

**NATURAL RESOURCES CONSERVATION SERVICE
RHODE ISLAND**

**CONSTRUCTION SPECIFICATION
FOR**

**ACCESS ROAD
(Ft) Code 560**

SCOPE

This work shall consist of furnishing materials, preparing a base, and placing the materials needed for installing the access road as shown on the plans and specified herein. This specification does not include asphalt or concrete paved access roads.

Construction operations shall be carried out in such a manner that erosion, air, water, and noise pollution will be minimized within legal limits as established by state regulations.

The completed job shall present a workmanlike finish.

Roads shall be planned and laid out according to good landscape management principles.

EROSION AND SEDIMENT CONTROL

Erosion and sedimentation shall be controlled at the work site by use of geotextile silt/sediment fencing. Geotextile silt/sediment fences shall be installed to trap sediment on-site from areas subject to soil erosion as shown on the plans. Sediment filters shall be anchored with 36-inch wooden stakes and shall have a minimum burial depth of 6 inches to control erosion under or around them as shown on the plans. The sediment filters shall be removed when permanent measures are installed and vegetation is established.

CLEARING AND GRUBBING

All trees, stumps, roots, brush, weeds, and other objectionable material shall be removed from the area that will be required for the roadway including shoulders and ditches, and from similar areas required for side road approaches and inlet and outlet ditches. All such material will be disposed of by burning, burying at approved locations, or otherwise removed from the site and stacked. All burning shall conform to state laws and regulations.

DRAINAGE STRUCTURES

All culverts, side ditches, and crossings shall be installed at all natural drainage ways that cross the alignment of the access road and as shown

on the plans.

Culverts shall be placed on a firm foundation and installed to the neat lines and grades indicated on the plans. The minimum diameter culvert for drain crossings shall be 24 inches.

Culverts shall be backfilled with gravel bedding (RIDOT Type III) placed around the culvert in four (4) inch layers. Thoroughly compact initial backfill around the haunches of the culvert by means of hand tamping or manually directed power tampers, while taking care not to damage or displace the culvert. Compaction of final backfill shall be accomplished by the use of vibratory plate compactors.

Culverts shall be installed to grade, and must provide satisfactory drainage with a minimum cover of 12 inches over the top of the culvert.

The outlet end of culverts shall terminate on protective riprap outlet structures as shown on the plans.

Corrugated high-density polyethylene (HDPE) pipe shall be used for culverts and shall conform to the material requirements as outlined in Material Specification 548, Corrugated Polyethylene Pipe and to the requirements as described in AASHTO M294. The pipe shall be Type S with a smooth interior and annular-corrugated exterior. If applicable, the coupling band or external snap coupler shall cover at least 2 full corrugations on each end of the pipe. Connections for corrugated HDPE pipe shall have rubber gaskets and be installed in accordance with manufacturer's recommendations.

For road grades between 2 and 4%, water bars shall be installed every 400 feet. For road grades between 4 and 8%, water bars shall be installed every 300 feet. Side ditches shall have a 1 foot minimum depth below the road surface. Water bars and side ditches shall conform to the line, grade, and section as specified on the plans. The outlet ends of water bars and side ditches shall terminate onto protective riprap outlet structures as shown on plans.

MATERIALS AND CONSTRUCTION

Common Excavation The excavation of earthen materials necessary and incidental to constructing roadway to the lines and grades as shown on plans shall be excavated from the roadway areas and dumped into place or loaded onto hauling equipment using excavators having a rated capacity of 1 CY or larger. This method of excavation is classified as common excavation.

Excavated materials shall not be used as earthfill material. All excavated material shall be disposed of offsite in accordance with all state and local laws and regulations.

All over-excavated areas shall be brought up to design subgrade elevation with compacted base course gravel material meeting the gradation requirements of RIDOT Type Ia gravel as shown on plans.

Earthfill When fill to the subgrade surface is required; the earthfill material shall meet the gradation requirements of RIDOT Type Ia gravel as shown on the plans. After stripping and/or excavating, the foundation shall be scarified or plowed to a minimum depth of 2 inches.

