND GRADE.

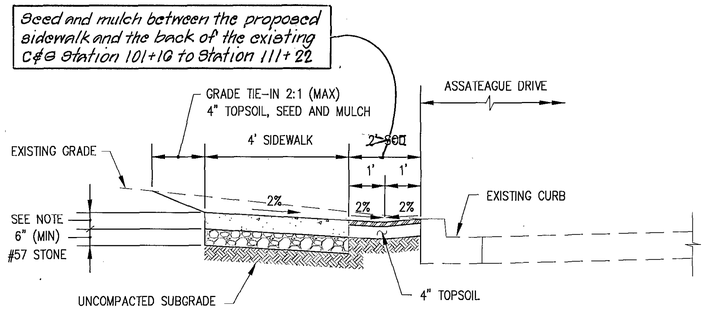
INSTALL CURB INLET PROTECTION
STA. 110+22, LT. – 1 EA.

AS-BUILT NOTE: AS-BUILT INFORMATION SHOWN ON THIS PLAN REFLECTS REMOVAL OF BIO-SWALE CONSTRUCTION



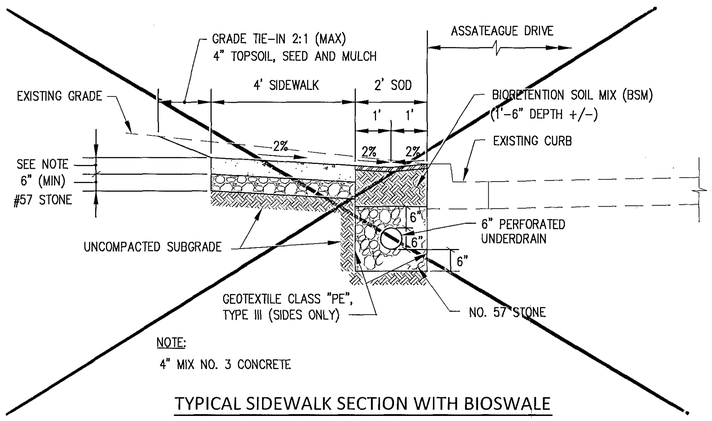
TYPICAL FILTER LOG INSTALLATION
NOT TO SCALE

Seed and mulch between the proposed sidewalk and the back of the existing C&G station 101+10 to station 111+22



NOTE:
4" MIX NO. 3 CONCRETE

TYPICAL SIDEWALK SECTION
NOT TO SCALE



NOTE:
4" MIX NO. 3 CONCRETE

TYPICAL SIDEWALK SECTION WITH BIOSWALE
NOT TO SCALE

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 6/18/15
CHIEF, BUREAU OF ENGINEERING — DATE 6/16/15
CHIEF, BUREAU OF HIGHWAYS — DATE 6/18/2015
CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION — DATE 6/16/15

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DES: GWF/JRW					
DRN: JRW					
CHK: GWF					
DATE: MAY 2015	BY	NO.	REVISION	DATE	

PEDESTRIAN SIDEWALK GRADING, EROSION & SEDIMENT CONTROL PLAN

600' SCALE MAP NO. _____ BLOCK NO. _____

DESIGN OF PEDESTRIAN SIDEWALK
NORTH SIDE ASSATAGUE DRIVE
FROM US RTE 1 TO POCOMOKE AVE
CAPITAL PROJECT K-5061
ELECTION DISTRICT NO. 6
JESSUP, MARYLAND

SCALE: AS SHOWN

SHEET 2 OF 4

AS-BUILT 01/28/16 BY GPI

<u>STANDARD SEDIMENT CONTROL NOTES</u>

1. 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).

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

3. Following initial soil disturbance or re-disturbance, permanent or temporary stabilization 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.

4. All disturbed areas must be stabilized within the time period specified above in accordance with the 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL for 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.

5. All sediment control structures are to remain in place and are to be maintained in operative condition until permission for their removal has been obtained from the Howard County Sediment Control Inspector.

