Capacity is total sediment basin volume up to emergency spillway crest.

Conversion Values

1 Ac Ft = 43,560 ft³ = 1,613 CY
1 Ac In = 3,630 ft³ = 134.4 CY

Ref. Sec. 11-0105.6, 11-0106.2
Rev. 1-00, 2011
Reprint, 2018 Reprint

MAXIMUM PROBABLE
TRAP EFFICIENCY
OF SEDIMENT BASINS

PLATE NO. 1-11
STD. NO.
These are the recommended standard specifications for the pipe outlet sediment trap. The design engineer may alter the pipe and perforation sizes, provided engineering calculations can justify it. The desired drawdown times are a minimum of 4 hours and a maximum of 40 hours. The perforation size and spacing as indicated below represents approximately 17 hours of drawdown time. When selecting a drawdown time, the designer must consider the proximity to existing residences and the safety of small children; thus, a shorter drawdown time. For remote sites, a longer drawdown time would be more appropriate.

**PERFORATED RISER DETAIL**

3 rows of 1" holes spaced 6" apart vertically; and 12" horizontally. (9 holes total.) A gravel cone of VDOT #1 crushed aggregate must be placed around the riser to prevent clogging of the perforations.

**CROSS SECTION**

15" corrugated metal barrel

2 times the riser dia.

18" perforated corrugated metal riser

6" 18" conc. base or 1/4" steel base (as shown)

30"

**STORAGE VOLUME REQUIRED**

134* CY/Ac

*202 CY/Ac in RPAs per Code 104-1-8(4)

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Ref. Sec. 11-0105.6, 11-0106.2

Rev. 1-00, 2011 Reprint, 2016 Reprint

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<th>PIPE OUTLET SEDIMENT TRAP</th>
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<th>STD. NO.</th>
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<td>1 TO 3 AC OF DRAINAGE AREA</td>
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Surface accumulation of organic materials undergoing varying stages of plant decomposition. They are designated O1 contain loose leaves and other recognizable vegetative matter. Horizons designated O2 contain matted and decomposed organic material. The O1 and O2 layers are often thin or insignificant because of past cultivation or construction practices.

The A horizons collectively represent the surface soils that have been exposed to the most active physical and chemical weathering processes, resulting in leaching or downward movement of dissolved minerals and fine clay particles into lower horizons. Many of the silt and clay particles have leached out of the entire soil system and into the groundwater and streams. A1 horizons are enriched with finely divided organic matter and are the "topsoil" material that occurs naturally in place. Organic matter content of naturally occurring A1 horizons in the County seldom exceeds 1.5% by weight and usually less than 1.0%.

The A2 horizons are the most severely leached or stripped layers. The A3 horizon is gradational to underlying strata. Past cultivation and construction practices have frequently mixed the 0 and A horizons into a distinct subhorizon. The "topsoil" that is sold commercially is usually this mixed layer material. The 0 and A horizons may be entirely missing in areas that are severely eroded or disturbed by construction practices. Permeability is usually moderate to high.

The B horizons of the County soil are usually clay enriched as a result of (1) weathering in place, (2) clay translocation from overlying layers, or (3) as a primary clay deposit. Residual soils have developed in situ from weathered rock and are the predominant type in the Piedmont Upland and Piedmont Triassic Lowland physiographic provinces of the County. The clay content and clay type of the B horizon depend on the bedrock characteristics, subsurface soil drainage and the landscape position. Permeability is moderately slow to very slow in most B horizons.

The B horizon clays that have developed from micaeous schists have clays of low activity, whereas B horizons developed from diabase or other mafic rocks have highly plastic clays. The B horizons generally range in thickness from 2 to 5 feet and are often the building foundation and road subgrade materials of concern to developers and contractors. B horizons of the various soils have specific characteristics with regard to structure or fabric, grain size distribution, and soil index properties.

The B horizons in most of the residual soils have thoroughly altered the original structure and the physical and chemical characteristics of the parent bedrock. B horizons of soils in the unconsolidated sediments of the Coastal Plain more closely resemble the structure and texture of their original parent materials than do their counterparts in the Piedmont provinces to the west. The B horizons generally contain subhorizons such as B1, B2, B3 or others. The B1 and B3 horizons are gradational to overlying and underlying layers. The B2 horizon is the zone of maximum clay accumulation, and max secondary micro and macro structural development. Hard cemented Bx fragipan layers, that severely restrict permeability occur in some County soils.

