SHEET INDEX	
SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	ENVIRONMENTAL CONCEPT PLAN
3	STORMWATER MANAGEMENT DETAILS
4	SCHEMATIC GRADING, SEDIMENT & EROSION CONTROL PLAN
5	STORMWATER DRAINAGE AREA MAP

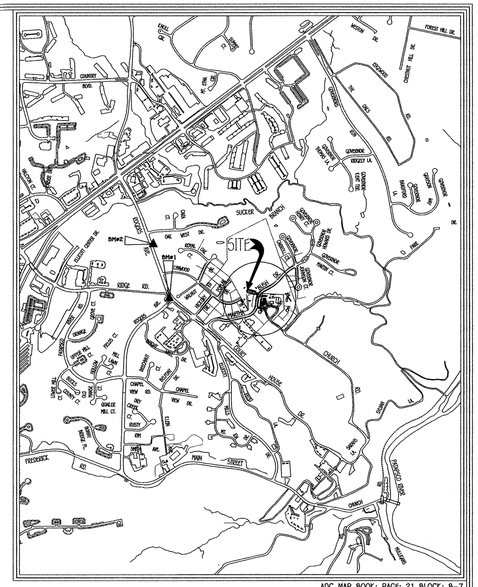
ENVIRONMENTAL CONCEPT PLAN

CAPITAL PROJECT No. C-0363

LINWOOD CENTER PARKING LOT

ZONED: POR

TAX MAP No. 25 GRID No. 01 PARCEL No. 264



ADC MAP BOOK: PAGE: 21 BLOCK: B-7

VICINITY MAP

SCALE: 1" = 1200'

SWM NARRATIVE:

THE PROPOSED SWM FOR THIS PROJECT WILL CONSIST OF A MICRO BIORETENTION FACILITY (M-6), UTILIZING THIS FACILITY WILL PROVIDE THE REQUIRED Pe AND ESDV VOLUMES AND RUNOFF AMOUNTS TO MEET THE ENVIRONMENTAL SITE DESIGN TO THE MAXIMUM EXTENT POSSIBLE (ESD TO THE MEP) TO REFLECT A WOODED CONDITION FOR THIS SITE. THE SWM REPORT FOR THIS PROJECT CONTAINS A SUMMARY TABLE TO INDICATE THE VOLUME PROVIDED TO THIS FACILITY.

DESIGN NARRATIVE:

THE NATURAL AREAS OF THIS PROJECT ARE BEING PRESERVED BY AREAS THAT WILL REMAIN UNDEVELOPED. IN ADDITION, THERE ARE NOT ANY PERENNIAL STREAMS, WETLANDS, FLOODPLAIN AND STEEP SLOPES LOCATED ON THE UNDEVELOPED PORTIONS OF THIS LAND. THESE AREAS WILL REMAIN UNDISTURBED AS A FEE-IN-LIEU IS PROPOSED TO COMPLY WITH THE FOREST CONSERVATION OBLIGATION. THE ERODIBLE SOILS HAVE BEEN IDENTIFIED IN THE SOILS CHART AND IN THE SITE ANALYSIS. THE TOTAL AREA OF THE PROJECT IS 0.65 AC. THE LIMITS OF DISTURBANCE AREA IS 0.31 AC. THE MAJORITY OF THIS SITE WILL REMAIN UNDEVELOPED AND PROVIDE 0.34 ACRES OF GREEN SPACE. THE PROPOSED IMPERVIOUS AREA INCLUDE THE PARKING LOT LAYOUT.

LOCATION MAP

SCALE: 1" = 600'

GENERAL NOTES

1. PROPERTY ZONED POR PER 10/6/13 COMPREHENSIVE ZONING PLAN.
2. AREA TABULATION:
   A. TOTAL TRACT AREA = 26.2300 Ac±
   B. AREA OF PROPOSED ROAD R/W = 0.00 Ac±
   C. AREA OF PROPOSED BUILDABLE LOTS = 0.00 Ac±
3. NUMBER OF LOTS/PARCELS PROPOSED = 0
   A. BUILDABLE LOTS = 0
   B. BUILDABLE PRESERVATION PARCELS = 0
   C. NON-BUILDABLE PRESERVATION PARCELS = 0
4. SOILS INFORMATION TAKEN FROM (NRCS) HOWARD COUNTY SOIL SURVEY. SOILS MAP NUMBER 16.
5. FOREST STAND & WETLANDS DELINEATION REPORT DATED MAY 14, 2019 WAS PREPARED BY ECO-SCIENCE PROFESSIONAL, INC.
6. THERE ARE STEEP SLOPES OF 25% OR GREATER ON SITE OF 0.04 ACRES WITHIN LOD.
7. NO CEMETERIES EXIST ON SITE BY VISUAL OBSERVATION OR LISTED IN AVAILABLE HOWARD COUNTY CEMETERY INVENTORY MAP.
8. THERE ARE NO HISTORIC HOUSE STRUCTURES ON-SITE.
9. SITE IS ADJACENT TO MARTHA BUSH DRIVE.
10. A TRAFFIC STUDY IS NOT NEEDED FOR THIS PROJECT.
11. A PRE-SUBMISSION COMMUNITY MEETING WAS HELD FOR THIS PROJECT ON FEBRUARY 23, 2019 AT GLENWOOD LIBRARY IN COOKSVILLE.
12. THERE ARE NO 100-YEAR FLOODPLAIN DELINEATIONS, WETLANDS OR STREAM BUFFERS ON THIS PLAN.
13. THE FOREST CONSERVATION REQUIREMENTS PER SECTION 16.1200 OF THE HOWARD COUNTY CODE AND FOREST CONSERVATION MANUAL FOR THIS SUBDIVISION WILL BE FULFILLED BY A PROPOSED FEE-IN-LIEU OF 0.20 ACRES.
14. THE PROJECT IS IN CONFORMANCE WITH THE LATEST HOWARD COUNTY STANDARDS UNLESS WAIVERS HAVE BEEN APPROVED.
15. THE EXISTING TOPOGRAPHY INFORMATION SHOWN IS BASED ON HOWARD COUNTY AERIAL CONTOURS AND SUPPLEMENTED WITH A FIELD RUN TOPOGRAPHIC 2/01/19 BY FISHER, COLLINS & CARTER, INC.
16. BOUNDARY INFORMATION IS BASED ON A SURVEY PERFORMED ON OR ABOUT FEBRUARY 1, 2019 BY FISHER, COLLINS & CARTER, INC.
17. COORDINATES BASED ON NAD '83, MARYLAND COORDINATE SYSTEM AS PROJECTED BY HOWARD COUNTY GEODETIC CONTROL STATIONS NOS: 25A1(BM#1) & 25A2(BM#2)
    CONTROL STATION NO. 25A1 N 506,557 ELEV. = 396.349
    E 1,366,847
    CONTROL STATION NO. 25A2 N 507,503 ELEV. = 348.098
    E 1,366,556
18. THIS PROPERTY IS LOCATED WITHIN THE METROPOLITAN DISTRICT.
19. STORM WATER MANAGEMENT IS IN ACCORDANCE WITH THE M.D.E. STORM WATER DESIGN MANUAL, VOLUMES I & II, REVISED 2009. WE ARE PROVIDING STORM WATER MANAGEMENT BY THE USE OF 1 - MICRO BIORETENTION FACILITY (M-6) TO PROVIDE AN AREA OF TREATMENT FOR THE PARKING AREA. THE MICRO RETENTION FACILITY WILL PROVIDE FOR THE ESDV VOLUME REQUIRED FOR THIS PROJECT.
20. A NOISE STUDY IS NOT REQUIRED FOR THIS PROJECT.
21. APPROVAL OF THIS ECP DOES NOT CONSTITUTE AN APPROVAL OF ANY SUBSEQUENT AND ASSOCIATED SUBDIVISION PLAN/PLAT AND/OR SITE DEVELOPMENT PLAN AND/OR REDLINE REVISION PLAN. REVIEW OF THIS PROJECT FOR COMPLIANCE WITH THE HOWARD COUNTY SUBDIVISION AND LAND DEVELOPMENT REGULATIONS SHALL OCCUR AT THE SUBDIVISION PLAN/PLAT AND/OR SITE DEVELOPMENT PLAN STAGES AND/OR REDLINE REVISION PROCESS. THE APPLICANT AND CONSULTANT SHOULD EXPECT ADDITIONAL AND MORE DETAILED REVIEW COMMENTS (INCLUDING COMMENTS THAT MAY ALTER THE OVERALL SITE DESIGN) AS THIS PROJECT PROGRESSES THROUGH THE PLAN REVIEW PROCESS.
22. AN ALTERNATIVE COMPLIANCE IS BEING REQUESTED FOR THIS PROJECT TO ALLOW FOR THE REMOVAL OF AN EXISTING SPECIMEN TREE. THE TREE IS LOCATED IN THE PROPOSED PAVING AREA AND WILL NEED TO BE REMOVED. THE TREE IS IN GOOD CONDITION WITH VINES GROWING ON IT. THE TYPE IS A TULIP POPLAR AND IS 34" IN DIAMETER.