6. Site Analysis:

Total Area of Site	0.20	Acres
Area Disturbed	0.20	Acres
Area to be roofed or paved	0.09	Acres
Area to be vegetatively stabilized	0.11	Acres
Total Cut	310	Cu. Yds.
Total Fill	0	Cu. Yds.
Offsite waste/borrow are location		

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

8. Additional sediment control must be provided, if deemed necessary by the Howard County Sediment Control Inspector.

9. 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.

10. 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.

11. Any changes or revisions to the sequence of construction must be reviewed and approved by the plan approval authority prior to proceeding with construction.

12. 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 be 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.

B-4-2 STANDARDS AND SPECIFICATIONS FOR SOIL PREPARATION, TOPSOILING, AND SOIL AMENDMENTS

<u>Definition</u>

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

<u>Purpose</u>

To provide a suitable soil medium for vegetative growth.

<u>Conditions Where Practice Applies</u>

Where vegetative stabilization is to be established.

<u>Criteria</u>

A. Soil Preparation

1. Temporary Stabilization
   a. Seedbed preparation consists of loosening soil to a depth of 3 to 5 inches by means of suitable agricultural or construction equipment, such as disc harrows or chisel plows or rippers mounted on construction equipment. After the soil is loosened, it must not be rolled or dragged smooth but left in the roughened condition. Slopes 3:1 or flatter are to be tracked with ridges running parallel to the contour of the slope.
   b. Apply fertilizer and lime as prescribed on the plans.
   c. Incorporate lime and fertilizer into the top 3 to 5 inches of soil by disking or other suitable means.
2. Permanent Stabilization
   a. A soil test is required for any earth disturbance of 5 acres or more. The minimum soil conditions required for permanent vegetative establishment are:
      i. Soil pH between 6.0 and 7.0.
      ii. Soluble salts less than 500 parts per million (ppm).
      iii. Soil contains less than 40 percent clay but enough fine grained material (greater than 30 percent silt plus clay) to provide the capacity to hold a moderate amount of moisture. An exception: if lovegrass will be planted, then a sandy soil (less than 30 percent silt plus clay) would be acceptable.
      iv. Soil contains 1.5 percent minimum organic matter by weight.
      v. Soil contains sufficient pore space to permit adequate root penetration.
   b. Application of amendments or topsoil is required if on-site soils do not meet the above conditions.
   c. Graded areas must be maintained in a true and even grade as specified on the approved plan, then scarified or otherwise loosened to a depth of 3 to 5 inches.
   d. Apply soil amendments as specified on the approved plan or as indicated by the results of a soil test.
   e. Mix soil amendments into the top 3 to 5 inches of soil by disking or other suitable means. Rake lawn areas to smooth the surface, remove large objects like stones and branches, and ready the area for seed application. Loosen surface soil by dragging with a heavy chain or other equipment to roughen the surface where site conditions will not permit normal seedbed preparation. Track slopes 3:1 or flatter with tracked equipment leaving the soil in an irregular condition with ridges running parallel to the contour of the slope. Leave the top 1 to 3 inches of soil loose and friable. Seedbed loosening may be unnecessary on newly disturbed areas.

