SOILS LEGEND

SYMBOL TYPE

K*

NAME FACTOR

GbB B,28 GLADSTONE LOAM - 3 TO 8 PERCENT SLOPES
GbC B,28 GLADSTONE LOAM - 8 TO 15 PERCENT SLOPES
GmB C,43 GLENVILLE SILT LOAM - 8 TO 15 PERCENT SLOPES
GmC C,43 GLENVILLE SILT LOAM - 8 TO 15 PERCENT SLOPES
GoB C,43 GLENVILLE-CORDORUS SILT LOAMS - 0 TO 8 PERCENT SLOPES
MaC B,32 MANOR LOAM - 8 TO 15 PERCENT SLOPES
MaD 8,32 MANOR LOAM - 15 TO 25 PERCENT SLOPES
MgD 8,32 MANOR-BANNERTOWN SANDY LOAMS - 15 TO 20 PERCENT SLOPES, ROCKY

SOILS TAKEN FROM NRCS WEB SOIL SURVEY, MARCH 17, 2014, REF, SOIL SURVEY MAPS 5 & 6.

WHOLE SOIL K FACTOR

1670 sr

OVED: DEPARTMENT OF PUBLIC WORKS

DATE CHIEF, BUREAU OF HIGHWAYS

APPROVED: COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT DATE

OWNER/DEVELOPER: SONSHINE MD, LP

DRIVE 227 GRANITE RUN SUITE 100

LANCASTER, PA 17601 717-464-9060

DES: AAM DRAFT: AAM/NAF CHECK: CAM

PROJECT: MYRTUE PROPERTY

LOCATION: TAX MAP 10, GRID 24

PARCEL 225

6th ELECTION DISTRICT

HOWARD COUNTY, MARYLAND

REVISED ROAD PLANS

EROSION CONTROL & SEDIMENT AND DRAINAGE PLAN

MARCH, 2020 PROJECT NO. 2099

SCALE: AS SHOWN DRAWING 21 OF 56

FOR GAS MAIN COVER, .....

Professional Certified 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. 28376. Expiration Date: 1-1-2021.
A. The stockpile area must be kept free of erosion. If the vertical height of a stockpile exceeds 20 feet, the footprint of the stockpile must be sized to accommodate the anticipated volume of material

II. Soil contains less than 40 percent clay but enough fine grained material (greater than 30 percent silica plus 5 percent clay) to provide a suitable soil medium for vegetative growth. Soils of concern have low moisture content, low permeability, and are frequently silty loams or silty clay loams. Topsoil application may be used if recommended by an agronomist or soil scientist and approved by the appropriate approval authority.

III. Apply seed in two directions, perpendicular to each other. Apply half the seeding rate in each direction.

IV. Key points:
   a. Dry Seeding: This includes use of conventional drum or broadcast spreaders
   b. Cinders, stones, slag: coarse fragments, gravel
   c. Graded areas must be maintained in a true and even grade as specified on the approved plan, then scarified and incorporated into the soil.
   d. Incorporate lime and fertilizer into the top 3 to 5 inches of soil by disking
   e. Limestone must be ground to such fineness that at least 50 percent will pass through a #100 mesh sieve.

Topsoil Application

Topsoil application is an important component of the soil management plan. Topsoil must be used if recommended by an agronomist or soil scientist and approved by the appropriate approval authority.

10. Ground must be suitable for planting and prepared as required for reclamation. Vegetation must be installed immediately with permanent erosion control matting or sod.

DELETIONS TO SWM TO ESD METHODS

1. In the earlier version of the SWM (January, 2010) the stormwater management system was a "stream" system and consisted of a series of basins and channels. This system was designed to capture and convey stormwater to an ultimate outlet, usually a stream or river.

2. With the advent of the ESD program, the stormwater management system has been altered to include a "network" system. This system consists of a series of interconnected channels, basins, and other stormwater management practices. This system is designed to capture and convey stormwater to an ultimate outlet, usually a stream or river. However, the network system is more flexible and can be adapted to meet the needs of individual sites.