SITE ANALYSIS DATA CHART

A. TOTAL AREA OF PARCEL No. 264 = 26.23 ac.±. (ENTIRE PARCEL) PARKING LOT AREA = 0.31 ac.±. (NEW PARKING AREA)
B. LIMIT OF DEVELOPABLE AREA = 0.65 AC.± (LOD) (PARKING AREA)
C. LIMIT OF DISTURBED AREA = 28,314 Sq. Ft. or 0.65 Ac±. (PARKING AREA)
D. PRESENT ZONING DESIGNATION = POR (PER 10/06/13 COMPREHENSIVE ZONING PLAN). (ENTIRE PARCEL)
E. PROPOSED USE: PUBLIC PARKING LOT (PARKING AREA)
F. OPEN SPACE ON SITE: N/A (PARKING AREA)
G. RECREATIONAL AREA PROVIDED: N/A (PARKING AREA)
H. BUILDING COVERAGE OF SITE: N/A (PARKING AREA)
I. PREVIOUS HOWARD COUNTY FILES: SDP 78-103 HOWARD COUNTY DETENTION CENTER
J. TOTAL AREA OF FLOODPLAIN: 0.00 Ac. (PARKING AREA)
K. TOTAL AREA OF SLOPES: 25% or GREATER = 0.04 Ac.
   15%-24.99% = 0.0 Ac. ——LOCATED WITHIN L.O.D. (PARKING AREA)
L. NET TRACT AREA = 26.10 Ac± (ENTIRE PARCEL)
   (TOTAL SITE AREA - FLOODPLAIN - STEEP SLOPES AREA)
M. TOTAL AREA OF WETLANDS (INCLUDING BUFFER) = 0.00 Ac±. (NOT IN LOD).
N. TOTAL AREA OF STREAMS (INCLUDING BUFFER) = 0.00 Ac± (ENTIRE PARCEL).
O. TOTAL AREA OF FOREST WITHIN L.O.D. = 0.39 Ac.± (PARKING AREA)
P. TOTAL GREEN OPEN AREA WITHIN L.O.D. = 0.33 Ac.± (PARKING AREA)
Q. TOTAL IMPERVIOUS AREA WITHIN L.O.D. = 0.31 Ac.± (PARKING AREA)
R. AREA OF ERODIBLE SOILS = 0.00 Ac.± (WITHIN AREA OF DEVELOPMENT) (ENTIRE PARCEL)

2ND ELECTION DISTRICT

HOWARD COUNTY, MARYLAND

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 10/30/19

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 10.31.19

FISHER, COLLINS & CARTER, INC.
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
CENTENNIAL SQUARE OFFICE PARK - 10272 BALTIMORE NATIONAL PIKE
ELLICOTT CITY, MARYLAND 21042
(410) 461 - 2855

OWNER & DEVELOPER:

HOWARD COUNTY MARYLAND
DEPARTMENT OF PUBLIC WORKS
C/O MR. JIM WOHN
3430 COURT HOUSE DRIVE
ELLICOTT CITY, MARYLAND 21043

STATE OF MARYLAND — ALDO MICHAEL VITUCCI — No. 20748 — PROFESSIONAL ENGINEER

Aldo M. Vitucci, P.E. — Date 10/16/19

"Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly Licensed Professional Engineer under the laws of the State of Maryland, License No. 20748, Expiration Date 2-22-21."

CAPITAL PROJECT No. C-0363
LINWOOD CENTER PARKING LOT
ZONED: POR
TAX MAP No. 25 GRID No. 01 PARCEL No. 264
2ND ELECTION DISTRICT HOWARD COUNTY, MARYLAND
DATE: OCTOBER 1, 2019
SHEET 1 of 5