B. Topsoiling

1. Topsoil is placed over prepared subsoil prior to establishment of permanent vegetation. The purpose is to provide a suitable soil medium for vegetative growth. Soils of concern have low moisture content, low nutrient levels, low pH, materials toxic to plants, and/or unacceptable soil gradation.
2. Topsoil salvaged from an existing site may be used provided it meets the standards as set forth in these specifications. Typically, the depth of topsoil to be salvaged for a given soil type can be found in the representative soil profile section in the Soil Survey published by USDA-NRCS.
3. Topsoiling is limited to areas having 2:1 or flatter slopes where:
   a. The texture of the exposed subsoil/parent material is not adequate to produce vegetative growth.
   b. The soil material is so shallow that the rooting zone is not deep enough to support plants or furnish continuing supplies of moisture and plant nutrients.
   c. The original soil to be vegetated contains material toxic to plant growth.
   d. The soil is so acidic that treatment with limestone is not feasible.
4. Areas having slopes steeper than 2:1 require special consideration and design.
5. Topsoil Specifications: Soil to be used as topsoil must meet the following criteria:
   a. Topsoil must be a loam, sandy loam, clay loam, silt loam, sandy clay loam, or loamy sand. Other soils may be used if recommended by an agronomist or soil scientist and approved by the appropriate approval authority. Topsoil must not be a mixture of contrasting textured subsoils and must contain less than 5 percent by volume of cinders, stones, slag, coarse fragments, gravel, sticks, roots, trash, or other materials larger than 1½ inches in diameter.
   b. Topsoil must be free of noxious plants or plant parts such as Bermuda grass, quack grass, Johnson grass, nut sedge, poison ivy, thistle, or others as specified.
   c. Topsoil substitutes or amendments, as recommended by a qualified agronomist or soil scientist and approved by the appropriate approval authority, may be used in lieu of natural topsoil.
6. Topsoil Application
   a. Erosion and sediment control practices must be maintained when applying topsoil.
   b. Uniformly distribute topsoil in a 5 to 8 inch layer and lightly compacted to a minimum thickness of 4 inches. Spreading is to be performed in such a manner that sodding or seeding can proceed with a minimum of additional soil preparation and tillage. Any irregularities in the surface resulting from topsoiling or other operations must be corrected in order to prevent the formation of depressions or water pockets.
   c. Topsoil must not be placed if the topsoil or subsoil is in a frozen or muddy condition, when the subsoil is excessively wet or in a condition that may otherwise be detrimental to proper grading and seedbed preparation.

C. Soil Amendments (Fertilizer and Lime Specifications)

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

B-4-3 STANDARDS AND SPECIFICATIONS FOR SEEDING AND MULCHING

<u>Definition</u>

The application of seed and mulch to establish vegetative cover.

<u>Purpose</u>

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

<u>Conditions Where Practice Applies</u>

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

<u>Criteria</u>

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 and rate of seed used.
   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 be placed on soil which has been treated with soil sterilants or chemicals used for weed control until sufficient time has elapsed (14 days min.) to permit dissipation of phyto-toxic materials.
2. Application
   a. Dry Seeding: This includes use of conventional drop or broadcast spreaders.
      i. Incorporate seed into the subsoil at the rates prescribed on Temporary Seeding Table B.1, Permanent Seeding Table B.3, or site-specific seeding summaries.
      ii. Apply seed in two directions, perpendicular to each other. Apply half the seeding rate in each direction. Roll the seeded area with a weighted roller to provide good seed to soil contact.
   b. Drill or Cultipacker Seeding: Mechanized seeders that apply and cover seed with soil.
      i. Cultipacking seeders are required to bury the seed in such a fashion as to provide at least 1/4 inch of soil covering. Seedbed must be firm after planting.
      ii. Apply seed in two directions, perpendicular to each other. Apply half the seeding rate in each direction.
   c. Hydroseeding: Apply seed uniformly with hydroseeder (slurry includes seed and fertilizer).
      i. If fertilizer is being applied at the time of seeding, the application rates should not exceed the following: nitrogen, 100 pounds per acre total of soluble nitrogen; P_2O_5 (phosphorous), 200 pounds per acre; K_2O (potassium), 200 pounds per acre.
      ii. Lime: Use only ground agricultural limestone (up to 3 tons per acre may be applied by hydroseeding). Normally, not more than 2 tons are applied by hydroseeding at any one time. Do not use burnt or hydrated lime when hydroseeding.
      iii. Mix seed and fertilizer on site and seed immediately and without interruption.
      iv. When hydroseeding do not incorporate seed into the soil.

