

PROJECT DESCRIPTION

The purpose of this project is provide sanitary sewer service to the Botetourt Center at Greenfield. The site is located in the south central portion of Botetourt County, adjoining US Route 220, known as Roanoke Road, and State Route 672, known as Etzler Road. The sewer service will include, a 24 inch diameter, 12,000 foot extension from the Tinker Creek Interceptor to the unnamed tributary that drains Greenfield, followed by, a 21 inch diameter, 6,500 foot extension that will bring the sewer service approximately 3,000 feet into the Greenfield property.

EXISTING SITE CONDITIONS

The property along the onsite alignment is rolling with elevations ranging from 1250' where an unnamed drainage course leaves the property at its southwest corner to 1510' at the top of a knob near the northern boundary of the property. Approximately one third of the site is wooded while the remainder is in meadow and open pasture. The properties along the proposed offsite sewer alignment follow the unnamed tributary that drains Greenfield until it turns at the confluence with Tinker Creek. The majority of the alignment is open pasture, with occasional brush and/or wooded areas. The grades along the offsite alignment typically range from 0% to 5%.

ADJACENT PROPERTY

State Route 672, known as Etzler Road, and US Route 220, known as Roanoke Road, adjoin the property. Due to the nature of the project, there are numerous tracts of property that will border the construction. Please refer to the design plans in order to obtain the location and listing of the significant adjacent property owners.

CRITICAL EROSION AREAS

Critical erosion areas include steep slopes along Tinker Creek and locations where the project crosses Tinker Creek and the unnamed tributary that drains Greenfield. The drainage areas contributing to these critical erosion areas are small enough to permit the application of silt fence. Silt fence will be installed around these areas to alleviate the potential for significant erosion, and rip rap will be installed on the creek banks at all crossing locations.

EROSION AND SEDIMENT CONTROL MEASURES

Unless otherwise indicated, all vegetative and structural erosion and sediment control practices shall be constructed and maintained according to minimum standards and specifications of the 1992 Virginia Erosion and Sediment Control Handbook. The minimum standards of the Virginia Erosion and Sediment Control Regulations shall be adhered to unless otherwise waived or approved by a variance.

STRUCTURAL PRACTICES

1. TEMPORARY CONSTRUCTION ENTRANCE - 3.02

A temporary construction entrance shall be installed where the access area intersects with the existing paved area. During muddy conditions, drivers of construction vehicles may be required to wash their wheels before entering paved areas.

2. SILT FENCE BARRIER - 3.05

Silt fence barriers will be installed downslope of areas with minimal grade to filter sediment laden runoff from sheet flow.

3. CULVERT INLET PROTECTION - 3.08

All storm sewer culverts shall be protected during construction. Sediment-laden water shall be filtered before entering storm sewer inlets.

4. TEMPORARY DIVERSION DIKE - 3.09

Temporary diversion dikes will be installed downslope of drainage areas to divert storm runoff from a disturbed area to a sediment trapping facility such as a sediment trap.

5. TEMPORARY SEDIMENT TRAP - 3.13

A small ponding area is to be formed in order to detain sediment-laden runoff from small disturbed areas for enough time to allow most of the suspended solids to settle out.

6. OUTLET PROTECTION - 3.18

Riprap is to be placed at the outlet of all pipes.

7. RIPRAP - 3.19

Riprap is to be placed at the critical erosion areas to protect the soil from the erosive forces of concentrated runoff.

8. ROCK CHECK DAMS - 3.20

Rock check dams will be installed upstream of the sediment trap to reduce the velocity of concentrated flows.

9. TEMPORARY CULVERT CROSSING - 3.24

VDOT #1 Coarse Aggregate or larger will be used to form the crossing. The depth of stone cover over the culvert shall be equal to one-half the diameter of the culvert or 12 inches, whichever is greater. To protect the sides of the stone from erosion, riprap shall be used.