ECP-19-057

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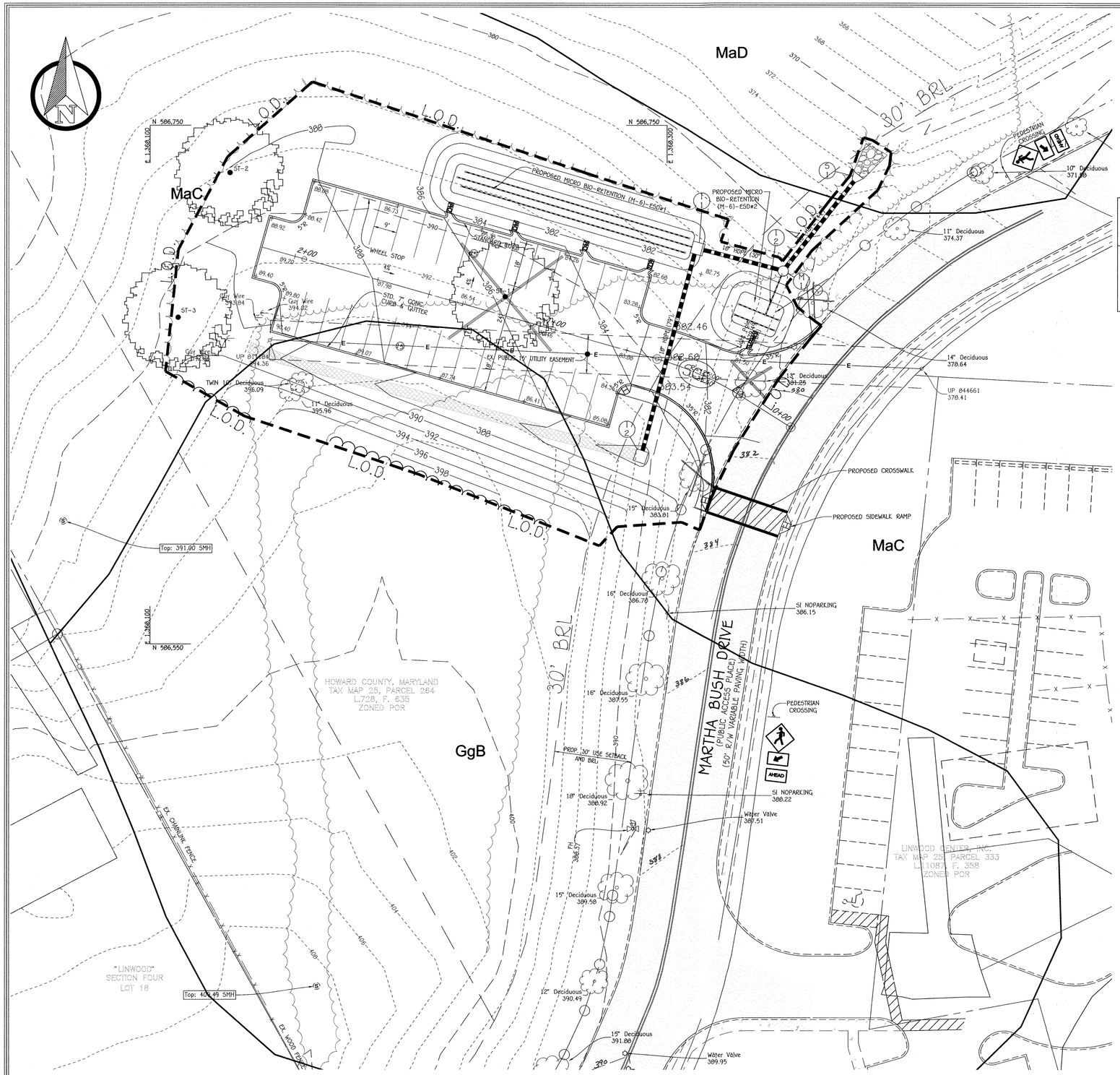
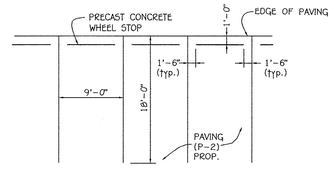
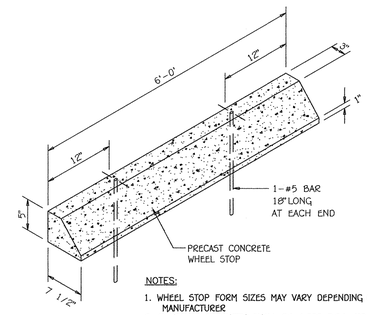


SECTION NUMBER	ROAD AND STREET CLASSIFICATION	CALIFORNIA BEARING RATIO (CBR)	3 TO <5	5 TO <7	≥7	3 TO <5	5 TO <7	≥7
		PAVEMENT MATERIAL (INCHES)	MIN HMA WITH GAB			HMA WITH CONSTANT GAB		
P-2	PARKING DRIVE AISLES: RESIDENTIAL AND NON-RESIDENTIAL WITH NO MORE THAN 10 HEAVY TRUCKS PER DAY LOCAL ROADS: ACCESS PLACE, ACCESS STREET CUL-DE-SACS: RESIDENTIAL	SUPERPAVE ASPHALT MIX FINAL SURFACE 9.5 MM, PG 64-22, LEVEL 1 (ESAL)	1.5	1.5	1.5	1.5	1.5	1.5
		SUPERPAVE ASPHALT MIX INTERMEDIATE SURFACE 9.5 MM, PG 64-22S; LEVEL 1 (ESAL)	1.5	1.5	1.5	1.5	1.5	1.5
		SUPERPAVE ASPHALT MIX BASE 19.0 MM, PG 64-22S, LEVEL 1 (ESAL)	2.0	2.0	2.0	3.5	2.0	2.0
		GRADED AGGREGATE BASE (GAB)	8.0	4.0	3.0	4.0	4.0	4.0



WHEEL STOP LOCATION DETAIL

NO SCALE

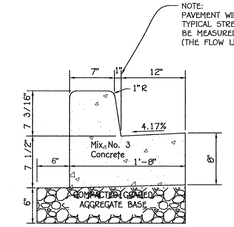


NOTES:

1. WHEEL STOP FORM SIZES MAY VARY DEPENDING ON MANUFACTURER
2. CONCRETE STRENGTH SHALL BE 4,000 P.S.I. AIR ENTRAINED

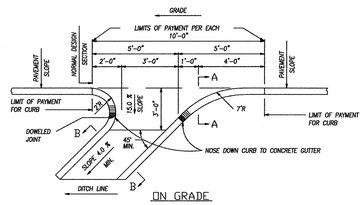
WHEEL STOP DETAIL

NO SCALE



7" COMBINATION CONCRETE CURB AND GUTTER

NO SCALE (R-3.01)



CURB OPENING DETAIL

NO SCALE

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 10/30/19

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 10.31.19

FISHER, COLLINS & CARTER, INC.
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STATE OF MARYLAND — ALDO MICHAEL VITUCCI — No. 20748 — PROFESSIONAL ENGINEER

Aldo M. Vitucci, P.E. — Date 10/16/19

"Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly Licensed Professional Engineer under the laws of the State of Maryland, License No. 20748, Expiration Date 2-22-21."

ENVIRONMENTAL CONCEPT PLAN

CAPITAL PROJECT No. C-0363

LINWOOD CENTER PARKING LOT

ZONED: POR
TAX MAP No. 25 GRID No. 01 PARCEL No. 264
2ND ELECTION DISTRICT HOWARD COUNTY, MARYLAND
DATE: OCTOBER 1, 2019
SHEET 2 of 5

ECP-19-057

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B.4.C Specifications for Micro-Bioretention, Rain Gardens, Landscape Infiltration & Infiltration Berms

1. Material Specifications

The allowable materials to be used in these practices are detailed in Table B.4.1.

2. Filtering Media or Planting Soil

The soil shall be a uniform mix, free of stones, stumps, roots or other similar objects larger than two inches. No other materials or substances shall be mixed or dumped within the micro-bioretention practice that may be harmful to plant growth, or prove a hindrance to the planting or maintenance operations. The planting soil shall be free of Bermuda grass, Quackgrass, Johnson grass, or other noxious weeds as specified under COMAR 15.08.01.05.

The planting soil shall be tested and shall meet the following criteria:

Soil Component – Loamy Sand or Sandy Loam (USDA Soil Textural Classification)

Organic Content – Minimum 10% by dry weight (ASTM D 2974). In general, this can be met with a mixture of loamy sand (60%-65%) and compost (35% to 40%) or sandy loam (30%), coarse sand (30%), and compost (40%).

Clay Content – Media shall have a clay content of less than 5%.

pH Range Should be between 5.5 – 7.0. Amendments (e.g., lime, iron sulfate plus sulfur) may be mixed into the soil to increase or decrease pH.

There shall be at least one soil test per project. Each test shall consist of both the standard soil test for pH, and additional tests of organic matter, and soluble salts. A textural analysis is required from the site stockpiled topsoil. If topsoil is imported, then a texture analysis shall be performed for each location where the topsoil was excavated.