B. Mulching

1. Specifications (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: Only sterile straw mulch should be used in areas where one species of grass is desired.**
   b. Wood Cellulose Fiber Mulch (WCFM) consisting of specially prepared wood cellulose processed into a uniform fibrous physical state.
      i. WCFM is to be dyed green or contain a green dye in the package that will provide an appropriate color to facilitate visual inspection of the uniformly spread slurry.
      ii. WCFM, including dye, must contain no germination or growth inhibiting factors.
      iii. WCFM materials are to be manufactured and processed in such a manner that the wood cellulose fiber mulch will remain in uniform suspension in water under agitation and will blend with seed, fertilizer and other additives to form a homogeneous slurry. The mulch material must form a blotter-like ground cover, on application, having moisture absorption and percolation properties and must cover and hold grass seed in contact with the soil without inhibiting the growth of the grass seedlings.
      iv. WCFM material must not contain elements or compounds at concentration levels that will be phyto-toxic.
      v. WCFM must conform to the following physical requirements: fiber length of approximately 10 millimeters, diameter approximately 1 millimeter, pH range of 4.0 to 8.5, ash content of 1.6 percent maximum and water holding capacity of 90 percent minimum.
2. Application: Apply mulch to all seeded areas immediately after seeding.
   a. 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.
   b. 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: Perform mulch anchoring immediately following application 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:
   a. 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 be used on the contour if possible.
   b. 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.
   c. Synthetic binders such as Acrylic DLR (Agro-Tack), DCA-70, Petroset, Terra Tax II, Terra Tack AR or other approved equal may be used. Follow application rates as specified by the manufacturer. Application of liquid binders needs to be heavier at the edges where wind catches mulch, such as in valleys and on crests of banks. **Use of asphalt binders is strictly prohibited.**
   d. 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-4-4 STANDARD SPECIFICATIONS FOR TEMPORARY STABILIZATION

<u>Definition</u>

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

<u>Purpose</u>

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

<u>Conditions Where Practice Applies</u>

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

<u>Criteria</u>

1. Select one or more of the species or seed mixtures listed in Table b.1 for the appropriate Plant Hardiness Zone (from Figure B.3), and enter them in the Temporary Seeding Summary below along with applications rates, seeding dates and seeding depths. if this Summary is not on the plan and completed, then Table B.1 plus fertilizer and lime rates, must be put on the plan.
2. For sites having soil test performed, use and show the recommended rates by the testing agency. Soil test are not required for temporary seeding.
3. If stabilization is required outside of a seeding season, apply mulch alone as prescribed in section B-4-3 and maintain until next the next seeing 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) (1)	Seeding Dates	Seeding Depths (2)		
	Annual Ryegrass	40	3/1 to 5/15 8/1 to 10/15	0.5"	436 lb/ac (10 lb/1000 sf)	2 Tons/ac (90 lb/1000 sf)
	Barley	96	3/1 to 5/15 8/1 to 10/15	1.0"		
	Foxtail Millet	30	5/16 to 7/31	0.5"		
	Pearl Millet	20	5/16 to 7/31	0.5"		

NOTES:

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

Seeding rates listed above are for temporary seedings, when planted alone. When planted as a nurse crop with permanent seed mixes, use 1/3 of the seeding rate listed above for barley, oats, and wheat. For small-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 seeding dates for the temporary seedings. Cereal rye has allelopathic properties that inhibit the germination and growth of other plans. If it must be used as a nurse crop, seed at 1/3 of the rate listed above.

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

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

B-4-5 STANDARDS AND SPECIFICATIONS FOR PERMANENT STABILIZATION

<u>Definition</u>

To stabilize disturbed soils with permanent vegetation.

