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PROJECT DESCRIPTION

The purpose of this project is to provide sanitary sewer service within 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 21 inch diameter, 2,592 foot extension of the Greenfield Collector followed by a 18 inch diameter, 1,534 foot extension followed by a 12 inch diameter, 1,838 foot extension to the proposed south entrance intersection with US Route 220. This will extend the sanitary sewer trunk line through the center of Greenfield.

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 majority of the alignment is open pasture, with occasional brush and/or wooded areas. The grades along the onsite alignment typically range from 0% to 12%.

ADJACENT PROPERTY

State Route 672, known as Etzler Road, and US Route 220, known as Roanoke Road, adjoin the property. Since the project is entirely within the boundary of the Greenfield property, there are no significant tracts of adjacent property that will border the construction.

CRITICAL EROSION AREAS

Critical erosion areas include steep slopes along the proposed stormwater pond and locations where the project crosses the unnamed tributary that bisects 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

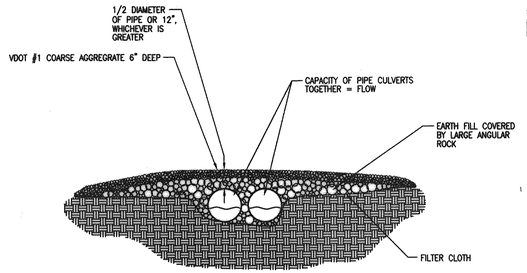
The predominant soils on the site are Groseclose–Litz Complex, Lindside Silt Loam, Massanetta Silt Loam and Timberville Silt Loam.

The Groseclose–Litz Complex (30D) is composed of 50 percent very deep, well drained Groseclose soil, 35 percent moderately deep, well drained Litz soil and 15 percent other soils. The soils are moderately steep and are found on narrow shoulders and side slopes in a limestone valley with significant management concerns due to their severe erodibility. The soil area are so intermingled that mapping them separately is not practical. The Groseclose soil material ranges from a dark yellowish brown silt loam from 0 to 7 inches, to a yellowish brown clay from 7 to 13 inches, to a strong brown clay from 13 to 26 inches, to a strong brown silty clay loam from 26 to 37 inches, to a yellowish brown silty clay loam from 37 to 50 inches, to a yellowish brown, light gray and red silty clay loam from 50 to 65 inches. The Litz soil material ranges from a dark brown channery silt loam from 0 to 5 inches, to a yellowish brown channery silt loam from 5 to 9 inches, to a yellowish brown very channery silt loam from 9 to 13 inches, to a yellowish brown extremely channery silt loam from 13 to 20 inches, to a yellowish brown, weak red and gray weathered shale from 20 to 29 inches, to shale bedrock at 29 inches. The permeability rate for Groseclose soil ranges from 0.06 – 6.0 inches per hour and Litz soil ranges from 0.6 – 2.0 inches per hour. The erosion factor, (K) for Groseclose soil is 0.43 for the surface layer and 0.24 for the subsoil and substratum; Litz soil is 0.32 for the surface, subsurface, subsoil and substratum layers. The slopes generally range from 15% to 30%.