The C horizons of the County soils represent unconsolidated strata that are less intensively weathered than the overlying horizons. The C horizons in the residual soils of the County have weathered in situ from bedrock and are often referred to as saprolite. The density of the C horizons usually increases the degree of weathering and decreases with depth. The C horizons in residual soils have soil properties indicative of weathering, yet remain the original mineral orientation, joint system and cleavage patterns of the original bedrock mass. Downward clay translocation from overlying horizons can often be detected in relics, fissures and fault zones of the saprolite. These micro and macro structural features of the C horizons are a function of bedrock type and past geologic stresses, which often reduce the stability of soils in trench excavations and tunneling operations. Permeability varies from slow to rapid depending on rock type.

The C horizons of soils in the Coastal Plain Physiographic Province are interlayered alluvial deposits often extend to depths greater than several hundred feet before saprolite or bedrock is encountered. The surface and subsoils may have markedly different engineering characteristics than overlying strata. The density of soil materials generally increases with depth. An exception to the rule is the soft, more recent alluvial soils and buried organic beds in some stream valleys. Active geologic erosion cycles have maintained the substrata layers near the surface in many steep areas resulting in insignificant development of A and B horizons.

Fracture patterns of varying complexity often occur in the substrata and subsoil layers in the Coastal Plain. Those in the subsoil are due to near-surface physical, chemical and biological phenomena; those at greater depths due to soil gradation and past geologic stresses.

The R horizon consists of partially weathered to unweathered bedrock. The depth to bedrock and the bedrock characteristics depend on the geologic origin and landscape position. Bedrock depth is generally shallow in the sedimentary, igneous and metamorphic rock of the Piedmont Triassic Lowlands; hard bedrock requiring ripping or blasting is typically 3 to 6 feet. The depth to hard bedrock is more variable in the Piedmont Upland, ranging from 2 to 5 feet over some igneous and metamorphic rocks to 4 to 100 feet within areas of the metamorphic micaeous schists or phyllites. The depth to bedrock within the Coastal Plain is similar to the Piedmont Upland where the 2 provinces coalesce, generally along Shirley Highway (Rte. 1-95 and I-395). The depth increases to over 500 feet along the Potomac River. The individual bedrock types have characteristic mineral size and orientation, joint patterns and cleavage systems.

Depth range shown is schematic only. All horizons will not necessarily occur within a specific soil section. There can be proportionate variation from the drawing on the topographic conditions, and disturbance by cultivation and construction practices. Depth to bedrock may be several hundred feet in the Coastal Plain Physiographic Province.
Source: Erosion and Improvement Plan for Stream Valley Parks — Fairfax County
Gauthier, Alvarado & Associates/Sheladia Associates

BIOTECHNICAL
SLOPE PROTECTION

PLATE NO. 4–11
STD. NO.
2.5" DIA. METAL FENCE POSTS
CHAIN LINK FENCE
FILTER FABRIC

FILTER FABRIC

CHAIN LINK FENCE WITH ONE LAYER OF FILTER FABRIC ATTACHED TO IT

10’ MAX. 39” 42” 3”
GROUND

ELEVATION VIEW

SSF X——X——X——X——X

SECTION VIEW

SUPER SILT FENCE
NO SCALE

FENCING

Chain link fence must be 39” above grade with 3” embedded for a total fabric width of 42”. The post must be 42” above grade with 30” placed below grade (without concrete) for a total length of 72”.

NOTES

1. Chain link fence must be fastened securely to fence posts with wire ties.
2. Filter fabric must be fastened securely to chain link fence with ties spaced horizontally 24” at the top and midsection.
3. Physical properties of the filter fabric must conform to the latest edition of THE VIRGINIA EROSION & SEDIMENT CONTROL HANDBOOK.
4. When two sections of filter fabric adjoin each other, they must be overlapped by 6”.
5. Maintenance must be performed as needed and material must be removed when sediment build-up reaches 50% of the height of the super silt fence.