<u>Purpose</u>

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

<u>Conditions Where Practice Applies</u>

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

<u>Criteria</u>

A. Seed Mixtures

1. General Use
   a. Select one or more of the species or mixtures listed in Table B.3 for the appropriate Plant Hardiness Zone (from Figure B.3) and based on the site condition or purpose found on Table B.2. Enter selected mixture(s), application rates, and seeding dates in the Permanent Seeding Summary. The Summary is to be placed on the plan.
   b. Additional planting specifications for exceptional sites such as shorelines, stream banks, or dunes or for special purposes such as wildlife or aesthetic treatment may be found in USDA-NRCS Technical Field Office Guide, Section 342 - Critical Area Planting.
   c. For sites having disturbed area over 5 acres, use and show the rates recommended by the soil testing agency.
   d. For areas receiving low maintenance, apply urea form fertilizer (46-0-0) at 3 ½ pounds per 1000 square feet (150 pounds per acre) at the time of seeding in addition to the soil amendments shown in the Permanent Seeding Summary .
2. Turfgrass Mixtures
   a. Areas where turfgrass may be desired include lawns, parks, playgrounds, and commercial sites which will receive a medium to high level of maintenance.
   b. Select one or more of the species or mixtures listed below based on the site conditions or purpose. Enter selected mixture(s), application rates, and seeding dates in the Permanent Seeding Summary. The summary is to be placed on the plan.
      i. Kentucky Bluegrass: Full Sun Mixture: For use in areas that receive intensive management. Irrigation required in the areas of central Maryland and Eastern Shore. Recommended Certified Kentucky Bluegrass Cultivars Seeding Rate: 1.5 to 2.0 pounds per 1000 square feet. Choose a minimum of three Kentucky bluegrass cultivars with each ranging from 10 to 35 percent of the total mixture by weight.
      ii. Kentucky Bluegrass/Perennial Rye: Full Sun Mixture: For use in full sun areas where rapid establishment is necessary and when turf will receive medium to intensive management. Certified Perennial Ryegrass Cultivars/Certified Kentucky Bluegrass Seeding Rate: 2 pounds mixture per 1000 square feet. Choose a minimum of three Kentucky bluegrass cultivars with each ranging from 10 to 35 percent of the total mixture by weight.
      iii. Tall Fescue/Kentucky Bluegrass: Full Sun Mixture: For use in drought prone areas and/or for areas receiving low to medium management in full sun to medium shade. Recommended mixture includes; Certified Tall Fescue Cultivars 95 to 100 percent, Certified Kentucky Bluegrass Cultivars 0 to 5 percent. Seeding Rate: 5 to 8 pounds per 1000 square feet. One or more cultivars may be blended.
      iv. Kentucky Bluegrass/Fine Fescue: Shade Mixture: For use in areas with shade in Bluegrass lawns. For establishment in high quality, intensively managed turf area. Mixture includes; Certified Kentucky Bluegrass Cultivars 30 to 40 percent and Certified Fine Fescue and 60 to 70 percent. Seeding Rate: 1½ to 3 pounds per 1000 square feet.

      Notes:
      Turfgrass varieties should be selected 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

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

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

      <u>Southern MD, Eastern Shore</u>: March 1 to May 15, August 15 to October 15 (Hardiness Zones: 7a, 7b)

(CONTINUE ON NEXT SHEET)

(SEE TITLE SHEET FOR PROFESSIONAL CERTIFICATION)

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS	6/18/15	CHIEF, BUREAU OF ENGINEERING	6/16/15
CHIEF, BUREAU OF HIGHWAYS	6/18/2015	CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION	6/16/15

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GREENMAN-PEDERSEN, INC.
ENGINEERS, ARCHITECTS, PLANNERS, CONSTRUCTION ENGINEERS & INSPECTORS
10977 GUILFORD RD., ANNAPOLIS JUNCTION, MD. 20701
WASH. (301) 470-2772 BALT. (410) 880-3055
FAX: (301) 490-2649 www.gpiinet.com

DES: GWF
DRN: BSB
CHK:
DATE: MAY 2015

BY	NO.	REVISION	DATE

EROSION AND SEDIMENT CONTROL NOTES AND DETAILS

600' SCALE MAP NO. ________ BLOCK NO. ________

SIDEWALK IMPROVEMENTS
NORTH SIDE ASSATEAGUE DRIVE
FROM US 1 TO POCOMOKE AVE
CAPITAL PROJECT K-5061
ELECTION DISTRICT NO. 6
JESSUP, MARYLAND

SCALE: AS SHOWN

d. Till areas to receive seed by disking or other approved methods to a depth of 2 to 4 inches, level and rake the areas to prepare a proper seedbed. Remove stones and debris over 1½ inches in diameter. The resulting seedbed must be in such condition that future mowing of grasses will pose no difficulty.

e. If soil moisture is deficient, supply new seedings with adequate water for plant growth (½ to 1 inch every 3 to 4 days depending on soil texture) until they are firmly established. This is especially true when seedings are made late in the planting season, in abnormally dry or hot seasons, or on adverse sites.