10. TEMPORARY BRIDGE CROSSING - 3.24

Structural materials used to construct the bridge must be able to withstand the anticipated loading of the construction traffic.

11. COFFERDAM CROSSING - 3.25

A coffer dam crossing will be used when stream diversion is not practical and stream is wide enough (10 feet or wider). Cofferdam construction is to be performed in low flow periods.

12. FLUME PIPE CROSSING - 3.25

Flume pipe crossing will be used when stream construction will last less than 72 hours and stream is narrow (less than 10 feet wide).

VEGETATIVE PRACTICES

1. TOPSOILING - 3.30

Topsoil will be stripped from areas to be graded and stockpiled for later use. Stockpiled locations are to be stabilized with temporary vegetation and the perimeter of the stockpile is to have siltfence installed.

2. TEMPORARY SEEDING - 3.31

All denuded areas which will be left dormant for more than 30 days shall be seeded with fast germinating temporary vegetation immediately following grading.

3. PERMANENT SEEDING - 3.32

All final-graded areas where permanent cover is desired or rough-graded areas that will not be brought to final grade for a year or more shall be seeded with perennial vegetation.

4. MULCHING - 3.35

Mulch (straw or fiber) will be used on relatively flat areas and will be applied as the second step in the seeding operation.

5. SOIL STABILIZATION BLANKETS & MATTING - 3.36

A protective covering (blanket) or a soil stabilization mat will be installed on prepared planting areas of steep slopes, channels, or shorelines where noted.

6. TREES, SHRUBS, VINES AND GROUND COVERS - 3.37

All disturbed areas where turf is not preferred shall be covered with trees, shrubs, vines, and other ground coverings.

7. TREE PRESERVATION AND PROTECTION - 3.38

Tree preservation and protection practices will be observed at all locations unless otherwise noted.

MANAGEMENT STRATEGIES

1. Construction will be sequenced so that grading operations can begin and end as quickly as possible.

2. Sediment trapping measures will be installed as a first step in grading and will be seeded and mulched immediately following installation.

3. Temporary seeding or other stabilization will immediately follow grading.

4. Areas which are not to be disturbed will be clearly marked by flags, signs, etc.

5. The job superintendent shall be responsible for the installation and maintenance of all erosion and sediment control practices.

6. After achieving adequate stabilization, the temporary E&S controls will be cleaned out or converted to permanent stormwater management control structures.

PERMANENT STABILIZATION

All areas disturbed by construction shall be stabilized with permanent seeding immediately following final grading. Seeding shall be done with Kentucky 31 Tall Fescue according to Std. and Spec. 3.32, PERMANENT SEEDING, of the 1992 Virginia Erosion and Sediment Control Handbook. Mulch (straw or fiber) will be used on all seeded areas. In all seeding operations, seed, fertilizer and lime will be applied prior to mulching. Erosion control blankets may be installed over fill slopes which have been brought to final grade and have been seeded to protect the slopes properly.

STORMWATER MANAGEMENT

Stormwater management will not be necessary on this project due to the nominal increase in stormwater generation that will result from the proposed improvements.

MAINTENANCE

In general, all erosion and sediment control measures will be checked daily and after each significant rainfall. The following items will be checked in particular:

1. The sediment traps will be checked regularly for sediment cleanout.

2. The gravel outlets will be checked regularly for sediment buildup which will prevent drainage. If the gravel is clogged by sediment, it shall be removed and cleaned, or replaced.

3. The silt fence barriers will be checked regularly for undermining or deterioration of the fabric. Sediment shall be removed when the level of sediment deposition reaches half way to the top of the barrier.

4. The seeded areas will be checked regularly to ensure that a good stand is maintained. Areas should be fertilized and reseeded as needed.

SOILS

The predominant soils on the site are Berks-Weikert Complex, Flatwoods Silt Loam, Frederick Loom, Lindsie Silt Loam and Wolfgap Loom.

