EROSION & SEDIMENT CONTROL CERTIFICATION PROGRAM
<table>
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<tr>
<th>Time</th>
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<th>Subevents</th>
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| 8:00 – 8:30 | I. Welcome and Introduction                | A. Environmental Stewardship  
 |            |                                            | B. Objectives of Program  
 |            |                                            | C. SHA Initiatives          |
| 8:30 – 9:30| II. Hydrology/Hydraulics  
 |            | III. Erosion Mechanics               |                                               |
| 9:30 – 9:45| Break                                      |                                               |
| 9:45 – 10:45| IV. Vegetative Stabilization       | V. Nutrient Management                      |
| 10:45 – Noon| VI. Field Guide                          | A. Highlights of E&S Controls                 |
| Noon – 1:00| Lunch                                      |                                               |
| 1:00 – 1:30| VI. Field Guide (Continued)              | B. Waterway Construction                     |
| 1:30 – 2:45| VII. Organization                        |                                               |
|            | A. Construction Compliance               |                                               |
|            | B. Preconstruction Meeting               |                                               |
|            | C. Modifications                         |                                               |
|            | D. Closeout of Project                   |                                               |
| 2:45 – 3:00| Break                                     |                                               |
| 3:00 – 3:15| VIII. Design Build Process               |                                               |
| 3:15 – 3:30| IX. Costs of Compliance vs. Noncompliance|                                               |
| 8:00 – 10:00| X. Section 308                            |                                               |
| 10:00 – 10:15| Break                                    |                                               |
| 10:15 – 11:00| XII. Quality Assurance Rating Example    |                                               |
| 11:00 – Noon| Test                                      |                                               |
Objective 5.7  Annually achieve 100 percent compliance of Maryland E&S Control requirements on all SHA construction projects and activities.

- **Performance Measures**
  - **Input:** Number of SHA Construction Projects & Activities
  - **Output:**
    - Number of inspections performed
    - Number of personnel trained in inspection & design.
  - **Outcome:** Percentage of compliance on E&S Control ratings by SHA & MDE inspectors, & SHA environmental monitors.
Objective 5.7  Annually achieve 100 percent compliance of Maryland E&S Control requirements on all SHA construction projects and activities.

- **Strategies**
  
  5.7.1  Introduce environmental monitors on all detail-build & environmentally sensitive projects
  
  5.7.2  Ensure that quality assurance inspections are taking place at a minimum of every 2 weeks at all active construction sites that are in compliance, & follow up quality assurance inspections on non-complying sites are taking place within 2 days of identifying actions needed for compliance.
  
  5.7.3  Ensure that daily inspections of E&S Control are performed by project staff with appropriate documentation.
  
  5.7.4  Update design specifications & standards pertaining to E&S Control
  
  5.7.5  By 2004, develop & implement a unified rating & tracking system for all E&S Control inspections.
Objective 5.8 Implement an SHA Environmental Stewardship Program involving all Offices & Districts by the end of 2004.

- **Performance Measures**
  - Input: Number of current SHA environmental initiatives & processes
  - Output: Number of implemented strategic environmental activities & initiatives
    Number of offices implementing environmental stewardship activities
  - Outcome: Percentage of SHA offices implementing environmental stewardship program elements
Objective 5.8  Implement an SHA Environmental Stewardship Program involving all Offices & Districts by the end of 2004.

- **Strategies**
  
  5.8.1 By July 2004, develop an environmental strategic plan with action items & priorities.
  
  5.8.2 Develop statewide recycling & energy conservation programs by September 2004.
  
  5.8.3 Recruit environmental stewards in each SHA office to assist in the implementation by July 2004.
  
  5.8.4 Annually by December 1, each SHA office & District will develop & include environmental stewardship initiatives in their local business plans.
  
  5.8.5 Develop internal & external outreach program for environmental stewardship activities as a component of the strategic plan.
  