3. Compaction

It is very important to minimize compaction of both the base of bioretention practices and the required backfill. When possible, use excavation hoes to remove original soil. If practices are excavated using a loader, the contractor should use wide track or marsh track equipment, or light equipment with turf type tires. Use of equipment with narrow tracks or narrow tires, rubber tires with large lugs, or high-pressure tires will cause excessive compaction resulting in reduced infiltration rates and is not acceptable. Compaction will significantly contribute to design failure.

Compaction can be alleviated at the base of the bioretention facility by using a primary tilling operation such as a chisel plow, ripper, or subsoiler. These tilling operations are to refracture the soil profile through the 12 inch compaction zone. Substitute methods must be approved by the engineer. Rototillers typically do not till deep enough to reduce the effects of compaction from heavy equipment.

Rototill 2 to 3 inches of sand into the base of the bioretention facility before backfilling the optional sand layer. Pump any ponded water before preparing (rototilling) base.

When backfilling the topsoil over the sand layer, first place 3 to 4 inches of topsoil over the sand, then rototill the sand/topsoil to create a gradation zone. Backfill the remainder of the topsoil to final grade.

When backfilling the bioretention facility, place soil in lifts 12to 18". Do not use heavy equipment within the bioretention basin. Heavy equipment can be used around the perimeter of the basin to supply soils and sand. Grade bioretention materials with light equipment such as a compact loader or a dozer/loader with marsh tracks.

4. Plant Material

Recommended plant material for micro-bioretention practices can be found in Appendix A, Section A.2.3.

5. Plant Installation

Compost is a better organic material source, is less likely to float, and should be placed in the invert and other low areas. Mulch should be placed in surrounding to a uniform thickness of 2" to 3"Shredded or chipped hardwood mulch is the only accepted mulch. Pine mulch and wood chips will float and move to the perimeter of the bioretention area during a storm event and are not acceptable. Shredded mulch must be well aged (6 to 12 months) for acceptance.

Rootstock of the plant material shall be kept moist during transport and on-site storage. The plant root ball should be planted so 1/8 th of the ball is above final grade surface. The diameter of the planting pit shall be at least six inches larger than the diameter of the planting ball. Set and maintain the plant straight during the entire planting process. Thoroughly water ground bed cover after installation.

Trees shall be braced using 2" by 2"stakes only as necessary and for the first growing season only. Stakes are to be equally spaced on the outside of the tree ball.

Grasses and legume seed should be drilled into the soil to a depth of at least one inch. Grass and legume plugs shall be planted following the non-grass ground cover planting specifications.

The topsoil specifications provide enough organic material to adequately supply nutrients from natural cycling. The primary function of the bioretention structure is to improve water quality. Adding fertilizers defeats, or at a minimum, impedes this goal. Only add fertilizer if wood chips or mulch are used to amend the soil. Rototill urea fertilizer at a rate of 2 pounds per 1000 square feet.

6. Underdrains

Underdrains should meet the following criteria:

Pipe- Should be 4to 6diameter, slotted or perforated rigid plastic pipe (ASTMF 758, Type PS 28, or AASHTO-M-278) in a gravel layer. The preferred material is slotted, 4 rigid pipe (e.g., PVC or HDPE).

Perforations – If perforated pipe is used, perforations should be 3/8" diameter located 6 center with a minimum of four holes per row. Pipe shall be wrapped with a 1/4"(No. 4 or 4x4) galvanized hardware cloth.

Gravel –The gravel layer (No. 57 stone preferred) shall be at least 3" thick above and below the underdrain.

The main collector pipe shall be at a minimum 0.5% slope.

A rigid, non-perforated observation well must be provided (one per every 1,000 square feet) to provide a clean-out port and monitor performance of the filter.

A 4" layer of pea gravel (1/4" to 3/8" stone) shall be located between the filter media and underdrain to prevent migration of fines into the underdrain. This layer may be considered part of the filter bed when bed thickness exceeds 24".

The main collector pipe for underdrain systems shall be constructed at a minimum slope of 0.5%. Observation wells and/or clean-out pipes must be provided (one minimum per every 1000 square feet of surface area).

7. Miscellaneous

These practices may not be constructed until all contributing drainage area has been stabilized

OPERATION AND MAINTENANCE SCHEDULE FOR BIO-RETENTION AREAS (M-6)

1. The owner shall maintain the plant material, mulch layer and soil layer annually. maintenance of mulch and soil is limited to correcting areas of erosion or wash out. Any mulch replacement shall be done in the spring. Plant material shall be checked for disease and insect infestation and maintenance will address dead material and pruning. Acceptable replacement plant material is limited to the following: 2000 Maryland stormwater design manual volume II, table A.4.1 and 2.

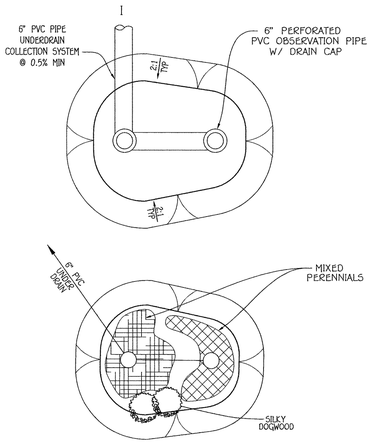
2. The owner shall perform a plant in the spring and in the fall each year. during the inspection, the owner shall remove dead and diseased vegetation considered beyond treatment, replace dead plant material with acceptable replacement plant material. Treat diseased trees ans shrubs and replace all deficient stakes and wires.

3. The owner shall inspect the mulch etch spring. The mulch shall be replaced every two to three years. The previous mulch layer shall be removed before the new layer is applied.

4. The owner shall correct soil erosion on an as needed basis, with a minimum of once per month and after each heavy storm.

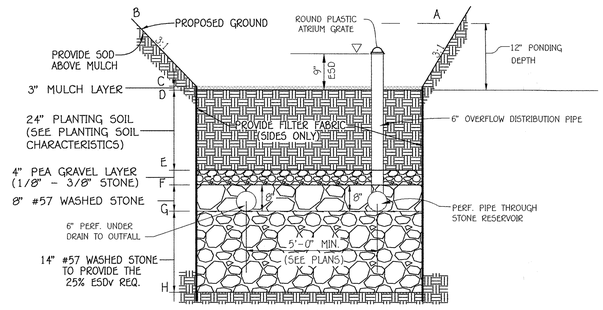
MICRO-BIORETENTIONS									
MICRO-BIORETENTION FILTER	A	B	C	D	E	F	G	H	I
#1	383.00	384.00	382.25	382.00	380.00	379.67	316.25	315.08	316.00
#2	363.00	363.00	362.00	361.75	359.75	359.42	358.75	357.58	355.15

MICRO-BIORETENTION PLANT MATERIAL			
MICRO-BIO 1 QUANTITY	MICRO-BIO 2 QUANTITY	NAME	MAXIMUM SPACING (FT.)
810	168	MIXED PERENNIALS	1.5 TO 3.0 FT.
1	1	SILKY DOGWOOD	PLANT AWAY FROM INFLOW LOCATION



MICRO BIO-RETENTION PLANTING DETAIL

NOT TO SCALE

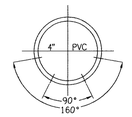


MICRO BIO-RETENTION SECTION WITH 6" OVERFLOW DISTRIBUTION PIPE

NO SCALE

NOTES:

1. UNDERDRAIN PIPE SHALL BE 4" DIAMETER, SLOTTED OR PERFORATED RIGID PLASTIC PIPE (ASTMF 758, TYPE PS 28 OR AASHTO-M- 278) IN A GRAVEL LAYER. THE PREFERRED MATERIAL IS SLOTTED 4" RIGID PIPE (e.g., PVC OR HDPE).
2. PERFORATIONS SHALL BE 3/8" DIAMETER LOCATED 6" ON CENTER WITH A MINIMUM OF FOUR HOLES PER ROW. PIPE SHALL BE WRAPPED WITH A 1/4" (No. 4 OR 4 x 4) GALVANIZED HARDWARE CLOTH.
3. GRAVEL LAYER SHALL BE (No. 57 STONE PREFERRED) AT LEAST 3" THICK ABOVE AND BELOW THE UNDERDRAIN.
4. THE MAIN COLLECTOR PIPE SHALL BE AT A MINIMUM 0.5% SLOPE.
5. A RIGID, NON PERFORATED OBERSERVATION WELL MUST BE PROVIDED (ONE PER EVERY 1,000 SQ.FT.) TO PROVIDE A CLEANOUT PORT AND MONITOR PERFORMANCE OF THE FILTER.
6. A 4" LAYER OF PEA GRAVEL (1/8" TO 3/8" STONE) SHALL BE LOCATED BETWEEN THE PLANTING MEDIA AND UNDERDRAIN TO PREVENT MIGRATION OF FINES INTO THE UNDERDRAIN. THIS LAYER MAY BE CONSIDERED PART OF THE FILTER BED WHEN BED THICKNESS EXCEEDS 24".



PIPE SIZE: 4"
HOLE SIZE: 3/8
CENTER TO CENTER: 3"
ROWS OF HOLES: 2 @ 90°
2 @ 160° (+/-3°)

SCH40 PVC PERFORATED UNDERDRAIN PIPE DETAIL FOR HORIZONTAL DRAIN PIPE

NO SCALE

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE: 10/30/19

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE: 10.31.19

FISHER, COLLINS & CARTER, INC.
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
CENTENNIAL SQUARE OFFICE PARK - 10272 BALTIMORE NATIONAL PIKE
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C/O JIM IRVIN
3430 COURT HOUSE DRIVE
ELLICOTT CITY, MARYLAND 21043

STATE OF MARYLAND — ALDO MICHAEL VITUCCI — No. 20748 — PROFESSIONAL ENGINEER

Aldo M. Vitucci, P.E. — Date: 10/16/19

"Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly Licensed Professional Engineer under the laws of the State of Maryland, License No. 20748, Expiration Date 2-22-21."

ENVIRONMENTAL CONCEPT PLAN
SWM DETAILS

CAPITAL PROJECT No. C-0363

LINWOOD CENTER PARKING LOT

ZONED: POR
TAX MAP No. 25 GRID No. 01 PARCEL No. 264
2ND ELECTION DISTRICT HOWARD COUNTY, MARYLAND
DATE: OCTOBER 1, 2019
SHEET 3 of 5

ECP-19-057

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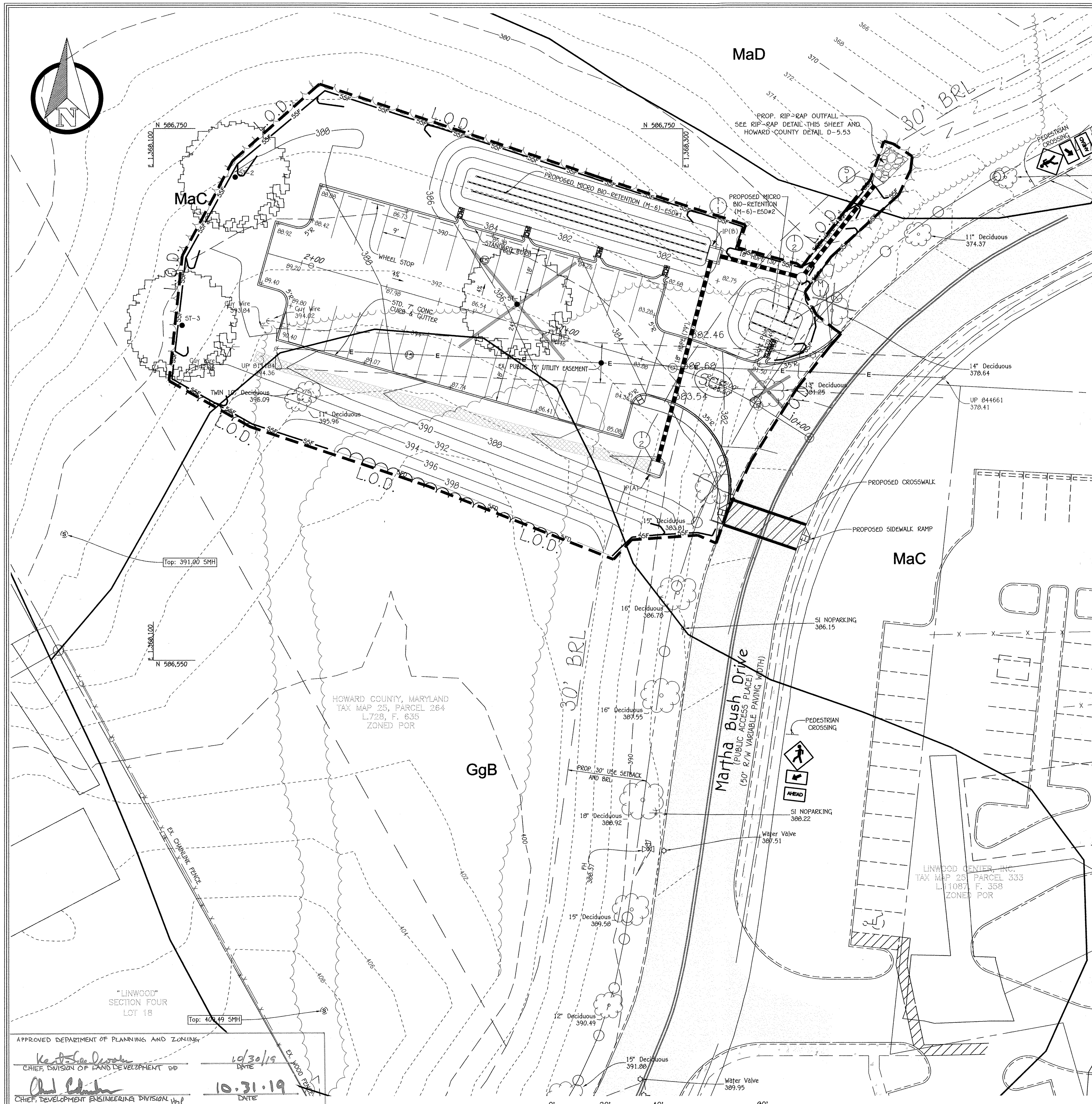


APPROVED DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT DD — 10/30/19 DATE

CHIEF, DEVELOPMENT ENGINEERING DIVISION — 10.31.19 DATE

Reviewed for HOWARD SCD and meets Technical Requirements.