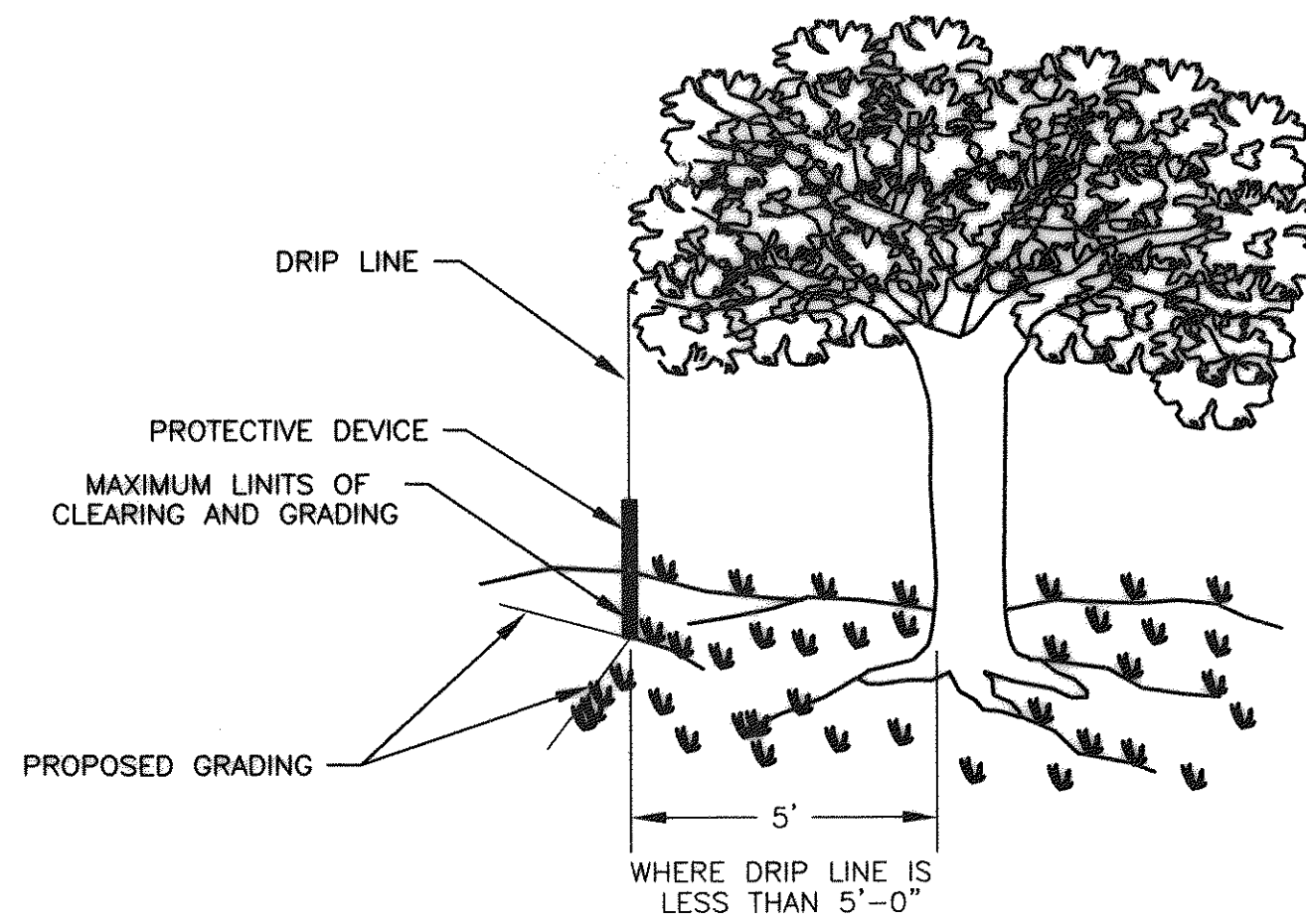
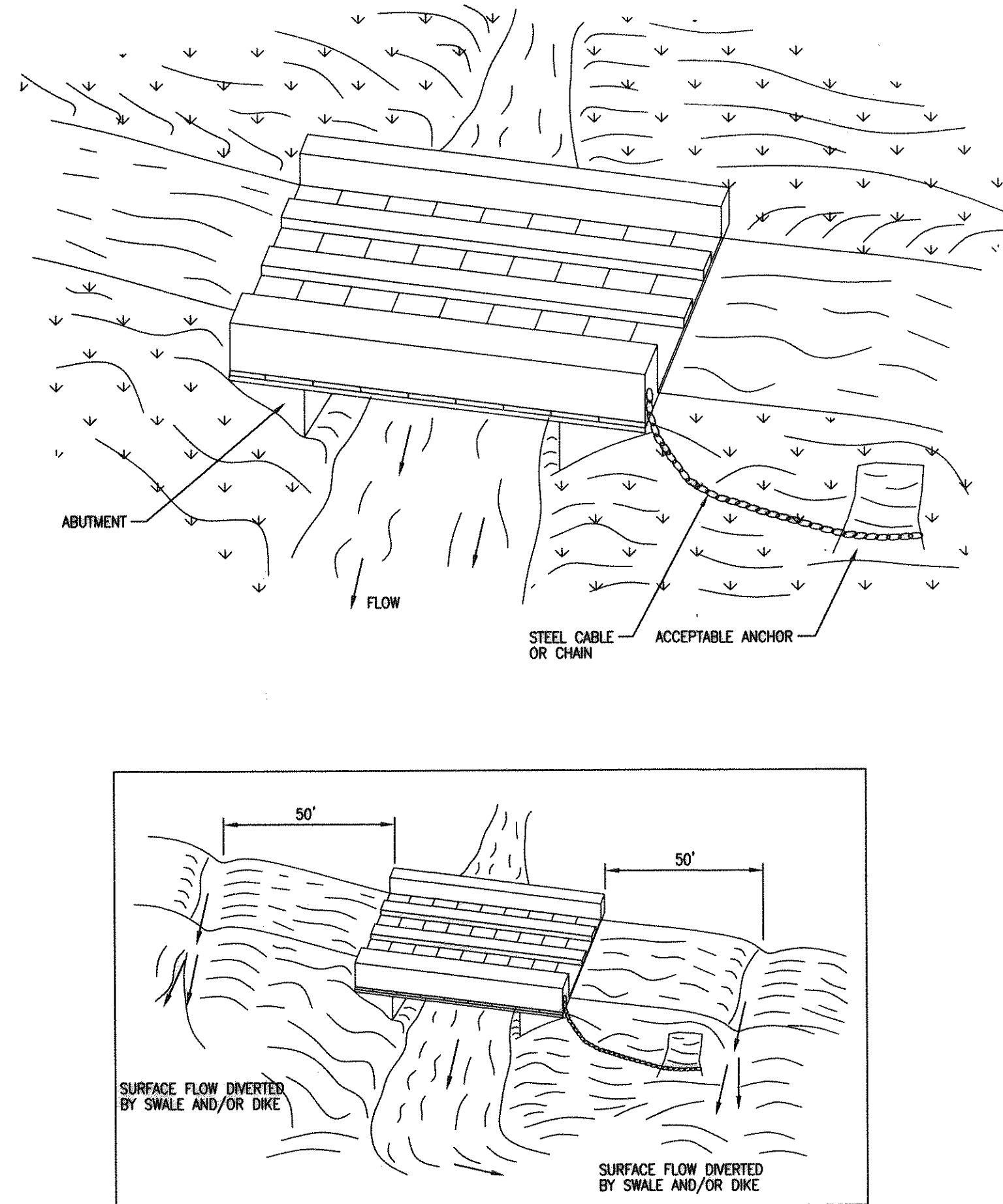
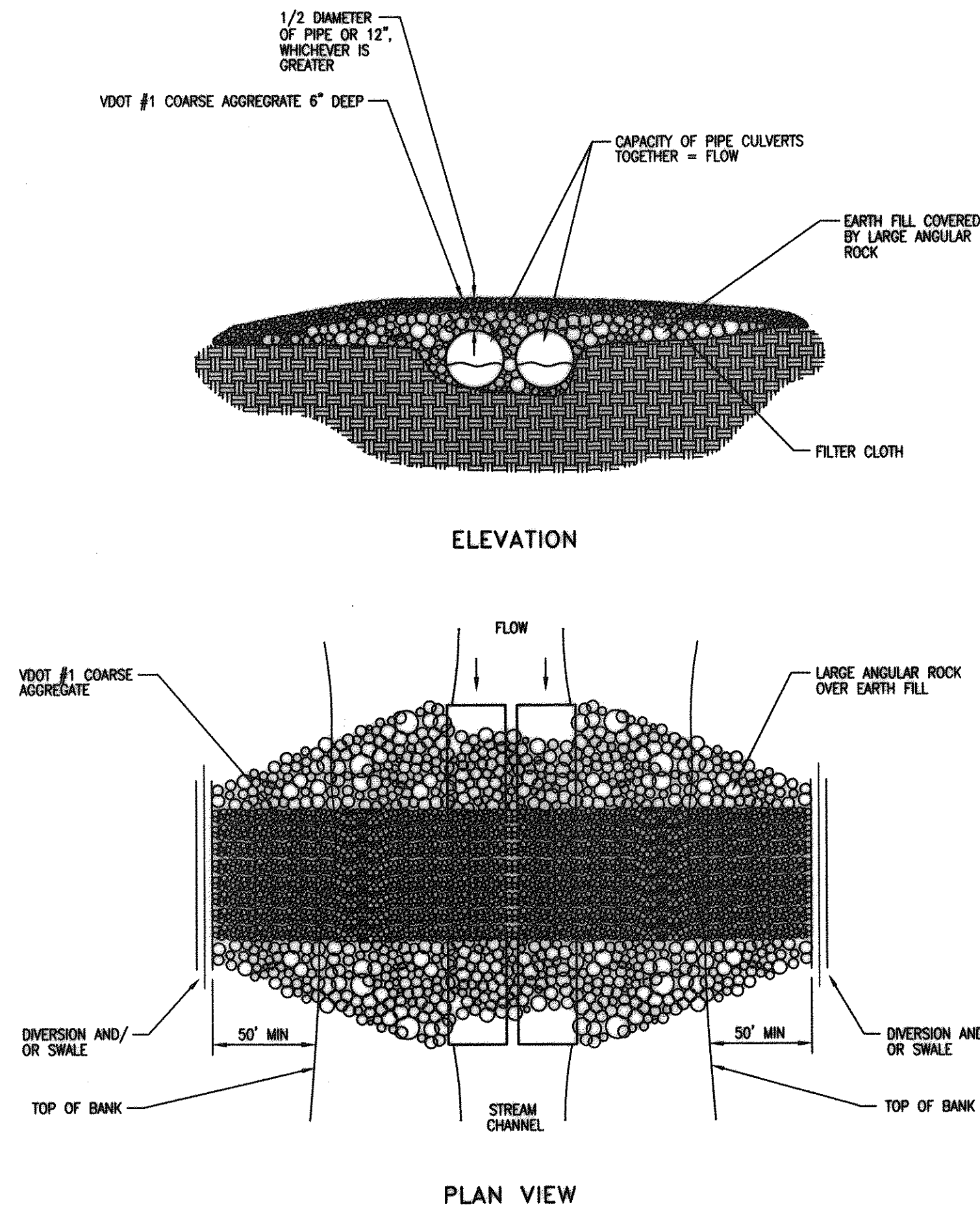
The Berks-Weikert complex (40) is composed of approximately 45 percent moderately deep, well drained Berks soil, 40 percent shallow, somewhat excessively drained Weikert soil, and 15 percent other soils. These type of soils are normally found on narrow, convex summits, shoulders, and side slopes in the uplands. These soils are typically so intermingled that mapping them separately is not considered practical. The permeability rate ranges from 0.6 to 6.0 inches per hour. The erosion factor, (K) ranges from 0.17 for the Berks soil to 0.28 for the Weikert soil and introduces significant management concerns due to it's severe erodibility. The slopes generally range from 15% to 30%.

