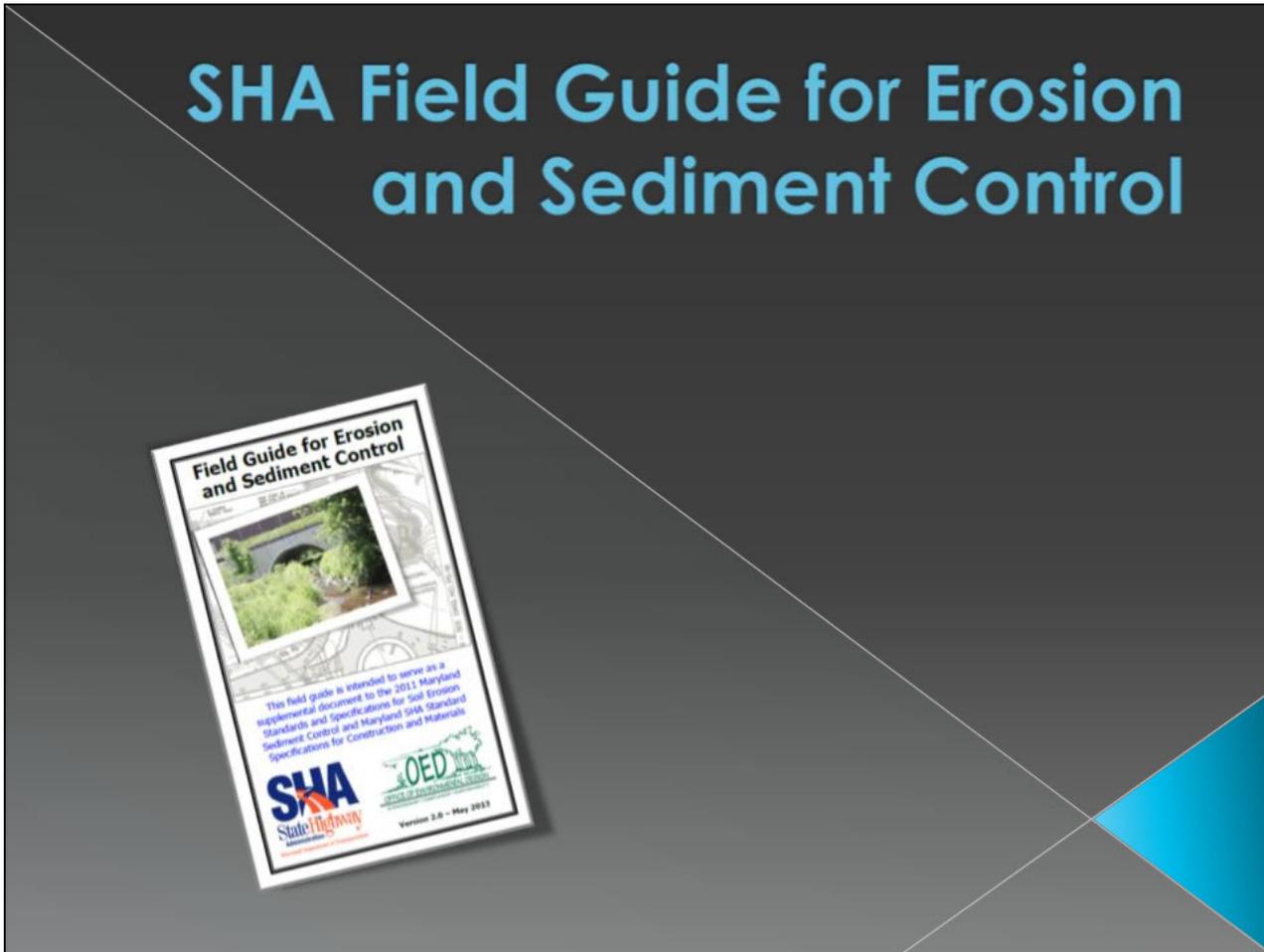


Slide 1 - SHA Field Guide



Slide notes

Now let's take some time to discuss some key elements of the Erosion and Sediment Control process on a construction project.

Notes

Slide 2 - 2011 MDE Specifications

MDE

MARYLAND MODEL EROSION AND SEDIMENT CONTROL ORDINANCE
FEBRUARY 2012

2011 Maryland Standards and Specifications for Soil Erosion and Sediment Control
December 2011

Maryland Department of the Environment
Water Management Administration
in association with
Natural Resources Conservation Service
and
Maryland Association of Soil Conservation Districts

MARYLAND
DEPARTMENT OF THE ENVIRONMENT

Maryland Department of the Environment
1800 Washington Boulevard • Baltimore, MD 21230-1718
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MDE
Martin O'Malley, Governor
Anthony G. Brown, Lt. Governor
Robert M. Summers, Secretary

1800 Washington Blvd.
Baltimore, MD 21230
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www.mde.state.md.us

Slide notes

All of the Erosion and Sediment control practices on S.H.A. construction projects are based on the M.D.E. Standards and specification for soil erosion and sediment control. A prerequisite of taking this training is that you must already possess a Green Card Certification from M.D.E. The most recent update to the regulations that govern E and S control practices in Maryland are outlined in the February 2012 release of the Maryland model erosion and sediment control ordinance.