All foundation excavation and/or preparation shall be completed before placing fill. The fill shall be placed such that the distribution of material is essentially uniform throughout the entire fill and is free from lenses, pockets, streaks, frozen soil or layers of materials differing substantially from surrounding material. No fill shall be placed on a frozen surface.

Fill shall be placed in approximately equal horizontal layers. The earthfill material shall be placed in maximum 9 inch thick loose lifts prior to compaction. Compaction shall be accomplished by 4 passes over the entire surface layer with heavy construction equipment or other suitable compaction equipment.

Compaction of earthfill or subgrade material shall be undertaken only when the soil moisture level is adequate to permit the required degree of compaction.

Road Subgrade The roadbed shall be graded to the required elevations for subgrade preparation. The portion of the roadbed on which subgrade is to be prepared shall be loosed to a depth of 6 inches. Removal and disposal of all stones, roots and other objectionable material removed and disposed shall be completed prior to compaction. The subgrade shall then be thoroughly compacted with a pneumatic tire or sheepsfoot roller. Saturated or soft spots discovered will be removed and replaced. The subgrade shall be firm and free of frozen material.

Geotextile (Road Stabilization) Once the road subgrade has been prepared and approved by the NRCS representative, woven geotextile, Class IV, (tensile strength of 180 lbs) shall be installed as specified on the plans and in accordance with manufacturer's recommendations.

The woven geotextile shall meet the following specified requirements for Property Test Method Class IV as shown on the label.

Requirements for Woven Geotextiles

Property	Test Method	Class IV
Tensile Strength (lbs) ^{1/}	ASTM D4632 Grab Test	180 Min. in any principal direction
Elongation at Failure (%) ^{1/}	ASTM D4632 Grab Test	< 50
Puncture (lbs) ^{1/}	ASTM D4833	60 Min.
Ultraviolet Light (% Residue Tensile Strength)	ASTM D4355 (150 Hr Exposure)	70 Min.
Apparent Opening Size (AOS)	ASTM D4751	As specified, but no smaller than 0.212 mm (#70) ^{2/}
Percent Open Area (Percent)	CWO-02215-86	1.0 Min.
Permittivity (Sec ⁻¹)	ASTM D4491	0.10 Min.

1/ Minimum Average Roll Value (Weakest Principal Direction)

2/ U.S. Standard Sieve Size

Note: CWO is a USACE Reference

The geotextile shall be placed on the approved prepared surface and in accordance with the details shown on the drawings. The geotextile shall be unrolled in a direction parallel to the roadway centerline in a loose manner permitting conformation to the surface irregularities when the roadway fill material is placed on its surface. In no case shall material be dropped on uncovered geotextile from a height of more than 5 feet.

The geotextile shall be joined by overlapping a minimum of 18 inches (unless otherwise specified on the drawings) and anchored by burial in a twelve-inch deep trench and covered with the underlying earthen material. The geotextile may be temporarily secured with pins recommended or provided by the manufacturer. The pins shall be removed prior to placement of the permanent covering material.

Should the geotextile be torn or punctured, or the overlaps disturbed, as evidenced by visible geotextile damage, subgrade pumping, intrusion, or grade distortion, the backfill around the damaged or displaced area shall be restored to the original approved condition. The repair shall consist of a

patch of the exact type of geotextile being used and overlaying the existing geotextile. Geotextile panels joined by overlap shall have the patch extend a minimum of 2 feet from the edge of any damaged area.

The geotextile shall be shipped/transported in rolls which have been wrapped with a cover for protection from moisture, dust, dirt, debris, and ultraviolet light. The cover shall be maintained undisturbed to the maximum extent possible before placement. Each geotextile roll must clearly display the label or tag to clearly identify the brand, class, and the individual production run in accordance with ASTM D4873.