The Flatwoods Silt Loam (19C) is typically moderately deep, strongly sloped and moderately well drained. It is normally found on narrow shoulders, summits and side slopes in the uplands and has significant management concerns due to its severe erodibility. The soil material ranges from a brown silt loam from 0 to 2 inches, to a brownish yellow silt loam from 2 to 6 inches, to a yellowish brown clay from 6 to 13 inches, to a yellowish brown clay that has yellowish red and pale brown mottles from 13 to 17 inches, to a mottled yellowish brown, strong brown and light brownish gray clay from 17 to 24 inches, to a mottled yellowish brown and gray clay from 24 to 32 inches. The permeability rate ranges from 0.6 - 2.0 inches per hour. The erosion factor, (K) is 0.28 for the surface layer, 0.24 for the subsurface and 0.20 for the subsoil. The slopes generally range from 7% to 15%.

The Frederick Loom (24D) soil is typically very deep, moderately steep and well drained. It is normally found on the convex side slopes of ridges in a limestone valley with limestone outcrops covering 2% to 10% of the surface, 100 to 300 feet apart, and has significant management concerns due to its severe erodibility. The soil material ranges from a dark yellowish red clay from 0 to 11 inches, to a yellowish red clay from 11 to 29 inches, to a yellowish red clay that has reddish yellow mottles from 29 to 55 inches, to a yellowish red clay that has red and reddish yellow mottles from 55 to 65 inches. The permeability rate ranges from 0.6 - 6.0 inches per hour. The erosion factor, (K) is 0.32 for the surface layer and 0.24 for the subsurface. The slopes generally range from 7% to 15% and are very rocky.