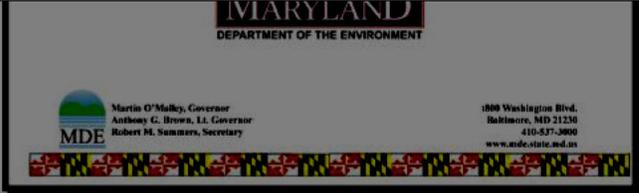
Notes

Slide 3 - 4.1




4.1 Review and Approval of Erosion and Sediment Control Plans

- (1) Any plans that receive final approval after January 9, 2013 must be in compliance with the requirements of this Ordinance and the Standards and Specifications.
- (2) A plan that receives final approval by January 9, 2013 may be reapproved under its existing conditions if grading activities have begun on the site by January 9, 2015, with the exception of stabilization requirements.
- (3) Stabilization practices on all sites must be in compliance with the requirements of this Ordinance and the Standards and Specifications by January 9, 2013, regardless of when an approved erosion and sediment control plan was approved.

Slide notes

Section 4 point 1 of the 2012 Ordinance states that all construction projects that receive final plan approval after January 9, 2013 must be in compliance. This means those plans must be based upon the 2011 M.D.E Specifications. Also note that as of January 9, 2013 all sites, regardless of when plan approval occurred or when construction began must now adhere to the 3 and 7 day stabilization requirements.

Notes

Slide 7 - 308.01.02

308.01.02 Standards and Specifications. Construct and maintain the erosion and sediment control measures and devices in accordance with the latest Maryland Department of the Environment (MDE) Erosion and Sediment Control and Stormwater Management regulations, “Maryland Standards and Specifications for Soil Erosion and Sediment Control”, “Maryland Stormwater Design Manual, Volumes I and II”, “SHA Field Guide for Erosion and Sediment Control”, and as specified in the Contract Documents. Keep a copy of the latest “Maryland Standards and Specifications for Soil Erosion and Sediment Control” on the site at all times. Where details differ from the MDE Standards and Specifications and the SHA Field Guide, use the details from then Field Guide.

A field guide related to the 2011 MDE Specifications has been developed

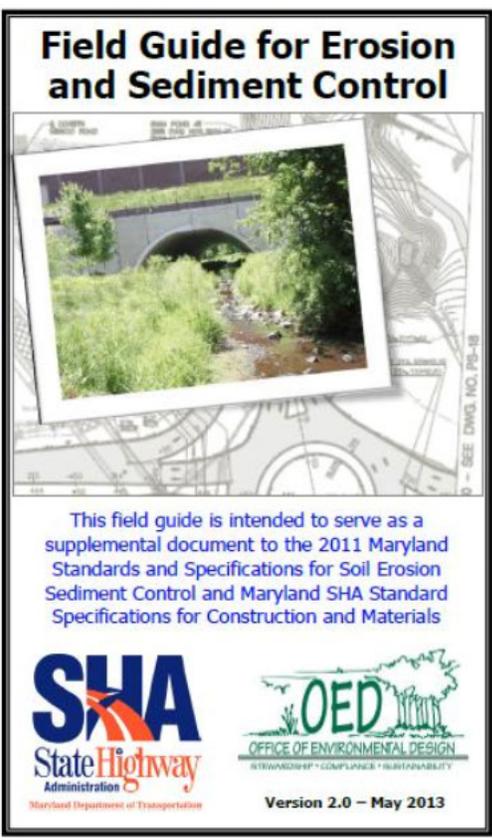
Slide notes

With the introduction of the 2011 M.D.E. erosion and sediment control specifications S.H.A. has developed a corresponding field guide. As stated in the S.H.A. construction specifications when there is a difference between the S.H.A field guide and the M.D.E. specifications, the field guide governs. The reason for this is that S.H.A. standards and specs may sometime exceed those of M.D.E.

Notes

Slide 8 - Field Guide

308.01.02 Standard erosion and sediment control in accordance with the latest Maryland (MDE) Erosion and Sediment Control Standards and Specifications, “Maryland Stormwater Management Regulations, “Maryland Sediment Control”, and II”, “SHA Field Guide for Erosion and Sediment Control” on the site at all times. Where details differ from the M.D.E. Specifications and Specifications and the SHA Field Guide.