PERMANENT SEEDING SUMMARY

No.	Species	Application Rate (lb/ac)	Seeding Dates	Seeding Depths	Fertilizer (10-20-20) N	P_2O_5	K_2O	Lime Rate
	Hardiness Zone (from Figure B.3): 6b Seed Mixture (from Table B.1):							
9	SELECT ONE SPECIES OF FESCUE:							
	Tall Fescue (Lolium arundinaceum) (formerly Festuca arundinaceum)	60						
	OR							
	Hard Fescue (Festuca trachyphylla)	40	3/1 to 5/15 8/1 to 10/15	0.25" –0.5"				
	AND ADD:							
	Kentucky Bluegrass (Poa pratensis)	40						
	Perennial Ryegrass (Lolium perenne)	20						
5	SELECT TWO GRASSES:							
	Creeping Red Fescue (Festuca rubra var. rubra)	20						
	OR							
	Hard Fescue (Festuca trachyphylla)	20	3/1 to 5/15 8/1 to 10/15	0.25" –0.5"				
	Perennial Ryegrass (Lolium perenne)	10						
	OR							
	Redtop (Agrostis gigantean)	1						
	AND ADD THE FOLLOWING LEGUME:							
	Flatpea (Lathyrus sylvestris)	15			45 lb/ac (1.0 lb/ 1000 sf	90 lb/ac (2.0 lb/ 1000 sf	90 lb/ac (2.0 lb/ 1000 sf	2 Tons/ac (90 lb/1000 sf)
1	SELECT ONE WARM-SEASON GRASS:							
	Switch Grass (Panicum virgatum)	10						
	OR							
	Costal Panic Grass (Panicum amarum var. amarulum)	10						
	AND ADD:							
	Creeping Red Fescue (Festuca rubra var. rubra)	15	3/1 to 5/16 5/16 to 6/15	0.25" –0.5"				
	PLUS ONE OF THE FOLLOWING LUGUMES:							
	Partridge Pea (Chamaecrista fasciculate)	4						
	Bush Clover (Lespedeza capitata)	2						
	Wild Indigo (Baptisia tinctoria)	2						
10	Orchardgrass (Dactylis glomerata)	25						
	Creeping Red Fescue (Festuca rubra var. rubra)	10						
	Redtop (Agrostis gigantean)	1	3/1 to 5/15 8/1 to 10/15	0.25" –0.5"				
	Alsike Clover (Trifolium hybridum)	3						
	White Clover (Trifolium repens)	3						

NOTE: FOR THE PERIOD BETWEEN 6/1 TO 8/14 PROVIDE NURSE CROPS IN ACCORDANCE WITH NOTE (1) LOCATED BELOW TEMPORARY SEEDING SUMMARY TABLE.

B. Sod: To provide quick cover on disturbed areas (2:1 grade or flatter).

1. General Specification:

a. Class of turfgrass sod must be Maryland or Virginia State Certified or Approved. 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 1/4 inch, at the time of cutting. Measurement of thickness must exclude top growth and thatch. Individual pieces of sod must be cut to the supplier width and length. Maximum allowable deviation from standard widths and lengths must be 5 percent. Broken pads and torn or uneven ends will not be acceptable.
c. Standard size 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 temperatures 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 wedge against each other. Stagger lateral joint 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 long edges parallel to the contour and with staggered joints. Roll and tamp, peg or otherwise secure sod to prevent slippage on slopes. Ensure solid contact exists between sod roots and the underlying soil surface.
d. Water the sod immediately following rolling and tamping until the underside of the new sod pad and soil surface below the sod are thoroughly wet. Complete the operations of laying, tamping and irrigating for any piece of sod within eight hours.