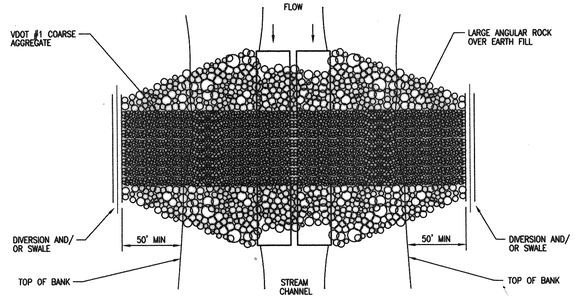
The Lindside Silt Loam (38A) soil is typically very deep, nearly level and moderately well drained. It is normally found on the flood plains along major streams and rivers and has a low potential for erodibility. The soil material ranges from a brown silt loam from 0 to 5 inches, to a yellowish brown 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 Massanetta Silt Loam (39A) soil is typically very deep, nearly level and moderately well drained. It is normally found on the flood plains along small streams in a limestone valley and has a low potential for erodibility. The soil material ranges from a very dark grayish brown loam from 0 to 11 inches, to a very dark gray silt loam from 11 to 17 inches, to a dark grayish brown silty clay loam from 17 to 28 inches, to a grayish brown gravelly loam from 28 to 34 inches, to a dark gray silt loam from 34 to 40 inches, to a grayish brown silt loam that has pale brown mottles from 40 to 52 inches, to a dark gray silt loam from 52 to 65 inches. The permeability rate ranges from 0.6 – 2.0 inches per hour. The erosion factor, (K) is 0.37 for the surface layer and subsoil, and 0.28 for the substratum. The slopes generally range from 0% to 3% and are occasionally flooded.

The Timberville Silt Loam (53B) is typically nearly level and gently sloping soil that is very deep and well drained. It is normally found on narrow to moderately broad foot slopes and in upland drainageways in a limestone valley and has a medium potential for erodibility. The soil material ranges from a dark yellowish brown silt loam from 0 to 14 inches, to a dark yellowish brown silt loam that has yellowish brown mottles from 14 to 30 inches, to a yellowish brown silty clay loam from 30 to 43 inches, to a strong brown clay from 43 to 55 inches, to a yellowish brown clay 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, 0.24 for the subsoil. The slopes generally range from 0% to 7% and are occasionally flooded.

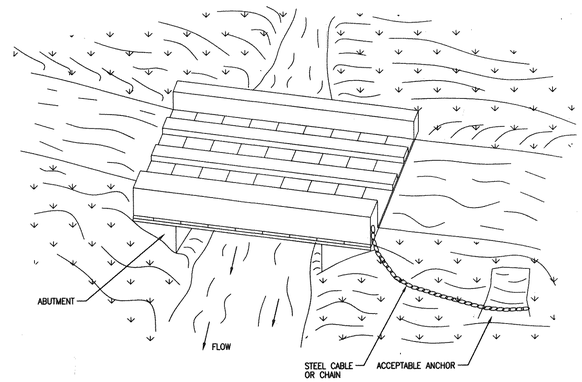


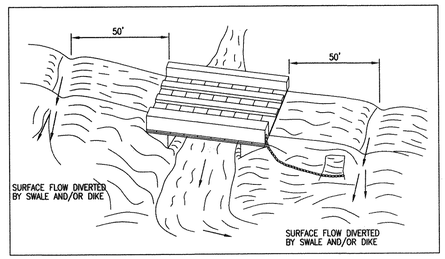
ELEVATION



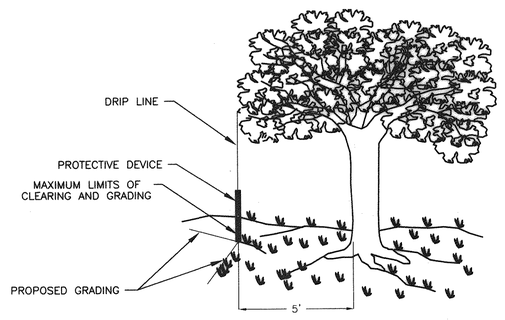
PLAN VIEW

VSC TEMPORARY CULVERT CROSSING





VSC TEMPORARY BRIDGE CROSSING



WHERE DRIP LINE IS LESS THAN 5'–0"

TP TREE PROTECTION

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

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AS–BUILT

Drawn JHG	GREENFIELD COLLECTOR EXTENSION SANITARY SEWER PROJECT	SCALE:NONE
Designed SCG		MAY 1997
Checked WPJ/JST	EROSION & SEDIMENT CONTROL NOTES AND DETAILS	PROJECT: 97024
Approved WPJ		15 of 16