Field Guide for Erosion and Sediment Control

This field guide is intended to serve as a supplemental document to the 2011 Maryland Standards and Specifications for Soil Erosion Sediment Control and Maryland SHA Standard Specifications for Construction and Materials

SHA
State Highway Administration
Maryland Department of Transportation

OED
OFFICE OF ENVIRONMENTAL DESIGN
STRAIGHTFORWARD * COMPLIANCE * SUSTAINABILITY

Version 2.0 - May 2013

Slide notes

The S.H.A. field guide for erosion and sediment control details all of the standard E and S controls utilized on administration construction projects. The guide is formatted to give the control detail along with a representative picture. The control details include both construction and maintenance requirements for each control. This training will not cover all of the control details as they were discussed in depth as part of the M.D.E. Green Card training you have already completed. This training will however review those details that differ from M.D.E. specifications, the differences are emphasized in the guide by placing the information in a red text as will be seen in the following slides.

Notes

Slide 9 - TOC

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B-4-6-C	<small>PS20C - * 12/12" (* INCH DEEP STRIPS)</small>	Perm. Soil Stabilization Matting - Channel Application
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C-8		Mountable Berm
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Slide notes

The field guide is separated into sections based on the 2011 M.D.E. specifications. The Section letter and number will correspond to the same details that they relate to in the M.D.E. publication.

Section A is a description of the Quality Assurance Program and associated rating system.

Section B relates to grading and stabilization, and Section C relates to water conveyance devices.

Notes

Page 9 of 20

Slide 10 - TOC

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Slide notes

Section D relates to Erosion control practices.

Section E covers filtering practices.

Section F details Dewatering methods, and Section G details sediment trapping methods.

Notes

Slide 11 - TOC / Section A

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Quality Assurance Ratings

308.01.03

A Quality Assurance Inspector will inspect each project every 2 weeks to ensure compliance with the approved Erosion and Sediment Control Plan. The scores will be reported on form No. OOC61, Erosion and Sediment Control Field Investigation Report. The Quality Assurance Inspector will use the scores to determine the following ratings:

SCORE	RATING
≥ 90	A
80 - 89.9	B
70 - 79.9	C
60 - 69.9	D
< 60	F

A RATING: The project is in compliance. Minor corrective action may be necessary.

B RATING: The project is in compliance; however, corrective action is necessary.

C RATING: The project is in compliance; however, deficiencies noted require corrections. Shutdown conditions described elsewhere herein could arise quickly. Project will be reinspected within 72 hours.

D RATING: The project is in non-compliance. The Administration will shut down all earthwork operations. All work efforts shall focus on correcting erosion and sediment control deficiencies. The project will be reinspected within 72 hours. All required corrective actions shall be completed within the 72 hour period for the project to be upgraded to a 'B' rating. Failure to upgrade the project from a 'D' rating to a 'B' or better rating will result in the project being rated an 'F'. Liquidated damages will be imposed for each day the project has a 'D' rating. Refer to Shutdown elsewhere in this Specification for additional requirements.

F RATING: The project is in non-compliance. An 'F' rating indicates a score less than 60 or the appropriate permits and approvals have not been obtained; or that the limit of disturbance has been exceeded, or that wetlands, wetland buffers, Waters of the United States (WUS), floodplains, and tree protection areas as specified in Section 107 have been encroached upon; or that work is not proceeding according to the approved Erosion and Sediment Control Plan and schedules. The Administration will shut down the entire project until the project receives a 'B' or better rating. Focus all work efforts on correcting erosion and sediment control deficiencies. Liquidated damages will be imposed for each day the project has an 'F' rating.

Slide notes

Section H is reserved for miscellaneous practices.

Appendix A is a list for the troubleshooting and maintenance of installed E and S controls, and Appendix B outlines materials and shows some materials examples.

Notes

Slide 12 - Section A

Shutdowns. If a project is rated 'C', correct all deficiencies within 72 hours. The project will be reinspected at the end of this period. If the deficiencies have not been satisfactorily corrected, the project will be rated 'D' and all earthwork operations will be shut down until the project is rated 'B' or better.

If consecutive 'C' ratings are received, the Contractor will be alerted that their overall effort is marginal and a shutdown of all earthwork operations is imminent if erosion and sediment control efforts do not substantially improve within the next 72 hours. The project will be reinspected at the end of this period. If the deficiencies are not satisfactorily corrected or other deficiencies are identified that result in a score of less than 80 and not below 60 on Form No. OOC61, a 'D' rating will be given and all earthwork operations will be shut down.

If disregard for correcting these deficiencies is evident, an 'F' rating will be given, and the entire project will be shut down until the project receives a 'B' or better rating. When degradation to a resource could occur, or if the Contractor is unresponsive, the Administration may elect to have these corrective actions performed by another contractor or by Administration maintenance staff. All costs associated with this work will be billed to the original Contractor in addition to liquidated damages.

