

SAFETY REGULATIONS

ALL EXCAVATION AND METHODS OF CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE MARYLAND OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (MOSHA) STANDARDS AS SET FORTH IN THE LATEST VERSION OF THE CODE OF MARYLAND REGULATIONS

LANDOWNER/PROJECT

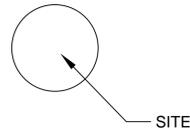
412 - GRASSED WATERWAY

468 - LINED WATERWAY OR OUTLET

(DISTRICT SOIL CONSERVATION DISTRICT)

THERE WILL BE NO CHANGES IN SPECIFICATION, DIMENSIONS, OR MATERIALS UNLESS APPROVED BY THE ENGINEER RESPONSIBLE FOR THIS DRAWING.

THE DRAWINGS ARE PREPARED COOPERATIVELY BY THE NATURAL RESOURCE CONSERVATION SERVICE FOR THE NAMED LANDOWNER. CONSTRUCTION FOUND NOT IN ACCORDANCE WITH THESE DRAWINGS AND SPECIFICATIONS SHALL VIOLATE THE COOPERATIVE AGREEMENT AND ALL DRAWINGS, SPECIFICATIONS, AND QUANTITIES ESTIMATE SHALL IMMEDIATELY BE RETURNED TO THE LOCAL NRCS OFFICE.



VICINITY MAP
N.T.S.



**Know what's below.
Call before you dig.**

"The Soil Conservation District makes no representation as to the existence or Non-existence of any utilities at the construction site. Shown on these construction drawings are those utilities which have been identified. It is the responsibility of the landowners or operators and contractors to assure themselves that no hazard exists or damage will occur to utilities"

GENERAL NOTES:

- PLEASE CONTACT THE DISTRICT SOIL CONSERVATION DISTRICT AT LEAST 3 DAYS PRIOR TO CONSTRUCTION TO ARRANGE A PRE-CONSTRUCTION MEETING @ PHONE #
- EXISTING GULLY MUST BE FILLED AND TAMPED IN 4-6" LIFTS
- A CONSERVATION TECHNICIAN SHALL VERIFY CUT/GRADE STAKES AT THE CONTRACTORS REQUEST

AS-BUILT STATEMENT

THE CONSERVATION PRACTICE(S) MEETS OR EXCEEDS NRCS STANDARDS AND SPECIFICATIONS

INSPECTED BY	SIGNATURE _____	DATE _____
CONSTRUCTION APPROVAL	SIGNATURE _____	DATE _____
VERIFIED DISTRICT CONSERVATIONIST	SIGNATURE _____	DATE _____

MM/YY	Designed	Approved _____ Date _____
	Drawn	
TRACT	Checked	Approved _____ Date _____
	City, Maryland	
LANDOWNER	Maryland Department of Agriculture	DISTRICT Soil Conservation District
412 GRASSED WATERWAY		
United States Department of Agriculture	Natural Resources Conservation Service	

MATERIALS LIST

OWNER/CONTRACTOR STATEMENT

I CERTIFY THAT THIS DESIGN HAS BEEN EXPLAINED TO ME BY A REPRESENTATIVE OF THE _____ DISTRICT _____ SOIL CONSERVATION DISTRICT, AND I UNDERSTAND THE CONTENTS. ALL CONSTRUCTION WILL BE DONE ACCORDING TO THESE PLANS AND SPECIFICATIONS. I FURTHER UNDERSTAND THAT ALL CONSTRUCTION WILL BE UNDER THE INSPECTION OF THIS OFFICE.

OWNER'S SIGNATURE _____ DATE _____

CONTRACTOR'S SIGNATURE _____ DATE _____

CONSTRUCTION NOTIFICATION
The Contractor/Owner is to notify the _____ DISTRICT _____ SOIL CONSERVATION DISTRICT at least 72 hours prior to construction to facilitate any scheduling, layout, or preliminary mobilization necessary to ensure proper construction inspection to enable appropriate certification of the project.

It is the Landowner's responsibility to obtain all County, State, and Federal permits that may be needed, and to maintain this structure and related regulations.