Sequence of Construction

Sequence of construction is an important consideration in the design and implementation of stormwater management systems. The sequence of construction is typically determined by the sequence of construction activities, which may include:

1. Site Excavation and Grading
2. Placement of Silt Fence
3. Placement of Sediment Control Mats
4. Placement of Riprap Protection
5. Installation of Drainage Structures
6. Placement of Vegetative Matting
7. Installation of Permanent Sediment Control Devices

NOTES:

1. Stormwater facilities MB-0 and SGW-E shall be designed and constructed in accordance with the approved plan.

2. The stormwater management system shall be designed and constructed in accordance with the approved plan and all applicable regulations and standards.

3. The stormwater management system shall be designed and constructed in accordance with the approved plan and all applicable regulations and standards.

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9. The stormwater management system shall be designed and constructed in accordance with the approved plan and all applicable regulations and standards.

10. The stormwater management system shall be designed and constructed in accordance with the approved plan and all applicable regulations and standards.
1. USE WRAP PIPE WITH DISCHARGE BACKFILL PIT AROUND THE PIPE WITH SPECIFIED IN SECTION H-1 MATERIALS, OVER THE HARDWARE CLOTH.

2. PLACE ABUTMENTS PARALLEL TO, AND ON, STABLE BANKS.

3. PROVIDE STORAGE VOLUME AS SPECIFIED ON APPROVED PLANS.

4. KEEP FLOW SURFACE ALONG DIVERSION FENCE AND POINT OF DISCHARGE FREE OF EROSION.

5. REMOVE ACCUMULATED SEDIMENT AND DEBRIS. MAINTAIN POSITIVE DRAINAGE. REPLACE SEAM FACING DOWNGRADE.

6. PLACE CRUSHED AGGREGATE OVER THE PIPE. PROVIDE PIPE AS 2¾ IN BASE OF STONE OF EARTH DIKE AND COMPACT EARTH 4 FT MIN. ALONG FLOW SURFACE.

7. USE MINIMUM 3 x PIPE IN WATER TIGHT CONNECTION 3¼ IN MIN. 134 IN MIN. AT EACH END.

8. PROVIDE SEEDING AND PLANTS NEAR DRAINAGE, WHERE SPECIFIED IN SECTION 4 OF WATER MANAGEMENT ADMINISTRATION NATURAL RESOURCES CONSERVATION SERVICE WATER MANAGEMENT ADMINISTRATION.


10. PROVIDE A MINIMUM WEIR CREST OF 2 IN 9 GAUGE CHAIN 24 INCHES BELOW THE NOTCH.

11. EMBED WOVEN MONOFILAMENT GEOTEXTILE UNDER ALL GABIONS.

12. PROVIDE GEOTEXTILE ON UPSTREAM FACE OF GABION BASKET PRIOR TO BACKFILL.
CONSTRUCTION SPECIFICATIONS

R-0.1 Specifications for Micro-Bioretenion  and Construction Conformance to ADEs  Standards

1. Material Specifications
   a. The maximum permissible liner thickness is 10 mil. A 10 mil impermeable liner is recommended.
   b. The impermeable liner shall be a geotextile blend of polyethylene and polyester. The geotextile blend shall be of a type that is resistant to ultraviolet degradation and have a thickness of 10 mil. The material shall meet the following ASTM standards:
      - ASTM D-4833 (PUNCTURE STRENGTH 125LB)
      - ASTM-D-471 (WATER ADSORPTION: +8)
      - ASTM-D-4833 (THICKNESS) 30 Mil. I HICK LINER TO BE ULTRAVIOLET RESISTANT. A GEOTEXTILE FABRIC SHOULD SE USED TO PROTECT THE LINER FROM THE SOIL AMENDMENTS.

2. Planting Specifications
   a. The planting area shall be kept moist during transport and on-site storage. The plant root ball should be planted so 1/8th 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.
   b. 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 at a 6-inch interval.
   c. Organic Content—Minimum 10% by dry weight (ASTM D 2974). In general, this can be met with a mixture of loamy and coarse sand (30%), and compost (40%) or sandy loam (30%), coarse sand (30%), and compost (40%).
   d. Soil 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.

3. Perforations—If perforated pipe is used, perforations should be 1/8" diameter located 6" on center with a 30% void ratio. The pipe shall be installed with a 3% invert. A perforated pipe length of 30 feet shall be used for every 30 feet of elevation change. The invert should be no greater than 3 feet below the elevation of the flow line. The invert shall be installed with a 3% slope. The pipe shall be installed with a 3% slope.