  5.8.6 Refine environmental strategic plan using input from SHA staff & customers by September 2004.
  
  5.8.7 Develop a computerized system to track program progress & resulting environmental as well as business benefits by December 2004.
Overall Environmental Stewardship

- Containment of concrete cleanout discharge
- Containment of machine fluids
- Proper disposal of construction debris
- Proper disposal of garbage
- Develop a spill containment action plan
- Tree protection
- Habitat protection
E&S Program Objectives

- Reevaluate the Quality Assurance Program
- Publish an Erosion & Sediment Control Field Guide
- Develop Training & Certification for Designers, Contractors, & Inspectors
- Implement Contract Incentives to Encourage Environmental Stewardship
Reevaluate the Quality Assurance (QA) Program

- Revised the QA specifications to emphasize a proactive approach to E&S
- Developed an inspection checklist to make inspections more objective & reproducible
- Tested the new checklist on several projects to evaluate the effectiveness & objectiveness
- Piloted the checklist throughout the State using concurrent inspections by a designer, inspector, environmental monitor, & the contractor
- Implemented a new QA Rating tracking system
The new QA Rating Tracking Program can track per:

- Contract
- Contractor
- District
- Inspector
- Frequency of Inspection
- Project Engineer
- By date or time period (month, year, etc.)
Field Guide for Erosion and Sediment Control

This field guide is intended to serve as a supplemental document to the 1994 Maryland Standards and Specifications for Soil Erosion Sediment Control and Maryland SHA Standard Specifications for Construction and Materials to be used by MD SHA Staff, Inspection Personnel, and Contractors.

State Highway Administration
Maryland Department of Transportation

Silt Fence
MDE Detail E-15-3 or Revised SHA SP1 308.03.28

Perspective View
Maintenance shall be performed when bridges occur or when sediment accumulation reaches 10% of the fabric height.

Joining Two Adjacent Posts
Fence Sections Minimum 60 ft, Allowances

Profile

Embed Geotextile to a Min. of 1 ft vertically & compact on both sides

Min. of 16" fence post driven.
Implementing Contract Incentives to Encourage Proactive E&S Control

- Apply incentive / liquidated damages to all projects that require formal plan approval from MDE

- Allow incentive / liquidated damages to be prorated throughout the project duration

- Base the incentive / liquidated damages on an objective parameter such as the QA inspection checklist

- Pay an incentive based on the contract size & the number of E&S items included in the project

- Implemented a new QA Rating tracking system
Training & Certification for Designers, Contractors & Inspectors

- Held Pilot Training on December 8 & 9 2004 for inspectors and contractors

- Emphasize more practical application such as conducting an effective preconstruction meeting, proper installation & maintenance of controls, required procedures for initiating a permit modification, & things to look for during inspections

- Require certification to work on SHA projects

- Require recertification every 3 years

- Implement training statewide for all projects
Hydrology and Hydraulics
Vegetation Establishment and Nutrient Management
Nutrient Management Plan

- Regulates the quantity of major plant nutrients applied to the soil

Inorganic

[Image of fertilizer bag]

Organic

[Image of chickens]
Required by COMAR for any nutrients applied to state land including permanent seeding and sodding operations

- Nutrient Management Plans (NMP) will be developed by the Landscape Operations Division (LOD) - Technical Resources Team (TRT)

- Need for a NMP is at the discretion of TRT
What is a NMP?

**NMP’s are:**

- A record of soil tests results
  - **Standard**
    - pH, texture, OM – SHA
    - P & K – University of Delaware
  - **Optional**
    - Salts, Mg, Al, Ca, B
- A recommendation of the nutrients needed for plant growth
Responsibility of SHA & the Contractor

- Record fertilizer information
  - Analysis
  - Total amount applied
  - Rate of application
  - Location

- Soil tests are valid for 3 years
1. PE contacts OMT for soil sampling 30 days prior to placing topsoil.

2. OMT tests for pH, OM, & texture. University of Delaware tests for P and K.

3. LOD develops a nutrient management plan based on the results of the soil tests & forwards the limestone, fertilizer, & soil amendment requirements to the ADE-Construction & the PE.

4. The PE should have a nutrient management plan prior to permanent seeding. The PE should contact LOD in the absence of a nutrient management plan.

5. PE and Contractor fill out the Nutrient Management Plan Report & the PE forwards a copy to LOD.
Conclusion

– Nutrient Management Plans are effective tools in preventing nutrient loss and waterway/Chesapeake Bay degradation.

– A new Special Provision Insert is in place to guarantee acceptable vegetative coverage and color at the time of semi-final and final inspections.

– A well established vegetative cover is mandatory to slow the effects of erosion.