Incentive Payments. When specified in the Contract Documents, the Administration may include incentive payments to the Contractor. Starting at the Notice to Proceed, an Incentive Payment will be made for a rating quarter consisting of 3 months when; at least four inspections were performed by the Quality Assurance Inspector and an average score equal to or greater than 85 for the entire rating quarter is received. The quarterly incentive payment will be made within 80 days after the end of the rating quarter. No incentive will be paid for partial quarters or for quarters with less than four inspections. No incentives will be paid for any quarter in which a 'D' or 'F' rating is received. When a project receives no 'D' or 'F' ratings and the overall average score is equal to or greater than 85, the final incentive payment will be made at final project closeout. If a time extension is granted, additional quarterly incentive payments will be drawn from the final incentive payment.

Liquidated Damages. Whenever a project is rated 'D' or 'F', the Administration will assess Liquidated Damages. Liquidated Damages shall be paid within 30 days from the date of notification to the Contractor.

Payments will not be allowed to accrue for consideration at final project closeout.

The second time that a project is rated 'F', the Erosion and Sediment Control Training Certificate issued by the Administration will be immediately revoked from the project superintendent and the Erosion and Sediment Control Manager for at least a six month period and until successful completion of the Administration's Erosion and Sediment Control Certification Program. Neither the project superintendent nor the Erosion and Sediment Control Manager will be allowed to oversee the installation and maintenance of erosion and sediment controls during the period the certification is revoked on any project of the Administration. Replace the project superintendent and the Erosion and Sediment Control Manager with certified personnel. Work may not commence until the certified personnel are in place.

308.01.04 Incentive Payments and Liquidated Damages. The Contract Documents will specify the amounts of incentive payments and liquidated damages that apply.

Stream Restriction Periods

Stream closure dates for fish spawning or migration within waterways are as follows:

Use I and IP	March 1 – June 15
Use II	June 1 – September 30
	December 16 – March 14
Use III and IIIP	October 1 – April 30
Use IV	March 1 – May 31
SAV	April 15 – October 15

All instream work is prohibited during these periods.

Quick Drainage Area Calculation Reference

(Approximations)

¼ Acre = 104' X 104'
½ Acre = 148' X 148'
¾ Acre = 181' X 181'
1 Acre = 209' X 209'

Slide notes

Section A of the guide also includes the stream restriction periods and a quick drainage area reference. Care must be taking to avoid activity in a stream during a stream restriction period. Review your contract documents to know if a restriction applies to any of the waterways associated with your project.

Notes

Slide 13 - Silt Fence

Silt Fence

STANDARD SYMBOL

ELEVATION

CROSS SECTION

JOINING TWO ADJACENT SILT FENCE SECTIONS (TOP VIEW)

CONSTRUCTION SPECIFICATIONS

- USE WOOD POSTS 1 1/2 X 1 1/2 X 3/8 INCH (MINIMUM) SQUARE CUT OF SOUND QUALITY HARDWOOD, AS AN ALTERNATIVE TO WOODEN POST USE STANDARD "F" OR "V" SECTION STEEL POSTS WEIGHING NOT LESS THAN 1 POUND PER LINEAR FOOT.
- USE 42 INCH MINIMUM POSTS DRIVEN 16 INCH MINIMUM INTO GROUND NO MORE THAN 6 FEET APART.
- USE WOVEN SLIT FILM GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS AND FASTEN GEOTEXTILE SECURELY TO UPSLOPE SIDE OF FENCE POSTS WITH WIRE TIES OR STAPLES AT TOP AND MID-SECTION.

Silt Fence

E-1

- PROVIDE MANUFACTURER CERTIFICATION TO THE AUTHORIZED REPRESENTATIVE OF THE INSPECTION/ENFORCEMENT AUTHORITY SHOWING THAT THE GEOTEXTILE USED MEETS THE REQUIREMENTS IN SECTION H-1 MATERIALS.
- EMBED GEOTEXTILE A MINIMUM OF 8 INCHES VERTICALLY INTO THE GROUND. BACKFILL AND COMPACT THE SOIL ON BOTH SIDES OF FABRIC.
- WHERE TWO SECTIONS OF GEOTEXTILE ADJOIN: OVERLAP, TWIST, AND STAPLE TO POST IN ACCORDANCE WITH THIS DETAIL.
- EXTEND BOTH ENDS OF THE SILT FENCE A MINIMUM OF FIVE HORIZONTAL FEET UPSLOPE AT 45 DEGREES TO THE MAIN FENCE ALIGNMENT TO PREVENT RUNOFF FROM GOING AROUND THE ENDS OF THE SILT FENCE.
- REMOVE ACCUMULATED SEDIMENT AND DEBRIS WHEN BULGES DEVELOP IN SILT FENCE OR WHEN SEDIMENT REACHES 25% OF FENCE HEIGHT. REPLACE GEOTEXTILE IF TORN IF UNDERMINING OCCURS. REINSTALL FENCE.

