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.
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Appendix A

Routine / Maintenance Inspection – Troubleshooting

Appendix B

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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:

<table>
<thead>
<tr>
<th>SCORE</th>
<th>RATING</th>
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<td>≥ 90</td>
<td>A</td>
</tr>
<tr>
<td>80 - 89.9</td>
<td>B</td>
</tr>
<tr>
<td>70 - 79.9</td>
<td>C</td>
</tr>
<tr>
<td>60 - 69.9</td>
<td>D</td>
</tr>
<tr>
<td>&lt; 60</td>
<td>F</td>
</tr>
</tbody>
</table>

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.
Shut downs. 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 60 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.

Shut downs. 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.

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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:

<table>
<thead>
<tr>
<th>Use</th>
<th>Period</th>
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<tbody>
<tr>
<td>Use I and IP</td>
<td>March 1 – June 15</td>
</tr>
<tr>
<td>Use II</td>
<td>June 1 – September 30</td>
</tr>
<tr>
<td></td>
<td>December 16 – March 14</td>
</tr>
<tr>
<td>Use III and IIIP</td>
<td>October 1 – April 30</td>
</tr>
<tr>
<td>Use IV</td>
<td>March 1 – May 31</td>
</tr>
<tr>
<td>SAV</td>
<td>April 15 – October 15</td>
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</table>

All instream work is prohibited during these periods.

Quick Drainage Area Calculation Reference

(Approximations)

\[
\begin{align*}
\frac{1}{4} \text{ Acre} &= 104' \times 104' \\
\frac{1}{2} \text{ Acre} &= 148' \times 148' \\
\frac{3}{4} \text{ Acre} &= 181' \times 181' \\
1 \text{ Acre} &= 209' \times 209'
\end{align*}
\]
CONSTRUCTION SPECIFICATIONS

1. PLACE STABILIZED CONSTRUCTION ENTRANCE IN ACCORDANCE WITH THE APPROVED PLAN. VEHICLES MUST TRAVEL OVER THE ENTIRE LENGTH OF THE SCE. USE MINIMUM LENGTH OF 50 FEET (30 FEET FOR SINGLE RESIDENCE LOT). USE MINIMUM WIDTH OF 10 FEET. FLARE SCE 10 FEET MINIMUM AT THE EXISTING ROAD TO PROVIDE A TURNING RADIUS.

2. PIPE ALL SURFACE WATER FLOWING TO OR DIVERTED TOWARD THE SCE UNDER THE ENTRANCE, MAINTAINING POSITIVE DRAINAGE. PROTECT PIPE INSTALLED THROUGH THE SCE WITH A MOUNTABLE BERM WITH 5:1 SLOPES AND A MINIMUM OF 12 INCHES OF STONE OVER THE PIPE. PROVIDE PIPE AS SPECIFIED ON APPROVED PLAN. WHEN THE SCE IS LOCATED AT A HIGH SPOT AND HAS NO DRAINAGE TO CONVEY, A PIPE IS NOT NECESSARY. A MOUNTABLE BERM IS REQUIRED WHEN SCE IS NOT LOCATED AT A HIGH SPOT.

3. PREPARE SUBGRADE AND PLACE NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS.

4. PLACE CRUSHED AGGREGATE (2 TO 3 INCHES IN SIZE) OR EQUIVALENT RECYCLED CONCRETE (WITHOUT REBAR) AT LEAST 6 INCHES DEEP OVER THE LENGTH AND WIDTH OF THE SCE.

5. MAINTAIN ENTRANCE IN A CONDITION THAT MINIMIZES TRACKING OF SEDIMENT. ADD STONE OR MAKE OTHER REPAIRS AS CONDITIONS DEMAND TO MAINTAIN CLEAN SURFACE, MOUNTABLE BERM, AND SPECIFIED DIMENSIONS. IMMEDIATELY REMOVE STONE AND/OR SEDIMENT SPILLED, DROPPED, OR TRACKED ONTO ADJACENT ROADWAY BY VACUUMING, SCRAPPING, AND/OR SWEEPING. WASHING ROADWAY TO REMOVE MUD TRACKED ONTO PAVEMENT IS NOT ACCEPTABLE UNLESS WASH WATER IS DIRECTED TO AN APPROVED SEDIMENT CONTROL PRACTICE.
CONSTRUCTION SPECIFICATIONS

1. Use a wash rack designed and constructed/manufactured for the anticipated traffic loads. Concrete, steel, or other materials are acceptable. Pre-fabricated units such as cattle guards are acceptable. Use minimum dimension of 6 feet x 10 feet. Orient direction of ribs as shown on the detail.