Before use, the geotextile shall be stored in a clean, dry location out of direct sunlight, not subject to extremes of either hot or cold temperatures, and with the manufacturer's protective cover undisturbed. Receiving, storage, and handling at the job site shall be in accordance with the requirements listed in ASTM D4873.

Road Base Course After completion of the subgrade and geotextile installation, the base course will be placed to the thickness, grade, and to the limits of road as shown on the plans. The base course gravel material shall meet the gradation requirements for RIDOT Type 1a gravel as shown on the plans and in accordance with RIDOT Kelly Blue Book, Standard Specifications for Road and Bridge Construction (December 2010), Section M.01.09 Gradation of Aggregates, Table 1. The base course material shall be placed in maximum 9 inch thick loose lifts prior to compaction. Compaction shall be accomplished by 4 passes over the entire surface layer with construction equipment or other suitable compaction equipment.

Compaction of embankment, subgrade or base course, shall be undertaken only when the soil moisture level is adequate to permit the required degree of compaction.

Road Surface Course Placement of the surface course shall be to the neat lines and grades as shown on the plans. The surface course material shall meet the gradation requirements for RIDOT Type III Gravel as shown on the plans and in accordance with RIDOT Kelly Blue Book, Standard Specifications for Road and Bridge Construction (December 2010), Section M.01.09 Gradation of Aggregates, Table 1. The surface course material shall be placed in maximum 9 inch thick loose lifts prior to compaction. Compaction shall be achieved by 4 passes over the entire surface layer with construction equipment or other suitable compaction equipment.

The road section shall be crowned to provide positive drainage.

Cut and fill slopes and road shoulders shall be stabilized in accordance with Rhode Island NRCS conservation practice standard Critical Area Planting, Code 342 or Mulching, Code 484, as appropriate.

Outlet Subgrade The subgrade surface on which the non-woven geotextile and rock riprap is to be placed shall be cut or filled and graded to the neat lines and grades as shown on plans. When fill to subgrade lines is required, it shall meet the gradation requirements of RIDOT Type Ia gravel as shown on the plans. The subgrade fill material shall be placed in maximum 9 inch thick loose lifts prior to compaction. Compaction shall be accomplished by 4 passes over the entire surface layer with construction equipment or other suitable compaction equipment.

Geotextile shall not be placed until the foundation preparation is completed and the subgrade has been inspected and approved by the NRCS representative.

Geotextile (Protective Rip Rap Outlets) Once the outlet subgrade has been prepared and approved by the NRCS representative, non-woven geotextile, Class I, shall be installed as specified on the plans and in accordance with manufacturer's recommendations.

The non-woven geotextile shall meet the following specified requirements for Property Test Method Class I as shown on the label.

Requirements for Non-Woven Geotextiles

Property	Test Method	Class I
Tensile Strength (lbs) ^{1/}	ASTM D4632 Grab Test	180 Min. in any principal direction
Elongation at Failure (%) ^{1/}	ASTM D4632	≥ 50
Puncture (lbs) ^{1/}	ASTM D4833	80 Min.
Ultraviolet Light (% residual tensile strength)	ASTM D4355 (150 Hr Exposure)	70 Min.
Apparent Opening Size (AOS)	ASTM D4751	As specified max. #40 ^{2/}
Permittivity (Sec ⁻¹)	ASTM D4491	0.70 Min.

1/ Minimum average roll value (weakest principal direction).

2/ U.S. Standard Sieve Size

3/ Heat-bonded or resin-bonded geotextile may be used for classes III and IV. They are particularly well suited to class IV. Needle-punched geotextiles are required for all other classes.

The non-woven geotextile shall be placed on the approved prepared surface and in accordance with the details shown on the drawings. The non-woven geotextile shall not be placed until it can be anchored by burial in a twelve-inch deep trench and protected with the specified covering within 48 hours or protected from exposure to ultraviolet light. In no case shall material be dropped on uncovered non-woven geotextile from a height of more than 3 feet.