Notes:

Slide notes

When placing Silt Fence on an S.H.A. project there are differences between the S.H.A. specification and the the M.D.E. Spec. As stated earlier the field guide will highlight the differences in red text. You can see on this page that the Silt fence on administration projects must be 22 inches high. The post length and height also differs due to the fabric height requirement.

Notes

Slide 14 - Super Silt Fence

Super Silt Fence

E-3

STANDARD SYMBOL

SSF

TO FT MAX.

7 GAUGE TENSION WIRE (SEE NOTE 8)

GROUND SURFACE

34 IN MIN.

8 IN MIN.

36 IN MIN.

2 1/2 IN DIAMETER GALVANIZED STEEL OR ALUMINUM POSTS

GALVANIZED CHAIN LINK FENCE WITH WOVEN SLIT FILM GEOTEXTILE

ELEVATION

CHAIN LINK FENCING

WOVEN SLIT FILM GEOTEXTILE

FLOW

EMBED GEOTEXTILE AND CHAIN LINK FENCE 8 IN MIN. INTO GROUND

CROSS SECTION

CONSTRUCTION SPECIFICATIONS

1. INSTALL 2 1/2 INCH DIAMETER GALVANIZED STEEL POSTS OF 0.095 INCH WALL THICKNESS AND SIX FOOT LENGTH SPACED NO FURTHER THAN 10 FEET APART. DRIVE THE POSTS A MINIMUM OF 36 INCHES INTO THE GROUND.
2. FASTEN 7 GAUGE OR HEAVIER GALVANIZED CHAIN LINK FENCE (2 1/2 INCH MAXIMUM OPENING) 42 INCHES IN HEIGHT SECURELY TO THE FENCE POSTS WITH WIRE TIES OR HUD RINGS.
3. FASTEN WOVEN SLIT FILM GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS, SECURELY TO THE UPSLOPE SIDE OF CHAIN LINK FENCE WITH TIES SPACED EVERY 24 INCHES AT THE TOP AND MID SECTION. EMBED GEOTEXTILE AND CHAIN LINK FENCE A MINIMUM OF 8 INCHES INTO THE GROUND.
4. WHERE ENDS OF THE GEOTEXTILE COME TOGETHER, THE ENDS SHALL BE OVERLAPPED BY 8 INCHES, FOLDED, AND STAPLED TO PREVENT SEDIMENT BY PASS.
5. EXTEND BOTH ENDS OF THE SUPER SILT FENCE A MINIMUM OF FIVE HORIZONTAL FEET UPSLOPE AT 45 DEGREES TO THE MAIN FENCE ALIGNMENT TO PREVENT RUNOFF FROM GOING AROUND THE ENDS OF THE SUPER SILT FENCE.
6. PROVIDE MANUFACTURER CERTIFICATION TO THE INSPECTION/ENFORCEMENT AUTHORITY SHOWING THAT GEOTEXTILE USED MEETS THE REQUIREMENTS IN SECTION H-1 MATERIALS.
7. REMOVE ACCUMULATED SEDIMENT AND DEBRIS WHEN BULGES DEVELOP IN FENCE OR WHEN SEDIMENT REACHES TOP OF FENCE HEIGHT. REPLACE GEOTEXTILE IF TORN. IF UNDERMINING OCCURS, REINSTALL CHAIN LINK FENCING AND GEOTEXTILE.
8. RUN A 7 GAUGE TENSION WIRE CONTINUOUSLY BETWEEN POSTS NEAR THE TOP OF THE FABRIC. ATTACH THE WIRE TO THE FABRIC WITH 1000 TENSILE FACTOR TIES AT 18 IN. INTERVALS.

Super Silt Fence

E-3

Notes:

Slide notes

Super Silt Fence Requires a 7 gauge top tension wire to be fastened to the fence. Without this tension wire the control is not installed correctly. Notice that not only is the detail highlighted in red but also the corresponding notes.