REVISIONS	Approved	Date
	Description	
File No.	* .DWG	
Sheet	1	of 3

PLAN VIEW

LANDOWNER	DATE				
FIELD #	TRACT				
A PRE-CONSTRUCTION MEETING WITH LANDOWNER, CONTRACTOR, AND CSD TECHNICIAN IS REQUIRED					
LAYOUT SKETCH					
PLANNED AMOUNTS					
	WIDTH	DEPTH	GRADE %	SEEDING WIDTH	MATTING WIDTH
STATION					
CERTIFIED AMOUNTS					
	WIDTH	DEPTH	GRADE %	SEEDING WIDTH	MATTING WIDTH
STATION					

MD GRASSED WW
CODE 412

Designed	Date	File No.
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Checked		
Approved		Sheet of

LENGTH _____ FT	ROCK ____ " TO ____ " D50 = ____ "
TOP WIDTH _____ FT	RIPRAP THICKNESS _____ FT
DEPTH _____ FT	FILTER CLOTH _____ SQFT (CLASS "SE" SEE TABLE)
GRADE _____ FT/FT	SEEDING _____ AC
RIPRAP _____ TONS	FILL _____ CY
	CLEARING _____ AC

TYPICAL CROSS SECTION

NOT TO SCALE

PARABOLIC ROCK
410

Designed	Date	File No.
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Approved		Sheet of

TYPICAL CROSS SECTION
NOT TO SCALE

GENERAL NOTES:

- REMOVE TOPSOIL PRIOR TO GRADING AND STOCKPILE OUTSIDE LIMITS OF WATERWAY CONSTRUCTION
- INSTALL **EXCELSIOR TYPE** EROSION CONTROL MATTING ACCORDING TO MANUFACTURE'S RECOMMENDATIONS. MATTING SHALL MEET MINIMUM SHEAR STRESS OF 1.75 LB/FT² AND MAXIMUM VELOCITIES OF 7 FT/S (SEE EROSION CONTROL MATTING DETAIL SHEET FOR INSTALLATION INSTRUCTIONS)
- EROSION CONTROL MATTING WIDTH SHALL BE A MINIMUM OF 2/3 OF THE WATERWAY WIDTH OR SHOWN AS ABOVE
- A MINIMUM OF 4" OF TOPSOIL SHALL BE PLACED ALONG ENTIRE LENGTH AND WIDTH OF CONSTRUCTED WATERWAY
- LIME, FERTILIZER AND SEED SHALL BE PLACED IN WATERWAY PRIOR TO INSTALLING EROSION CONTROL MATTING (SEE SEEDING DETAILS)
- WATERWAY SHALL BE MAINTAINED AS NEEDED TO MINIMIZE EROSION THROUGHOUT THE REQUIRED MAINTENANCE LIFE OF 10 YEARS

412-A-GRASSED WATERWAY

DRAWING NO. 412-A-GWW	
ISSUE DATE: 8/2014	

RIPRAP CONSTRUCTION SPECIFICATIONS

- All materials and construction shall be in accordance with applicable NRCS standards and construction specifications.
- Any changes in the plans or specifications must be approved by the engineer prior to being made. Changes are to be reviewed by the landowner for concurrence.
- Rock Riprap shall conform to the requirements as shown on the plans. It shall be free from dirt, clay, sand, rock fines, and other material not meeting the required gradation limits.
- The subgrade surface on which the rock riprap, filter, bedding, or geotextile is to be placed shall be cut or filled and graded to the lines and grades shown on the drawings. When fill to subgrade lines is required, it shall consist of approved material and shall conform to the requirements as shown on the plans. Rock riprap, filter, bedding, or geotextile shall not be placed until the foundation preparation is completed and the subgrade surface has been inspected and approved.
- The rock riprap shall be placed by equipment on the surface and to the depth specified. 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 one to another 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.