– Vegetative cover reduces time & money spent on the maintenance of E&S Controls.
Key Elements of E&S Controls
1994 MARYLAND
STANDARDS AND SPECIFICATIONS
FOR SOIL EROSION
AND SEDIMENT CONTROL

MARYLAND DEPARTMENT OF
THE ENVIRONMENT
Water Management Administration

in association with
SOIL CONSERVATION SERVICE
and
STATE SOIL CONSERVATION COMMITTEE

SHA
Field Guide for Erosion and Sediment Control

This field guide is intended to serve as a supplemental document to the 1994 Maryland Standards and Specifications for Soil Erosion Sediment Control and Maryland SHA Standard Specifications for Construction and Materials to be used by MD SHA Staff, Inspection Personnel, and Contractors.

State Highway Administration
Maryland Department of Transportation
Maryland's Waterway Construction Guidelines

Maryland Department of the Environment
Water Management Administration
Guideline Organization

• **Section 1:** Temporary Instream Construction Measures
• **Section 2:** Slope Protection & Stabilization Techniques
• **Section 3:** Channel Stabilization & Rehabilitation Techniques
• **Section 4:** Stream Crossings
Organization
Responsibilities

- SHA Construction
- Contractors ESCM
- SHA Quality Assurance
- MDE
- Environmental Monitor
Environmental Monitor (EM) Responsibilities

- Monitor contractors daily activities and permit compliance
- May or may not be assigned - Special Condition in the permit or Design/Build Projects
- Assigned by SHA EPD
- Reports to PE, SHA EPD, HHD, MDE, USACE and/or as specified
- Additional level of inspection
- Member of E&S Control Team
- Key focus is to monitor all activities that may affect environmental resources
E&S Control Pre-Con Meeting

- Promote Environmental Stewardship
- Discuss project expectations
- Identify & discuss critical environmental / constructability issues
- E&S progress meetings
- Partnering
E&S Control Modification Process

SHA & Contractor Initiates E&S Control Issue

Review Permit Conditions

E&S Control Modification

OOC 062 Form

Review as per MOU SHA District Support; Division Coordination

MINOR MODIFICATION

MDE Field Inspector

NO

MAJOR MODIFICATION

MDE Formal Review / Agency Review

MDE Authorization
MARYLAND STATE HIGHWAY ADMINISTRATION
REQUEST FOR REVISION OF EROSION AND SEDIMENT CONTROL MEASURES

CONTRACT NO: ____________________ MDE PERMIT NO: ____________________

DESCRIPTION: ____________________

CONTRACTOR: ____________________

SHELF PROJECT ENGINEER: _________ MDE INSPECTOR: _________

REQUESTED REVISION:
(Use one or pages if needed)

CONTRACT ITEM(S): ____________________

NATURE OF REVISION: ____________________

INDICATE LOCATION: ____________________

REASON FOR REVISION: ____________________

NOTE: Any change in a contract quantity resulting from this revision will be made based on the provisions of the contract. Any change in the contract total cost may be subject to approval by the MDE. (Any change in a contract quantity resulting from this revision will be made based on the provisions of the contract. Any change in the contract total cost may be subject to approval by the MDE.)

REQUESTED BY: ____________________ (DATE)

CONCURRENCE BY: ____________________ (DATE)

**APPROVED BY: ____________________ (DATE)

***(Name/Title)***

*** (Approval of specified changes in approved E&S control measures) ***

SEE PAGE 2 OF 2 FOR INSTRUCTIONS, AND EXAMPLES
OOC 62 Request for Revision of E&S Control Measures

PURPOSE

The purpose of the form is to request a revision to an Erosion and Sediment Control measure contained in the contract documents. This form will also be used to document revisions that had prior verbal agreement of the Contractor, SHA and MDE. It will be completed by the contractor with the concurrence of SHA and approval by MDE. If it is found that this revision has created a situation whereby erosion and sediment runoff is not effectively controlled, immediate corrective action will be taken and the originally approved control will be implemented.

INSTRUCTION AND EXAMPLE

1. The entire form will be completed in triplicate. (A copy to each to Contractor, SHA and MDE)
2. Contract Item(s) - All contract items affected by this revision will be listed.
3. Explain in detail the nature of the revision. (Example: Eliminate slope stilt fence and substitute stabilized side ditch with straw bale ditch check)
4. Indicate location (Station Limits, ML, Ramps, etc.)
5. Reason for Revision (Example: more cost effective, superior control, not required, etc.)