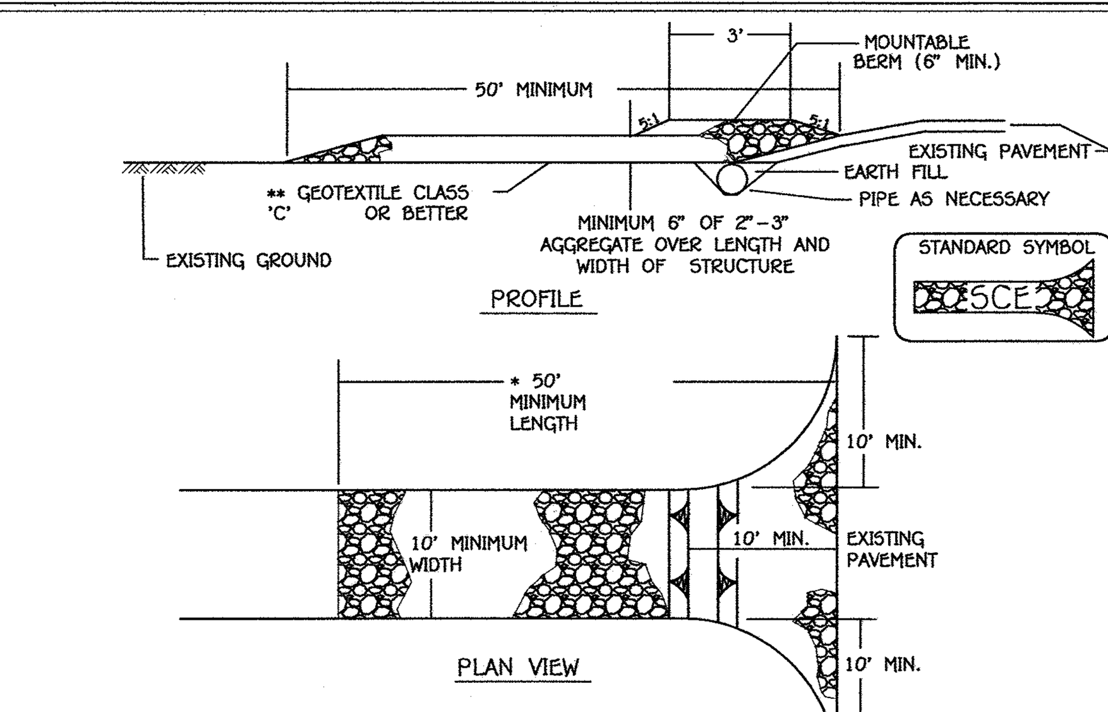
U.S.D.A.-Natural Resources Conservation Service — Date

This development plan is approved for soil erosion and sediment control by the HOWARD SOIL CONSERVATION DISTRICT.

Howard SCD — Date

FISHER, COLLINS & CARTER, INC.
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
CENTENNIAL SQUARE OFFICE PARK - 10272 BALTIMORE NATIONAL PIKE
ELLICOTT CITY, MARYLAND 21042
(410) 461 - 2855

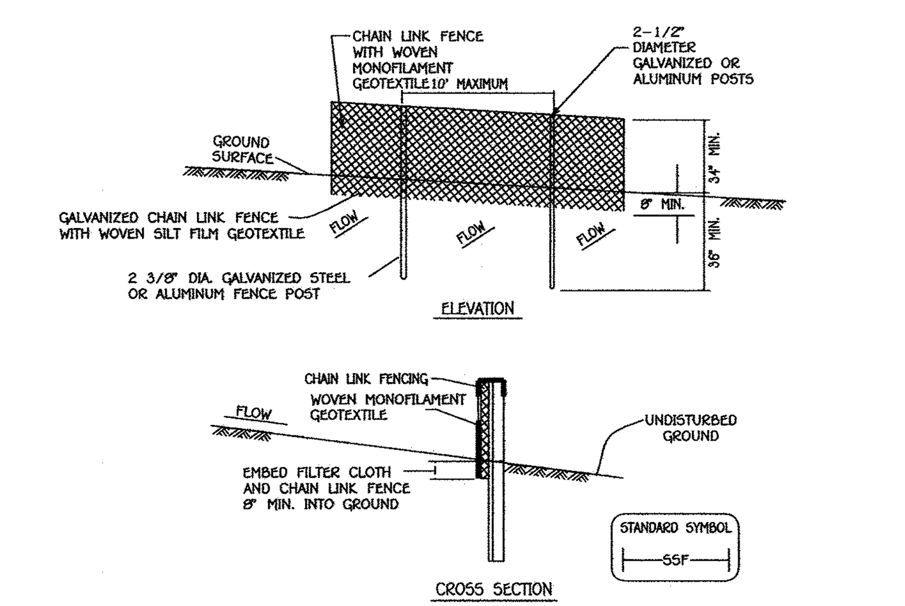
OWNER & DEVELOPER:
HOWARD COUNTY MARYLAND
DEPARTMENT OF PUBLIC WORKS
C/O JIM IRVIN
3430 COURT HOUSE DRIVE
ELLICOTT CITY, MARYLAND 21043



CONSTRUCTION SPECIFICATION

1. LENGTH - MINIMUM OF 50' (*30' FOR SINGLE RESIDENCE LOT).
2. WIDTH - 10' MINIMUM, SHOULD BE FLARED AT THE EXISTING ROAD TO PROVIDE A TURNING RADIUS.
3. GEOTEXTILE FABRIC (FILTER CLOTH) SHALL BE PLACED OVER THE EXISTING GROUND PRIOR TO PLACING STONE. **THE PLAN APPROVAL AUTHORITY MAY NOT REQUIRE SINGLE FAMILY RESIDENCES TO USE GEOTEXTILE.
4. STONE - CRUSHED AGGREGATE (2" TO 3") OR RECLAIMED OR RECYCLED CONCRETE EQUIVALENT SHALL BE PLACED AT LEAST 6" DEEP OVER THE LENGTH AND WIDTH OF THE ENTRANCE.
5. SURFACE WATER - ALL SURFACE WATER FLOWING TO OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED THROUGH THE ENTRANCE, MAINTAINING POSITIVE DRAINAGE. PIPE INSTALLED THROUGH THE STABILIZED CONSTRUCTION ENTRANCE SHALL BE PROTECTED WITH A MOUNTABLE BERM WITH 5:1 SLOPES AND A MINIMUM OF 6" OF STONE OVER THE PIPE. PIPE HAS TO BE SIZED ACCORDING TO THE DRAINAGE. WHEN THE SCE IS LOCATED AT A HIGH SPOT AND HAS NO DRAINAGE TO CONVEY A PIPE WILL NOT BE NECESSARY. PIPE SHOULD BE SIZED ACCORDING TO THE AMOUNT OF RUNOFF TO BE CONVEYED. A 6" MINIMUM WILL BE REQUIRED.
6. LOCATION - A STABILIZED CONSTRUCTION ENTRANCE SHALL BE LOCATED AT EVERY POINT WHERE CONSTRUCTION TRAFFIC ENTERS OR LEAVES A CONSTRUCTION SITE. VEHICLES LEAVING THE SITE MUST TRAVEL OVER THE ENTIRE LENGTH OF THE STABILIZED CONSTRUCTION ENTRANCE.