CHUTE ANCHOR DETAIL
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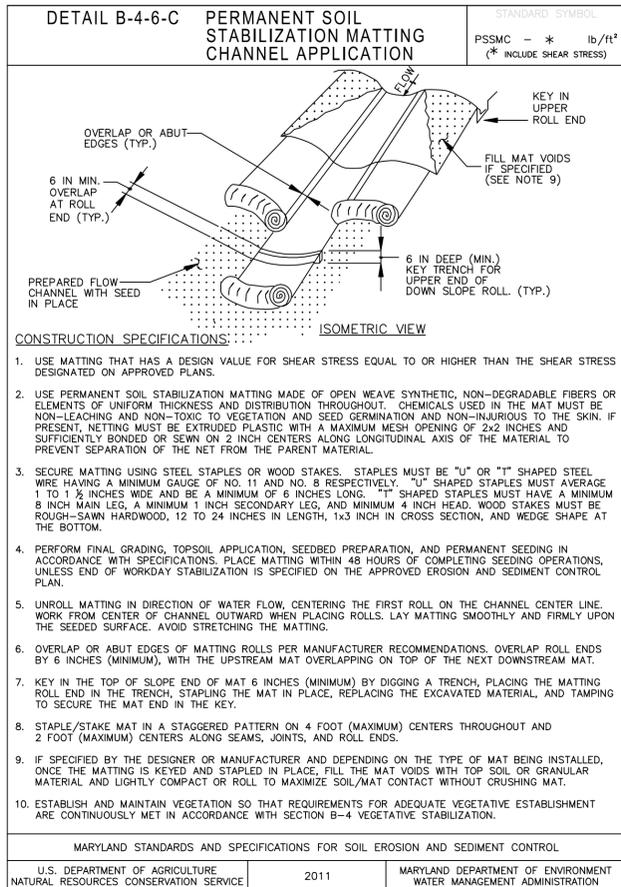
RIP RAP CHANNEL

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PROFILES/CROSS SECTIONS

MM/YY	Designed	Drawn	Checked				
LANDOWNER				TRACT			
412 GRASSED WATERWAY				Maryland Department of Agriculture			
City, Maryland				DISTRICT Soil Conservation District			
		Approved		Date		Job Class	
		Title					
United States Department of Agriculture		Natural Resources Conservation Service					
USDA							
REVISIONS	Approved						
Date	Description						
		File No.					
		*.DWG					
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LANDOWNER TRACT		PRACTICE(S)				
TOTAL AREA	AREA 1	AREA 2	AREA 3			
MATERIALS/RATE	AMOUNT PLANNED	AMOUNT APPLIED	AMOUNT PLANNED	AMOUNT APPLIED	AMOUNT PLANNED	AMOUNT APPLIED
FERTILIZER 10-20-20 500LBS/AC						
LIME - 2TONS/AC DOLOMITIC						
SEED MIXTURE (SEE BELOW)						
MULCH 2 TONS/AC						
ENTER KINDS AND AMOUNT OF SEED BELOW			NOTE: INOCULATE ALL LEGUMES			
AREA 1 NRCS SEED MIX #	AREA 2 NRCS SEED MIX #	AREA 3 NRCS SEED MIX #				
SITE PREPARATION AND OTHER PERTINENT INFORMATION: DISK ALL DISTURBED AREAS TO A DEPTH OF 4-6" CULTIPACK AFTER SEEDING			SEEDING DATES SPRING: FALL:			
PLAN APPROVED BY:		CHECKED FOR TECHNICAL COMPLIANCE BY:				
TITLE	DATE	TITLE	DATE			
		SEEDING	DRAWING NO. S-1.0			
			ISSUE DATE: 7/2014			



OPERATION AND MAINTENANCE SCHEDULE FOR LINED WATERWAY OR OUTLET

10 year maintenance life

- Mow, fertilize and lime to maintain flow capacity, grass height of 6-8 inches, plant density and to promote vigorous growth on vegetation on the sides of the lined waterway.
- Inspect at least once a year and after major storms for areas that are eroding and need re-seeding. Repair problems immediately. Fill in and reseed, following original seeding specifications. Remove sediment deposits to maintain capacity of lined waterways.
- Pavement or lining should be maintained as to prevent undermining and deterioration. Trees should be removed next pavements, as roots can cause uplift damage. Lining damage by machinery or erosion must be repaired promptly.
- Repairs should be made as soon as possible. Repairs should be made to return the structure to the same condition as it was designed.
- Avoid using waterways as turn-rows during tillage and cultivation practices.
- Prescribed burning and mowing may be appropriate to enhance wildlife values, but must be conducted to avoid peak nesting seasons and reduce winter cover.
- Control noxious weeds.
- Don't use as a field road.
- Avoid crossing with heavy equipment.