3. Sod Maintenance

a. In the absence of adequate rainfall, water daily during the first week or as often and sufficiently as necessary to maintain moist soil to a depth of 4 inches. Water sod during the heat of the day to prevent wilting.

b. After the first week, sod watering is required as necessary to maintain adequate moisture content.

c. Do not mow until the sod is firmly rooted. No more than ⅓ of the grass leaf must be removed by the initial cutting or subsequent cuttings. Maintain grass height between 2 and 3 inches unless otherwise specified.

SEQUENCE OF CONSTRUCTION

THIS PROJECT INVOLVES THE CONSTRUCTION OF A PEDESTRIAN SIDEWALK ALONG THE NORTH SIDE OF ASSATEAGUE DRIVE FROM THE US 1 INTERSECTION TO POCOMOKE AVENUE, ~~WITH SECTIONS OF BIO-SWALE CONSTRUCTED FOR STORMWATER MANAGEMENT PURPOSES~~. CONSTRUCTION WILL BE DONE UTILIZING A RIGHT-LANE CLOSURE FOR MAINTENANCE OF TRAFFIC. CONSTRUCTION VEHICLES WILL BE LOCATED IN THE CLOSED LANE AREA. EROSION AND SEDIMENT CONTROL WILL BE ACCOMPLISHED UTILIZING SAME DAY STABILIZATION ALONG WITH THE INSTALLATION OF CURB INLET PROTECTION AND FILTER LOGS PLACED DIRECTLY BEHIND EXISTING CURB.

1. OBTAIN GRADING PERMIT.

2. NOTIFY HOWARD COUNTY BUREAU OF INSPECTIONS AND PERMITS (410-313-1880) AND THE DPW BUREAU OF ENGINEERING, TRANSPORTATION AND SPECIAL PROJECTS DIVISION (410-313-6159) TO ARRANGE A PRE-CONSTRUCTION MEETING TO ESTABLISH CONSTRUCTION PHASING SEQUENCE.

3. NOTIFY HOWARD COUNTY BUREAU OF INSPECTIONS AND PERMITS (410-313-1880) AT LEAST 24 HOURS BEFORE STARTING ANY WORK.

4. ESTABLISH RIGHT LANE CLOSURE FOR THE MAINTENANCE OF TRAFFIC PER MDSHA STD. NO. MD 104.03-06.

5. INSTALL CURB INLET PROTECTION.

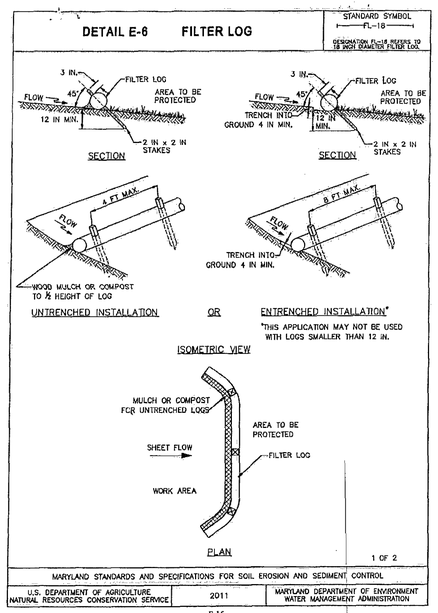
6. PROCEED WITH EXCAVATION AS REQUIRED TO CONSTRUCT SIDEWALK ~~AND BIO-SWALE~~ UTILIZING SAME DAY STABILIZATION AND /OR INSTALLATION OF FILTER LOGS (SEE NOTE 1 AT END OF THIS SEQUENCE).