4. Construction
   a. The construction of the bioretention facility shall be performed using light equipment such as a compact loader or a dozer/loader with marsh tracks.
   b. The bioretention facility shall be constructed in reduced infiltration rates and is not acceptable. Compaction will significantly contribute to design failure.
   c. The construction of the bioretention facility shall be performed using light equipment such as a compact loader or a dozer/loader with marsh tracks.

5. Installation
   a. The installation of the bioretention facility shall be performed using light equipment such as a compact loader or a dozer/loader with marsh tracks.
   b. The installation of the bioretention facility shall be performed using light equipment such as a compact loader or a dozer/loader with marsh tracks.

6. Maintenance
   a. Maintenance of the bioretention facility shall be performed using light equipment such as a compact loader or a dozer/loader with marsh tracks.
   b. Maintenance of the bioretention facility shall be performed using light equipment such as a compact loader or a dozer/loader with marsh tracks.

Material Specifications for Micro-Bioretenion  and Construction Conformance to ADEs  Standards

<table>
<thead>
<tr>
<th>Material</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liner</td>
<td>Geotextile blend of polyethylene and polyester</td>
</tr>
<tr>
<td>Diameter</td>
<td>10 mil</td>
</tr>
<tr>
<td>Thickness</td>
<td>30 Mil.</td>
</tr>
</tbody>
</table>

Note: All specifications shall be met in accordance with ADEs  Standards and ADEs  guidelines.
**SPECIFICATIONS**

**MODULAR CONCRETE BLOCK RETAINING WALL**

**WALL #2 - TIER A ELEVATION**

**WALL #2 - TIER B ELEVATION**

**WALL #2 - TIER C ELEVATION**

**PART 1 - GENERAL**

**1.01 DESCRIPTION**

A. All work shall be performed in accordance with the plans and specifications and all applicable local, state, and federal codes and regulations.

B. Work shall be performed in a manner suitable for the project and in accordance with accepted construction practices.

**1.02 DELIVERY, STORAGE AND HANDLING**

A. All modular concrete units shall be in accordance with the manufacturer's recommendations and shall be delivered and stored in the manner specified.

**2.02 SHEAR CONNECTORS**

A. Shear connectors shall be 1/2 inch diameter rebar, incorporated into the wall units.

**2.05 REINFORCED BACKFILL**

A. Reinforced backfill shall be placed and compacted with appropriate compaction equipment and in accordance with the manufacturer's recommendations.

**2.06 GEOGRID SOIL REINFORCEMENT**

A. Geogrids shall be manufactured specifically for soil reinforcement and shall not be used in the reinforced soil mass.

**3.01 FOUNDATION SOIL**

A. Foundation soil shall be prepared to ensure full contact with the footing and proper compaction.

**3.02 BASE LEVELING PAD**

A. Leveling pad shall be prepared to ensure full contact with the foundation soil.

**3.04 STRUCTURAL GEOGRID INSTALLATION**

A. Geogrids shall be installed to the vertical, horizontal, and diagonal requirements.

**3.07 CAP INSTALLATION**

A. Cap installation shall be performed in accordance with the manufacturer's recommendations.

**4.01 INSTALLATION OF WALL UNITS**

A. Wall units shall be installed in accordance with the manufacturer's recommendations.

**5.01 INSPECTION**

A. Inspection shall be performed in accordance with the manufacturer's recommendations.

**5.02 QUALITY CONTROL**

A. Quality control shall be performed in accordance with the manufacturer's recommendations.

**HARRIS COUNTY NOTES**

1. No trees shall be planted within 3 feet of the top of the retaining wall.

2. Retaining walls shall only be constructed under the supervision of a licensed professional engineer.

3. One soil sample shall be taken every 2000 cubic yards of backfill material placed.

4. The required bearing pressure beneath the wall units shall be determined by the engineer.

5. The soil sample shall be tested for bearing pressure.

6. The suitability of fill material shall be confirmed by structural soil testing.

7. The installation of modular units shall be performed in accordance with the manufacturer's recommendations.

8. The installation of modular units shall be performed in accordance with the manufacturer's recommendations.

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17. The installation of modular units shall be performed in accordance with the manufacturer's recommendations.