Notes

Slide 15 - TGOS

Temporary Gabion Outlet Structure E-8

STANDARD SYMBOL
TGOS

MAXIMUM DRAINAGE AREA = 15 ACRE

ELEVATION

PLAN

SECTION A-A

Temporary Gabion Outlet Structure E-8

EARTH DIKE TRANSITION

NOTES:

1. PROVIDE TRANSITION LENGTH AND HEIGHT AS SPECIFIED ON PLAN. HEIGHT OF TRANSITION EARTH DIKE MUST EXCEED 4 INCH MINIMUM FREEBOARD ABOVE TOP OF GABION AND EXTEND AT THIS ELEVATION UNTIL IT INTERCEPTS THE TOP OF ADJOINING EARTH DIKE.
2. PROVIDE POSITIVE DRAINAGE ALONG EARTH DIKE TO GABION OUTLET STRUCTURE.
3. COMPACT FILL.
4. SHAPE EARTH DIKE TO LINE, GRADE, AND CROSS SECTION AS SPECIFIED ON PLAN. BANK PROJECTIONS OR IRREGULARITIES ARE NOT ALLOWED.

CONSTRUCTION SPECIFICATIONS

1. PROVIDE STORAGE VOLUME AS SPECIFIED ON APPROVED PLANS.
2. USE BASKETS MADE OF 11 GAUGE WIRE OR HEAVIER.
3. USE NONWOVEN AND WOVEN MONOFLAMENT GEOTEXTILES AS SPECIFIED IN SECTION H-1 MATERIALS.
4. INSTALL GABIONS IN ACCORDANCE WITH MANUFACTURER RECOMMENDATIONS.
5. EMBED THE GABION OUTLET STRUCTURE INTO THE SOIL A MINIMUM OF 9 INCHES. PROVIDE NONWOVEN GEOTEXTILE UNDER ALL GABIONS.
6. FILL GABION BASKETS WITH CLEAN 4 TO 7 INCH STONE OR EQUIVALENT RECYCLED CONCRETE WITHOUT REBAR OR WIRE MESH.
7. MAKE THE WEIR CREST OF THE GABION OUTLET STRUCTURE 9 INCHES LOWER THAN THE TOP OF THE ADJACENT GABIONS.
8. PROVIDE A MINIMUM WEIR CREST OF 6 FEET.
9. ATTACH WOVEN MONOFLAMENT GEOTEXTILE TO THE UPSTREAM FACE OF GABION BASKETS AND COVER WITH 4 TO 7 INCH STONE.
10. REMOVE SEDIMENT WHEN IT HAS ACCUMULATED TO WITHIN 12 INCHES OF THE WEIR CREST. REPLACE GEOTEXTILE AND STONE FACING WHEN STRUCTURE CEASES TO FUNCTION. MAINTAIN LINE, GRADE, AND CROSS SECTION.
11. UPON REMOVAL OF GABION OUTLET STRUCTURE, GRADE AREA FLUSH WITH EXISTING GROUND, WITHIN 24 HOURS STABILIZE DISTURBED AREA WITH TOPSOIL, SEED, AND MULCH, OR AS SPECIFIED ON APPROVED PLAN.

Slide notes

A temporary gabion outlet structure is designed to handle a large drainage area and therefore is specifically designed for each site or project. Always review the plan details to ensure the proper construction of this device. Note that the fabric is to be placed along the front of the control at the elevation of the weir.

Notes

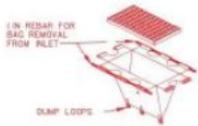
Slide 16 - Catch Basin Insert

Catch Basin Insert

STANDARD SYMBOL



MAXIMUM DRAINAGE AREA = 1/4 ACRE



ISOMETRIC



CONSTRUCTION SPECIFICATIONS

- LIFT GRATE AND PLACE WOVEN POLYPROPYLENE GEOTEXTILE INSERT IN POSITION SO THAT THE GEOTEXTILE FORMS A BASKET SHAPE WITHIN THE INLET. LEAVE APPROXIMATELY 2 INCHES OF THE FABRIC OUTSIDE THE FRAME.
- THIS TYPE OF PROTECTION MUST BE INSPECTED FREQUENTLY AND THE GEOTEXTILE INSERT REPLACED OR CLEANED WHEN CLOGGED WITH SEDIMENT.
- TO REMOVE CATCH BASIN INSERT, PLACE REBAR THROUGH THE LIFTING LOOPS ON EACH SIDE OF THE SACK.
- THE GEOTEXTILE WILL BE MANUFACTURED FROM A WOVEN POLYPROPYLENE GEOTEXTILE THAT MEETS OR EXCEEDS THE FOLLOWING SPECIFICATIONS:

PROPERTIES	TEST METHOD	UNITS
GRAB TENSILE STRENGTH	ASTM D-4632	300 LBS
GRAB TENSILE ELONGATION	ASTM D-4632	20%
PUNCTURE	ASTM D-4633	120 LBS
MELLEN BURST	ASTM D-3786	800 PSI
TRAPEZOIDAL TEAR	ASTM D-4533	120 LBS
UV RESISTANCE	ASTM D-4305	80%
APPARENT OPENING SIZE	ASTM D-4876	40 US SIEVE
FLOW RATE	ASTM D-449	40 GAL/MIN/SQ.FT.
PERMEABILITY	ASTM D-449	0.55 SEC-1

- INSPECT AND PROVIDE NECESSARY MAINTENANCE PERIODICALLY AND AFTER EACH RAIN EVENT.