STABILIZED CONSTRUCTION ENTRANCE



CONSTRUCTION SPECIFICATIONS

1. INSTALL 2 3/8" DIAMETER GALVANIZED STEEL POSTS OF 0.095" WALL THICKNESS AND SIX FEET IN LENGTH, SPACED NO FURTHER THAN 10 FEET APART. DRIVE POSTS A MINIMUM OF 36 INCHES INTO THE GROUND.
2. FASTEN MINIMUM 9 GAUGE GALVANIZED CHAIN LINK FENCE (2 3/8" MAX. OPENING) 42 INCHES IN HEIGHT SECURELY TO THE FENCE POSTS WITH WIRE TIES OR STAPLES
3. 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.
4. WHERE ENDS OF THE GEOTEXTILE COME TOGETHER, THE ENDS SHALL BE OVERLAPPED BY 6 INCHES, FOLDED, AND STAPLED TO PREVENT SEDIMENT BY PASS.
5. EXTEND BOTH ENDS OF THE SUPER SILT FENCE A MINIMUM OF 5 HORIZONTAL FEET UPSLOPE AT 45 DEGREES TO THE MAIN FENCE ALIGNMENT TO PREVENT RUNOFF FROM GOING AROUND THE ENDS OF THE SUPER SILT FENCE.
6. PROVIDE MANUFACTURER CERTIFICATION TO THE INSPECTION/ENFORCEMENT AUTHORITY SHOWING THAT GEOTEXTILE USED MEETS THE REQUIREMENTS IN SECTION H-1 MATERIALS.
7. REMOVE ACCUMULATED SEDIMENT AND DEBRIS WHEN BULGES DEVELOP IN FENCE OR WHEN SEDIMENT REACHES 25% OF FENCE HEIGHT. REPLACE GEOTEXTILE IF TORN.

DESIGN CRITERIA

SLOPE	SLOPE STEEPNESS	SLOPE LENGTH (MAXIMUM)	SUPER SILT FENCE LENGTH (MAXIMUM)
0 - 10%	0 - 10:1	UNLIMITED	UNLIMITED
10 - 20%	10:1 - 5:1	200 FEET	1,500 FEET
20 - 33%	5:1 - 3:1	150 FEET	1,000 FEET
33 - 50%	3:1 - 2:1	100 FEET	500 FEET
50% +	2:1 +	50 FEET	250 FEET

SUPER SILT FENCE

NOT TO SCALE

HOWARD SOIL CONSERVATION DISTRICT STANDARD SEDIMENT CONTROL NOTES

1) A MINIMUM OF 48 HOURS NOTICE MUST BE GIVEN TO THE HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS, CONSTRUCTION INSPECTION DIVISION (CID) PRIOR TO THE START OF ANY CONSTRUCTION (410-313-1855).
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 (THIS SUBMISSION)	0.65	ACRES
AREA DISTURBED	0.65	ACRES
AREA TO BE ROOFED OR PAVED	0.31	ACRES
AREA TO BE VEGETATIVELY STABILIZED	0.34	ACRES
TOTAL CUT	2,000	CU.YDS. (unadjusted)
TOTAL FILL	2,000	CU.YDS. (unadjusted)
WASTE AREA LOCATION	ON-SITE	

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) THIS PROJECT DOES NOT NEED TO BE SEQUENCED, SINCE IT IS SO SMALL.

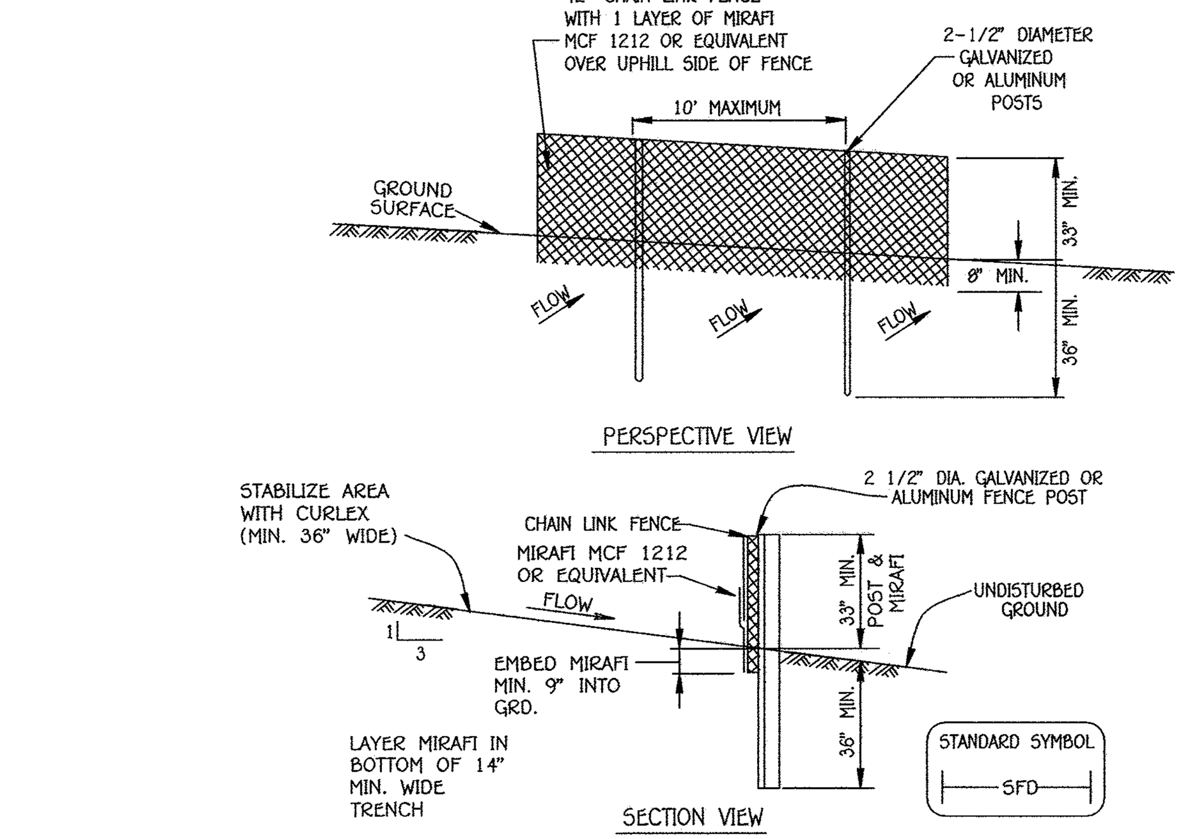
Aldo M. Vitucci, P.E. — 10/16/19 Date

"Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly Licensed Professional Engineer under the laws of the State of Maryland, License No. 20748, Expiration Date 2-22-21."

SOILS LEGEND

SOIL	NAME	CLASS	Kw
GgB	Glenelg loam, 3 to 8 percent slopes	B	0.20
MaC	Manor loam, 8 to 15 percent slopes	B	0.24
MaD	Manor loam, 15 to 25 percent slopes	B	0.24

NOTES:
- * Hydric soils and/or contains hydric inclusions
- ** May contain hydric inclusions
- † Generally only within 100-year floodplain areas



CONSTRUCTION SPECIFICATIONS

1. FENCING SHALL BE 42" HIGH CHAIN CONSTRUCTED IN ACCORDANCE WITH THE LATEST MARYLAND STATE HIGHWAY ADMINISTRATION STANDARD DETAILS 690.01 AND 690.02 FOR CHAIN U FENCING. THE SPECIFICATIONS FOR A 6'-0" FENCE SHALL BE USED, SUBSTITUTING 42" FABRIC AND 8' POSTS. POSTS SHALL BE PLACED WITHOUT CONCRETE EMBEDMENT.
2. CHAIN LINK FENCE SHALL BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES. THE LOWER TENSION WIRE, BRACE AND TRUSS RODS, ANCHORS AND POST CAPS ARE NOT REQUIRED EXCEPT ON THE ENDS OF THE FENCE.
3. FILTER CLOTH TO BE FASTENED SECURELY TO CHAIN LINK FENCE WITH TIES SPACED EVERY 24" AT TOP AND MID SECTION.
4. FILTER CLOTH SHALL BE IMBEDDED A MINIMUM OF 9" INTO THE GROUND.
5. WHEN TWO SECTIONS OF DIVERSION CLOTH ADJOIN EACH OTHER THEY SHALL BE OVERLAPPED BY SIX INCHES AND FOLDED.
6. MAINTENANCE SHALL BE PERFORMED AS NEEDED.