18. The installation of modular units shall be performed in accordance with the manufacturer's recommendations.

19. The installation of modular units shall be performed in accordance with the manufacturer's recommendations.

20. The installation of modular units shall be performed in accordance with the manufacturer's recommendations.
LEGEND

0.2 ± AC. FLOODPLAIN IN FUTURE FOREST CONSERVATION EASEMENT 3

FOREST CONSERVATION EASEMENT 3
2.3± AC. TOTAL
2.1± AC. RETENTION (OUTSIDE FLOODPLAIN)
FOR F-06-116
(ZAISER PROPERTY)

EXISTING FOREST CONSERVATION EASEMENT 1
2.7± AC. TOTAL
2.2± AC. RETENTION (OUTSIDE FLOODPLAIN)
FOR F-09-121
(OWENS PROPERTY)
PLAT #15277

MYRTUE PROPERTY

FOREST CONSERVATION EASEMENT B
16.1± ACRES TOTAL
15.2± ACRES RETENTION
6.3± ACRES REFORESTATION
2.5± ACRES FLOODPLAIN

F-06-104
Note to Contractor: Zone 2 species shall be planted within wetlands. Zone 3 species shall be planted outside of wetlands. Zone 4 species shall be planted outside of or within the following zones:

- Zone 2: 0 to 200 feet from the wetland edge
- Zone 3: 200 to 500 feet from the wetland edge
- Zone 4: 500 feet and beyond from the wetland edge

Guarantee: A minimum survival rate of 70% is to be guaranteed by the contractor at the end of the two year maintenance period.
GOALS AND OBJECTIVES

The goals and objectives of this forest conservation plan are to:

- Protect and enhance the existing forest cover
- Restore forested areas where necessary
- Ensure the sustainability of forest resources

FOREST CONSERVATION REQUIREMENTS

- Forested areas must cover at least 50% of the parcel
- Trees must be at least 12" in diameter
- No clear-cutting of mature trees without proper mitigation

FOREST CONSERVATION EASEMENT SUMMARY CHART

<table>
<thead>
<tr>
<th>Acreage</th>
<th>Existing Forest</th>
<th>Proposed Forest</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.5 AC</td>
<td>1.0 AC</td>
<td>0.5 AC</td>
</tr>
<tr>
<td>2</td>
<td>0.7 AC</td>
<td>1.2 AC</td>
<td>0.5 AC</td>
</tr>
<tr>
<td>3</td>
<td>0.8 AC</td>
<td>1.3 AC</td>
<td>0.5 AC</td>
</tr>
<tr>
<td>4</td>
<td>0.9 AC</td>
<td>1.4 AC</td>
<td>0.5 AC</td>
</tr>
<tr>
<td>Total</td>
<td>3.9 AC</td>
<td>6.7 AC</td>
<td>2.8 AC</td>
</tr>
</tbody>
</table>
5. CONCRETE

5.1 All concrete shall be made by an experienced concrete contractor, using a consistent and reliable mix with a cement content equal to or greater than 250 lb/cu yd. The contractor shall use a cement content equal to or greater than 400 lb/cu yd. The concrete shall be placed with a minimum cover of 12 inches on all sides, except for structural members or where the thickness of the concrete is greater than 10 inches. The concrete shall be placed in a manner that ensures proper de-molding and curing. The concrete shall be cured with appropriate measures to ensure adequate hydration and hardening.

5.2 All concrete shall be placed in accordance with the approved construction plans and specifications. The concrete shall be placed with proper consideration for the type of concrete, the curing requirements, and the structural integrity.

5.3 The concrete shall be placed using a suitable method of placement, such as a hopper, chute, or crane, to ensure proper placement and consolidation. The concrete shall be placed in a manner that ensures proper consolidation and compaction.

5.4 The concrete shall be cured using appropriate measures, such as wet curing, plastic sheets, or curing blankets, to ensure adequate hydration and hardening. The concrete shall be cured for a minimum of 7 days, except as otherwise specified by the engineer.

5.5 All concrete shall be placed in accordance with the approved construction plans and specifications. The concrete shall be placed with proper consideration for the type of concrete, the curing requirements, and the structural integrity.

5.6 The concrete shall be placed using a suitable method of placement, such as a hopper, chute, or crane, to ensure proper placement and consolidation. The concrete shall be placed in a manner that ensures proper consolidation and compaction.

5.7 The concrete shall be cured using appropriate measures, such as wet curing, plastic sheets, or curing blankets, to ensure adequate hydration and hardening. The concrete shall be cured for a minimum of 7 days, except as otherwise specified by the engineer.