REASON FOR DISAPPROVAL:  

________________________________________________________

________________________________________________________

________________________________________________________

(GAME)  (DATE)

(TITLE)
Design / Build Process
Design Build

- Increasing number of D/B projects.
- Allows design and construction activities to occur concurrently.
- Lump sum for contract.
- Risk to D/B Team—extreme weather
- Permits may contain special conditions.
- ESC approval must be obtained by D/B Team.
- Design-Build is an evolving process.
E&S Control & the Design Build Process

1. Contract
2. Preliminary SWM
3. Letter of Intent (From MDE)
4. Finalize / Address Comments
5. Final Approval
6. Construct / Quality Assurance / As-Built
7. Begin Work
8. Modifications for Phases
9. Conditional Approval
10. E&S Control Phasing

E&S Control & the Design Build Process

- Preliminary SWM
- Letter of Intent (From MDE)
- Finalize / Address Comments
- Final Approval
- Construct / Quality Assurance / As-Built
- Begin Work
- Modifications for Phases
Compliance vs. Non-compliance

$
Specifications & Independent Quality Assurance
Existing QA Rating System

- **Rating A**: Compliance
- **Rating B**: Compliance
- **Rating C**: Conditions for a shut down could arise quickly.
- **Rating D**: Grading & related operations will be shut down by the Administration.
- **Rating E**: The entire project will be shut down immediately.
Changes:
The Contractor shall demarcate all wetlands, wetland buffers, floodplains, tree protection areas, and the Limit of Disturbance (LOD) as specified in 107. Prior to beginning any earth disturbing activity the Contractor shall have all demarcated wetlands, wetland buffers, floodplains, tree protection areas, and LOD inspected and approved by the Engineer and MDE. The Contractor shall construct all E&S control measures in conformance with 308.01.01.
New QA Rating System

- **Rating A:** Equal to or greater than 90
- **Rating B:** 80 to 89.9
- **Rating C:** 70 to 79.9

- Projects that receive a ‘C’ rating will be re-inspected within 72 hours.
New QA Rating System

- **Rating D**: 60 to 69.9
  - All earthwork operations will be shut down
  - The project will be reinspected within 72 hours.
  - Failure to upgrade the project to a ‘B’ rating will result in the project being rated an ‘F’.

- **Rating F**: less than 60
  - Or if the Contractor has not obtained all appropriate permits and approvals; demarcated limits of disturbances, wetland and wetland buffers, floodplains, and tree protection areas as specified in Section 107
  - The entire project will be shut down until the project receives a ‘B’ rating
When a ‘C’ rating is given:
- Corrected within 72 hours.
- If deficiencies have not been corrected, a ‘D’ rating will be given and all earthwork operations will be shut down until the project receives a ‘B’ rating.

When a consecutive ‘C’ rating is given:
- For other deficiencies and the original deficiencies were corrected
- Imminent shut down of all earthwork operations.
- 72 hours to correct deficiencies
– If deficiencies have not been corrected or other deficiencies are identified that results in a score of less than 80, a ‘D’ rating will be given and all earthwork operations will be shut down until the project receives a ‘B’ rating.
– When a 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’ rating.
Shutdowns

– Where degradation could occur, or if the Contractor is unresponsive; SHA may elect to have these corrective actions taken by another contractor

– All costs associated with this work will be billed to the original Contractor in addition to the Liquidated Damages.
When a ‘D’ or ‘F’ rating is given liquidated damages will be imposed on the Contractor. Payment of the liquidated damages shall be made within 30 days from imposition of the liquidated damages and shall not be allowed to accrue for consideration at final project close-out.

When the project receives 2 ‘F’ ratings the E&S Control Certification shall be revoked from the project superintendent and the ESCM for a period of not less than 6 months and until successful completion of the E&S Control Certification Program.
For each day that the project has a ‘F’ rating the Contractor and/or his surety shall be liable for liquidated damages in the amount as specified in the Contract Documents.
Quarterly incentive payment will be made when an average score equal to or greater than 85 for the entire rating quarter.

No incentives will be paid for any quarter that liquidated damages are imposed.
Other Penalties

- MDE
- USACE
- EPA
- Civil / Criminal
- Corrective Action / Mitigation
- Documented past Non-Compliance is evaluated as part of Design/Build selection criteria
- And Others
New OOC 61QA Inspection Checklist (Page 2)

### Scope Section

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Total Items Available: 80

Total Items Not Available: 40
## New OOC 61QA Inspection Checklist (Page 3)

### Stabilization Section

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*OOC 61QA Inspection Checklist (Page 3)*
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EROSION & SEDIMENT CONTROL CERTIFICATION PROGRAM WRAP-UP
Wrap-up

- Quality Assurance Rating Exercise
- Written Exam
- Certification Cards Issued by Mail