The Lindsie Silt Loam (38A) soil is typically very deep, nearly level and moderately well drained. It is normally found on the flood plains along major streams and rivers and has a low potential for erodibility. The soil material ranges from a brown silt loam from 0 to 5 inches, to a yellowish brown silt loam that has pale brown mottles from 5 to 14 inches, to a yellowish brown silt loam that has pale brown and light brownish gray mottles from 14 to 24 inches, to a yellowish brown silt loam that has light gray and pale brown mottles and thin strata of fine sandy loam from 24 to 33 inches, to a pale brown silt loam that has light gray and strong brown mottles from 33 to 46 inches, to a pale brown and dark grayish brown stratified loam and silt loam from 46 to 65 inches. The permeability rate ranges from 0.6 - 6.0 inches per hour. The erosion factor, (K) is 0.32 for the surface layer, 0.37 for the subsoil and 0.32 for the substratum. The slopes generally range from 0% to 2% and are occasionally flooded.

The Wolfgap Loom (63A) soil is typically very deep, nearly level and well drained. It is normally found on the flood plains along major streams and rivers and has a low potential for erodibility. The soil material ranges from a dark brown loam from 0 to 10 inches, to a dark yellowish brown loam from 10 to 31 inches, to a dark yellowish brown sandy clay loam from 31 to 42 inches, to a dark yellowish brown gravelly sandy clay loam from 42 to 51 inches, to a dark yellowish brown gravelly sandy loam from 51 to 65 inches. The permeability rate ranges from 0.6 - 20.0 inches per hour. The erosion factor, (K) is 0.32 for the surface layer and subsoil, and 0.20 for the substratum. The slopes generally range from 0% to 2%, and are occasionally flooded.



SOURCE: 1992 VA. EROSION AND SEDIMENT CONTROL HANDBOOK, STD. & SPEC. 3.38