The non-woven geotextile shall be joined by overlapping a minimum of 18 inches (unless otherwise specified on the drawings) and secured against the underlying foundation material. The non-woven geotextile may be temporarily secured with pins recommended or provided by the manufacturer. The pins shall be removed prior to placement of the permanent covering material.

Should the non-woven geotextile be torn or punctured, or the overlaps disturbed, as evidenced by visible geotextile damage, subgrade pumping, intrusion, or grade distortion, the backfill around the damaged or displaced area shall be restored to the original approved condition. The repair shall consist of a patch of the exact type of non-woven geotextile being used and overlaying the existing geotextile. Non-woven geotextile panels joined by overlap shall have the patch extend a minimum of 2 feet from the edge of any damaged area.

The non-woven geotextile shall be shipped/transported in rolls, which have been wrapped with a cover for protection from moisture, dust, dirt, debris, and ultraviolet light. The cover shall be maintained undisturbed to the maximum extent possible before placement. Each roll of non-woven geotextile shall be labeled or tagged to clearly identify the brand, class, and the individual production run in accordance with ASTM D4873.

Before use, the non-woven geotextile shall be stored in a clean, dry location out of direct sunlight, not subject to extremes of either hot or cold temperatures, and with the manufacturer's protective cover undisturbed. Receiving, storage, and handling at the job site shall be in accordance with the requirements listed in ASTM D4873.

Rock Riprap (Protective Outlets) Rock riprap shall not be placed until the non-woven geotextile installation has been inspected and approved by the NRCS representative.

Rock riprap shall be obtained from designated sources and meet the following gradation requirements:

Rock Gradation	
Size of Stone, inches	Percent of total weight smaller than the given size
6 to 8	100
5 to 7	85
4 to 6	50
1 to 2	15

It shall be free from dirt, clay, sand, rock fines, and other material not meeting the required gradation limits. Individual rock fragments shall be dense, sound, and free from cracks, seams, and other defects conducive to accelerated weathering. The rock fragments shall be angular to sub-rounded. The least dimension of an individual rock fragment shall not be less than one-third (1/3) the greatest dimension of the fragment. ASTM D4992 provides guidance on selecting rock from a source.

At least 30 days before rock is delivered from other than designated sources, the contractor must designate in writing the source from which rock material will be obtained and provide information satisfactory to the NRCS representative that the material meets requirements. The contractor shall provide the NRCS representative free access to the source for the purpose of obtaining samples for testing. The size and grading of the rock must be as shown in the table above.

Rock from approved sources shall be excavated, selected, and processed to meet the specified quality and grading requirements at the time the rock is installed.

Based on a specific gravity of 2.65 (typical of limestone and dolomite) and assuming the individual rock is shaped midway between a sphere and a cube, typical size/weight relationships are:

Sieve size of rock (in.)	Approx. weight of rock (lbs)	Weight of test pile (lbs)
16	300	6,000
11	100	2,000
6	15	300

If required, a gradation quality control check shall be made by the contractor and be subject to inspection by the NRCS representative. The test shall be performed at the worksite in accordance with ASTM D5519, Test Method B, Size-Range Grading, on a test pile of representative rock. The weight or size of the test pile shall be large enough to ensure a

representative gradation of rock from the source and to provide test results within five percent accuracy.

The results of the test shall be compared to the required gradation. Test pile results that do not meet the construction specifications shall be cause for the rock to be rejected. The test pile that meets contract requirements will remain on site, and used as a sample for visual comparison. The test pile shall be used as part of the last rock riprap to be placed.

The rock riprap shall be placed by equipment on the non-woven geotextile and to the depth specified on the plans. It shall be installed to the full course thickness in one operation and in such a manner as to avoid serious displacement of the underlying material. The rock for riprap shall be delivered and placed in a manner that ensures the riprap in place is reasonably homogeneous with the larger rocks uniformly distributed and firmly in contact with the smaller rocks and spalls filling the voids between the larger rocks. Some hand placing may be required to provide a neat and uniform surface and to prevent damage to any new and existing structures.