Catch Basin Insert



Notes:

Slide notes

A catch basin insert is a control that is not in the M.D.E. specifications. This control is an alternative for use in high traffic situations, remember that approval must be given and documented as this would be a modification to the plans.

Notes

Slide 17 - Concrete Washout

Onsite Concrete Washout Structure

STANDARD SYMBOL

SECTION A-A

EXCAVATED WASHOUT STRUCTURE

SECTION B-B

WASHOUT STRUCTURE WITH WOOD FLANKS

SECTION B-B

NOTE: CAN BE TWO STAKED BALES OR PARTIALLY EXCAVATED TO REACH 3 FT DEPTH

WASHOUT STRUCTURE WITH STRAW BALES

H-6 Onsite Concrete Washout Structure

H-6

CONSTRUCTION SPECIFICATIONS

1. LOCATE WASHOUT STRUCTURE A MINIMUM OF 30 FEET AWAY FROM OPEN CHANNELS, STORM DRAIN PIPES, SENSITIVE AREAS, WETLANDS, BUFFERS AND WATER COURSES AND AWAY FROM CONSTRUCTION TRAFFIC.
2. SIZE WASHOUT STRUCTURE FOR VOLUME NECESSARY TO CONTAIN WASH WATER AND SOLIDS AND MAINTAIN AT LEAST 4 INCHES OF FREEBOARD. TYPICAL DIMENSIONS ARE 10 FEET X 10 FEET X 3 FEET DEEP.
3. PREPARE SOIL BASE FREE OF ROCKS OR OTHER DEBRIS THAT MAY CAUSE TEARS OR HOLES IN THE LINER. FOR LINER, USE 10 MIL OR THICKER UV RESISTANT, IMPERMEABLE SHEETING, FREE OF HOLES AND TEARS OR OTHER DEFECTS THAT COMPROMISE IMPERMEABILITY OF THE MATERIAL.
4. PROVIDE A SIGN FOR THE WASHOUT IN CLOSE PROXIMITY TO THE FACILITY.
5. KEEP CONCRETE WASHOUT STRUCTURE WATER TIGHT. REPLACE IMPERMEABLE LINER IF DAMAGED (E.G., BURST OR PUNCTURED). EMPTY OR REPLACE WASHOUT STRUCTURE THAT IS 75 PERCENT FULL, AND DISPOSE OF ACCUMULATED MATERIAL PROPERLY. DO NOT REUSE PLASTIC LINER. WET-VACUUM STORED LIQUIDS THAT HAVE NOT EVAPORATED AND DISPOSE OF IN AN APPROVED MANNER. PRIOR TO FORECASTED RAINSTORMS, REMOVE LIQUIDS OR COVER STRUCTURE TO PREVENT OVERFLOWS. REMOVE HARDENED SOLIDS, WHOLE OR BROKEN UP, FOR DISPOSAL OR RECYCLING. MAINTAIN RUNOFF DIVERSION AROUND EXCAVATED WASHOUT STRUCTURE UNTIL STRUCTURE IS REMOVED.
6. CONCRETE BARRIER MAY BE UTILIZED IN LIEU OF STRAW BALES OR WOOD FRAME TO BUILD THE WASHOUT FACILITY.

Notes:

Slide notes

A concrete washout structure is required when concrete is delivered to a construction project and the equipment needs to be washed out. There are several methods for constructing this facility. Notice note 6, on administration projects the structure may also be constructed out of concrete jersey barrier so long as all of the other requirements can be met.

Notes

Slide 18 - Materials

Appendix B

Materials Tables

Table B.1: Geotextile Fabrics

PROPERTY	TEST METHOD	WOVEN SLIT FILM GEOTEXTILE		WOVEN MONOFILAMENT GEOTEXTILE		NONWOVEN GEOTEXTILE	
		MD	CD	MD	CD	MD	CD
Grab Tensile Strength	ASTM D-4632	200 lb	300 lb	370 lb	230 lb	200 lb	300 lb
Grab Tensile Elongation	ASTM D-4632	15%	10%	15%	15%	50%	50%
Trapezoidal Tear Strength	ASTM D-4533	55 lb	55 lb	100 lb	60 lb	60 lb	100 lb
Puncture Strength	ASTM D-5341	450 lb		900 lb		450 lb	
Apparent Opening Size ²	ASTM D-4751	U.S. Sieve 30 (0.59 mm)		U.S. Sieve 70 (0.21 mm)		U.S. Sieve 70 (0.21 mm)	
Permeability	ASTM D-4491	0.05 sec ⁻¹		0.28 sec ⁻¹		1.1 sec ⁻¹	
Ultraviolet Resistance Retained at 500 hours	ASTM D-4355	70% strength		70% strength		70% strength	