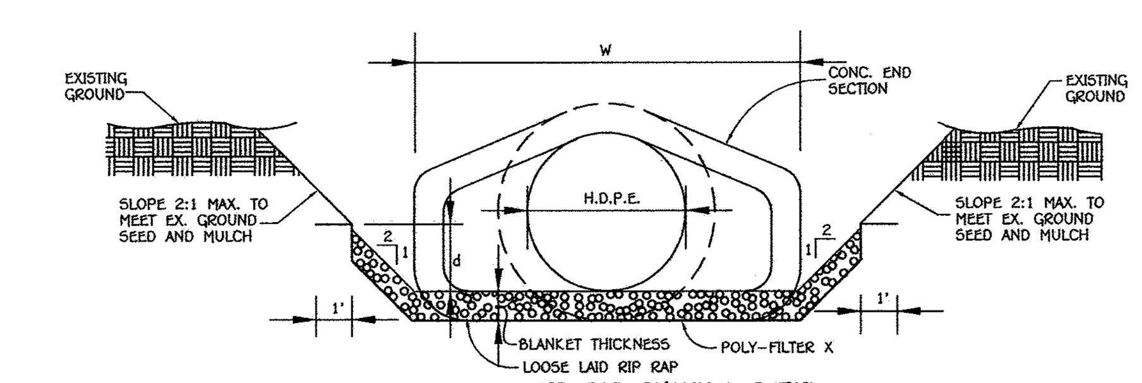
Fabric Properties	Value	Test Method
Grab Tensile Strength (lbs.)	90	ASTM D1682
Elongation at Failure (%)	50	ASTM D1682
Mullen Burst Strength (PSI)	190	ASTM D3786
Puncture Strength (lbs.)	40	ASTM D751
Slurry Flow Rate (gal/min/sf)	0.3	Virginia DOT VTM-51
Equivalent Opening Size	40-80	US Std Sieve CW-02215
Utraviolet Radiation Stability (%)	90	ASTM G-26

Design Criteria

Slope	Slope Steepness	Slope Length (maximum)	Silt Fence Length (maximum)
0 - 10%	0 - 10:1	Unlimited	Unlimited
10 - 20%	10:1 - 5:1	400 feet	1,500 feet
20 - 33%	5:1 - 3:1	300 feet	1,000 feet
33 - 50%	3:1 - 2:1	200 feet	500 feet
50% +	2:1 +	100 feet	250 feet

SUPER FENCE DIVERSION

NOT TO SCALE



RIP RAP CHANNEL DETAIL

NO SCALE

RIP-RAP CHANNEL DESIGN DATA

STRUCTURE	AREA	WETTED PERIMETER	R	$R^{2/3}$	S	$S^{1/2}$	W	d	N	V (f.p.s.)	Q (c.f.s.)	RIP-RAP SIZE D_{50}	RIP-RAP SIZE D_{MAX}	BLANKET THICKNESS
S-1	2.19	7.47	0.2932	0.4395	0.005	0.0707	6'	0.33'	0.05	1.14	2.50	9.5"	15"	19"

CONSTRUCTION SPECIFICATIONS FOR RIP-RAP OUTFALLS

1. The subgrade for the filter, riprap or gabion shall be prepared to the required lines and grades. Any fill required in the subgrade shall be compacted to a density of approximately that of the surrounding undisturbed material.
2. The rock or gravel shall conform to the specified grading limits when installed respectively in the riprap or filter.
3. Filter cloth shall be protected from punching, cutting or tearing. Any damage other than an occasional small hole shall be repaired by placing another piece of cloth over the damaged part or by completely replacing the cloth. All overlaps whether for repairs or for joining two pieces of cloth shall be a minimum of one foot.
4. Stone for the riprap or gabion outlets may be placed by equipment. Both shall each be constructed to the full course thickness in one operation and in such a manner as to avoid displacement of underlying materials. The stone for riprap or gabion outlets shall be delivered and placed in a manner that will insure that it is reasonably homogenous with the smaller stones and spalls filling the voids between the larger stones. Riprap shall be placed in a manner to prevent damage to the filter blanket or filter cloth. Hand placement will be required to the extent necessary to prevent damage to the permanent works.

SEDIMENT CONTROL LEGEND

- SSF — SSF — SSF — SUPER-SILT FENCE (IMBRICATE)
- STABILIZED CONSTRUCTION ENTRANCE
- S.I.P. 'A' or 'B' — STANDARD INLET PROTECTION 'TYPE'
- L.O.D. — LIMIT OF DISTURBANCE
- E.C.M. — EROSION CONTROL MATTING

SEDIMENT & EROSION CONTROL PLAN

CAPITAL PROJECT No. C-0363

LINWOOD CENTER PARKING LOT

ZONED: POR
TAX MAP No. 25 GRID No. 01 PARCEL No. 264
2ND ELECTION DISTRICT HOWARD COUNTY, MARYLAND
DATE: OCTOBER 1, 2019
SHEET 4 of 5

ECP-19-057

SOILS LEGEND

SOIL	NAME	CLASS	K.w
GgB	Glenelg loam, 3 to 8 percent slopes	B	0.20
MaC	Manor loam, 8 to 15 percent slopes	B	0.24
MaD	Manor loam, 15 to 25 percent slopes	B	0.24

NOTES:

- Hydric soils and/or contains hydric inclusions
- ** May contain hydric inclusions
- † Generally only within 100-year floodplain areas

A = 21,628 Sq.Ft. (LOD)
I = 13,689 Sq.Ft.

B = 3,399 Sq.Ft.
I = 2,549 Sq.Ft.

C = 7,325 Sq.Ft.

0' 20' 40' 80'
SCALE: 1" = 20'

STATE OF MARYLAND
ALDO MICHAEL VITUCCI
No. 20748
PROFESSIONAL ENGINEER

Aldo M. Vitucci, P.E. — Date 10/16/19

"Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly Licensed Professional Engineer under the laws of the State of Maryland, License No. 20748, Expiration Date 2-22-21."

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APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 10/30/19

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE

OWNER & DEVELOPER:
HOWARD COUNTY MARYLAND
DEPARTMENT OF PUBLIC WORKS
C/O JIM IRVIN
3430 COURT HOUSE DRIVE
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SWM DRAINAGE AREA MAP

CAPITAL PROJECT No. C-0363

LINWOOD CENTER PARKING LOT

ZONED: POR
TAX MAP No. 25 GRID No. 01 PARCEL No. 264
2ND ELECTION DISTRICT HOWARD COUNTY, MARYLAND
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SHEET 5 of 5

ECP-19-057

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