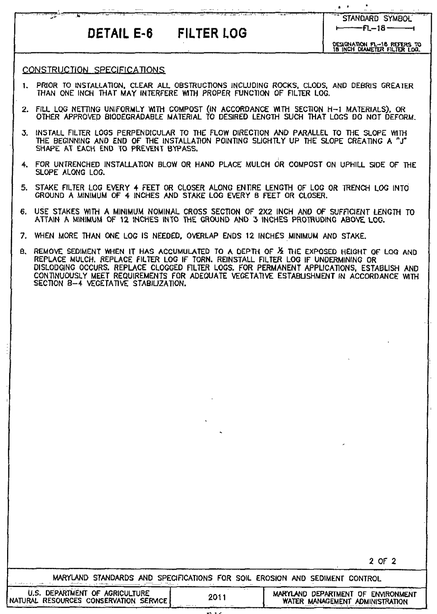
7. PROCEED WITH SIDEWALK CONSTRUCTION.

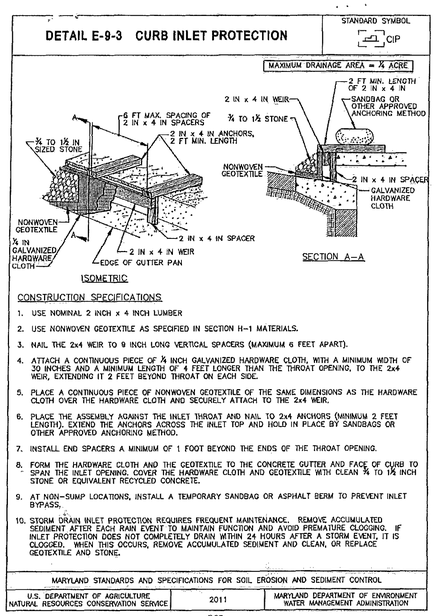
8. BACKFILL AREAS ADJACENT TO SIDEWALK WITH TOPSOIL, SEED AND MULCH OR SOD PER TYPICAL SIDEWALK SECTION.

9. ONCE CONSTRUCTION IS COMPLETED AND AREA PERMANENTLY STABILIZED REMOVE INLET PROTECTION.

NOTE:
1. THE CONTRACTOR SHALL BE AWARE THAT ALL DISTURBED AREAS THAT DO NOT FLOW TO A SEDIMENT CONTROL DEVICE SHALL BE STABILIZED AT THE END OF EACH WORKDAY. THE CONTRACTOR SHALL REVIEW DAILY WORK SCHEDULE AND SEQUENCE WITH THE SEDIMENT CONTROL INSPECTOR TO ENSURE THAT DAILY LIMITS OF GRADING ACTIVITIES ARE COORDINATED TO ENSURE COMPLIANCE. IMMEDIATE STABILIZATION SHALL INCLUDE, BUT NOT BE LIMITED TO: PLACEMENT OF SOD; PLACEMENT OF IMPERVIOUS SHEETING SUITABLY ANCHORED TO PREVENT BILLOWING; PLACEMENT OF STONE SUBBASE; OR OTHER METHODS HAVING PRIOR APPROVAL FROM THE SEDIMENT CONTROL INSPECTOR.







AS-BUILT NOTE: AS-BUILT INFORMATION SHOWN ON THIS PLAN REFLECTS REMOVAL OF BIO-SWALE CONSTRUCTION

(SEE TITLE SHEET FOR PROFESSIONAL CERTIFICATION)

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 6/18/15
CHIEF, BUREAU OF ENGINEERING — DATE 6/16/15
CHIEF, BUREAU OF HIGHWAYS — DATE 6/18/2015
CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION — DATE 6/16/15

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EROSION AND SEDIEMNT CONTROL NOTES AND DETAILS

600' SCALE MAP NO. _____ BLOCK NO. _____

SIDEWALK IMPROVEMENTS
NORTH SIDE ASSATEAGUE DRIVE
FROM US 1 TO POCOMOKE AVE
CAPITAL PROJECT K-5061
ELECTION DISTRICT NO. 6
JESSUP, MARYLAND

SCALE: AS SHOWN

SHEET 4 OF 4

AS-BUILT 01/28/16 BY GPI