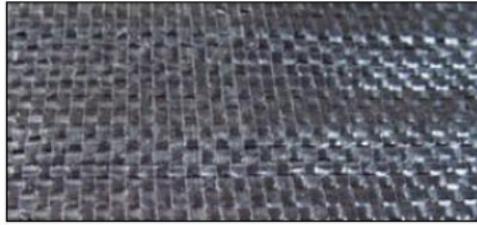
¹ All numeric values except apparent opening size (AOS) represent minimum average roll values (MARV). MARV is calculated as the typical minus two standard deviations. MD is machine direction, CD is cross direction.

² Values for AOS represent the average maximum opening.

Geotextiles must be evaluated by the National Transportation Product Evaluation Program (NTPED) and conform to the values in Table B.1.

The geotextile must be inert to commonly encountered chemicals and hydrocarbons and must be rot and mildew resistant. The geotextile must be manufactured from fibers consisting of long chain synthetic polymers and composed of a minimum of 95 percent by weight of polyolefins or polyesters, and formed into a stable network so the filaments or yarns retain their dimensional stability relative to each other, including shrinkage.

When more than one section of geotextile is necessary, overlap the sections by at least one foot. The geotextile must be pulled taut over the applied surface. Equipment must not run over exposed fabric. When placing spray on geotextile, do not exceed a one foot deep height.



Woven Slit Film Geotextile



Woven Monofilament Geotextile



Non-Woven Geotextile

Slide notes

Appendix B shows the M.D.E. approved materials and a photo representation to help in identifying these fabrics when they are delivered to the site. As this is only a visual representation of these materials, proper S.H.A. material approval documentation must be supplied with these materials.

Notes

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Table H.2: Stone Size

TYPE	SIZE RANGE	d_{60}	d_{40}	AASHTO	MIDSIZE WEIGHT ¹
NUMBER 5 ²	3/8 to 1 1/2 inch	3/8 in	1 1/2 in	M-45	N/A
NUMBER 1	2 to 3 inch	2 1/2 in	3 in	M-45	N/A
REPAV ³ (CLASS 0)	4 to 7 inch	5 1/2 in	7 in	N/A	N/A
CLASS I	N/A	9 1/2 in	15 in	N/A	40 lb
CLASS II	N/A	16 in	24 in	N/A	300 lb
CLASS III	N/A	23 in	34 in	N/A	600 lb

¹ This classification is to be used on the upstream face of stone outlets and check dams.

² This classification is to be used for gabions.

³ Optimum gradation is 50 percent of the stone being above and 50 percent below the median.

Stone must be composed of a well graded mixture of stone sized so that fifty (50) percent of the pieces by weight are larger than the size determined by using the chart. A well graded mixture, as used herein, is defined as a mixture composed primarily of larger stone sizes but with a sufficient mixture of other sizes to fill the smaller voids between the stones. The diameter of the largest stone in such a mixture must not exceed the respective d_{60} selected from Table H.2. The d_{60} refers to the median diameter of the stone. This is the size for which 60 percent, by weight, will be smaller and 40 percent will be larger.

Note: Recycled concrete equivalent may be substituted for all stone classifications for temporary control measures only. Concrete broken into the sizes meeting the appropriate classification, containing no steel reinforcement, and having a minimum density of 150 pounds per cubic foot may be used as an equivalent.

Table H.3: Compost

Parameters ¹	Acceptable Range
pH	5.0 - 8.5
Moisture content	30% - 60%, wet weight basis
Organic matter content	25% - 65%, dry weight basis
Particle size	% passing a selected mesh size, dry weight basis 3 in (75 mm), 100% passing 1 in (25 mm), 90 - 100% passing 0.75 in (19 mm), 70 - 100% passing 0.25 in (6.4 mm), 30 - 60% passing 0.04 in (1 mm), 30% mm. passing
Physical contaminants (manmade inerts)	<1% dry weight basis

Adapted from AASHTO Standards Specs for Compost Filter Socks and EPA Example Compost Filter Parameters.

¹ Recommended test methodologies are provided in Test Methods for the Examination of Composting and Compost (TMEC, The U.S. Composting Council).

Slide notes

Appendix B also contains M.D.E. stone and compost material specifications.

Keep in mind that this field guide was developed as a supplement to the 2011 M.D.E. specifications, for more information such as design criteria and calculations refer to the M.D.E. specs. If there are any questions in regards to E and S control installation and maintenance ask the project engineer to contact the regional environmental coordinator.

Notes

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Slide notes

This concludes the Field Guide portion of the training. Please select the next module to continue the training

Notes