OPERATION AND MAINTENANCE SCHEDULE FOR GRADE STABILIZATION STRUCTURE

10 year maintenance life

- Removal of any blockage of trash and debris that could affect flows through the structure.
- Mow, fertilize and lime to maintain flow capacity, grass height of 6-8 inches, plant density and to promote vigorous growth.
- Inspect at least once a year and after major storms for areas that are eroding and need reseeded. Repair problems immediately. Fill in and reseed, following original seeding specifications.
- Maintain the width of grassed area when tilling and planting adjacent to structure.
- Do not use grassed area or top of berm as a road. Vehicle tire tracks can form gullies.
- Check material used in the structure for deterioration or failure. Includes rock used for outlet protection.
- Repairs should be made as soon as possible. Repairs should be made to return the structure to the same condition as it was designed.
- Inspect pipe structures annually, secure anti-vortex devices, trash racks and/or rodent guards in place and make sure they are functioning properly.

OPERATION AND MAINTENANCE SCHEDULE FOR GRASSED WATERWAY

10 year maintenance life

- Mow, fertilize and lime to maintain flow capacity, grass height of 6-8 inches, plant density and to promote vigorous growth.
- Inspect at least once a year and after major storms for areas that are eroding and need reseeded. Repair problems immediately. Fill in and reseed, following original seeding specifications.
- Maintain the width of grassed waterway when tilling and planting adjacent to the waterways.
- Lift farming implements out of the ground when crossing the waterway.
- Do not use grassed waterway as a road. Vehicle tire tracks can form gullies.
- Establish crop row patterns perpendicular to the waterway where possible. It is not recommended to plant end rows along the sides of the waterway unless no-till planting.
- Nutrients shall be applied to grassed waterway at a rate of 2 tons/ac of lime and 500lb/ac of 10-20-20 fertilizer.
- Crop herbicide applications shall NOT be applied within the grassed waterway.
- Repairs should be made as soon as possible. Repairs shall be made to return the structure to the same condition as it was designed.
- Inspect and remove all debris or sediment buildup from outlet pipes and rock lined inlets or outlets.

If grassed waterway is located in a pasture follow steps 1 through 10 above and also the following:

- Grassed waterway shall not be grazed during the first growing season.
- Grassed waterway shall be grazed to maintain a grass height of 4-6 inches.
- At least one month prior to the first killing frost animals shall be removed from waterway to maintain a grass height of 4-6 inches throughout the winter. Animals can have access to grassed waterway at beginning of next growing season when firm.

STATE HIGHWAY ADMINISTRATION GEOTEXTILE REQUIREMENTS						
Maryland Application Class	Type of Geotextile	Grab Strength Lb D 4632	Puncture Strength Lb D 4833	Permittivity Sec ⁻¹	Apparent Opening Size, Max Mm D 4751	Trapezoid Tear Strength Lb D 4533
SD	NONWOVEN	160	50	0.50	0.43	55
	WOVEN MONOFILAMENT	250	90	0.50	0.43	90
SD	NONWOVEN	160	50	0.20	0.25	55
	WOVEN MONOFILAMENT	250	90	0.20	0.25	90
PE	NONWOVEN	200	80	0.70	0.43	80
	WOVEN MONOFILAMENT	250	90	0.70	0.43	90
FE	NONWOVEN	200	80	0.20	0.25	80
	WOVEN MONOFILAMENT	250	90	0.20	0.25	90
FE	NONWOVEN	200	80	0.10	0.22	80
	WOVEN	250	90	0.10	0.22	90
SE	NONWOVEN	200	80	0.20	0.30	80
	WOVEN	250	90	0.20	0.30	90
ST	WOVEN	300*	110	0.05	0.15**	110
F	WOVEN	100	-	0.05	0.00	-
E	NONWOVEN	60	30	0.05	0.30	30

Note: 1 All property values are based on minimum average roll values in the weakest principle direction, except for apparent opening size.
Note: 2 The ultraviolet stability shall be 80 percent after 500 hours of exposure for all classes, except Class F, which shall be 70 percent (D 4355).
* Minimum 15 percent elongation.
** This is a minimum apparent opening size, not a maximum.

MM/YY	Designed	Drawn	Checked
LANDOWNER 412 GRASSED WATERWAY TRACT			
City, Maryland			
Maryland Department of Agriculture DISTRICT Soil Conservation District			
United States Department of Agriculture		Natural Resources Conservation Service	
REVISIONS	Date	Description	Approved
File No.		Date	
*.DWG		Job Class	
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