2. Install prior to, along side of, or as part of the SCE.

3. Direct wash water to an approved sediment trapping device.

4. Keep area under wash rack free of accumulated sediment. If damaged, repair or replace wash rack.
CONSTRUCTION SPECIFICATIONS

1. Use fill material free of brush, rubbish, rocks, logs, stumps, building debris, and other objectionable materials that would interfere with or prevent construction of satisfactory fills.

2. Do not incorporate frozen, soft, mucky, or highly compressible materials into fill slopes or structural fills. Do not place fill on a frozen foundation.

3. Place all fill in loose lifts not to exceed 8 inches and then compact.

4. Compact all fills as required to reduce erosion, slippage, settlement, or other related problems. Compact fill intended to support buildings, structures, conduits, etc., in accordance with local requirements or codes.

5. Handle seeps or springs encountered during construction in accordance with Section H-2 subsurface drains or other approved methods.

6. Maintain line, grade, and cross section of benching. Stabilize in accordance with the 3/7 day stabilization criteria or as specified on the approved erosion and sediment control plan. Installation of erosion control matting may be necessary in bench/swale inverts. Continuously meet requirements for adequate vegetative establishment in accordance with Section B-4 vegetative stabilization.

7. Keep all benches free of sediment during all phases of development.
**Land Grading - Serrated Slope**

**Construc TIon SpecifiCations**

1. **DiveRT OLerAND flow FROM THE TOP OF AAll **SERRATED** C**UT SLOPES AND CARRY TO A SuitaBle OUTLET.

2. **MAKE SERRATIONS AS THE EXCAVA**TION **PROGRESS**ES.

3. **CONSTRUCT EACH STEP OR SERRATION ON THE CONTOUR. RISE & RUN DIMENSIONS WILL VARY DEPENDING ON THE FINAL SLOPE RATIO.** FOR RIPABLE ROCK SURFACES, MAKE TWO FOOT VERTICAL (RISE) AND THREE FOOT HORIZONTAL (RUN) SERRATIONS AT A SLOPE RATIO NO STEEPER THAN 1.5:1. FOR NON ROCK SURFACES, MAKE TWO FOOT VERTICAL (RISE) AND FOUR FOOT HORIZONTAL (RUNS) SERRATIONS AT A SLOPE RATIO NO STEEPER THAN 2:1.

4. **KEEP ALL BENCHES FREE OF SEDIMENT DURING ALL PHASES OF CONSTRUCTION.**

5. **HANDLE SEEPS OR SPRINGS ENCOUNTERED DURING CONSTRUCTION IN ACCORDANCE WITH SECTION H-2 SUBSURFACE DRAINS OR OTHER APPROVED METHODS.**

6. **MAITAIN LINE, GRADE, AND CROSS SECTION OF SERRATED SLOPES. TEMPORARILY OR PERMANENTLY STABILIZE ALL GRADED, NON ROCK SURFACES IN ACCORDANCE WITH THE 3/7 DAY STABILIZATION REQUIREMENTS OR AS SPECIFIED ON THE APPROVED EROSION AND SEDIMENT CONTROL PLAN. CONTINUOUSLY MEET REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.
Incremental Stabilization

A. Incremental Stabilization - Cut Slopes
1. Excavate and stabilize cut slopes in increments not to exceed 15 feet in height. Prepare seedbed and apply seed and mulch on all cut slopes as the work progresses.

Note: Once excavation has begun the operation should be continuous from grubbing through the completion of grading and placement of topsoil (if required) and permanent seed and mulch. Any interruptions in the operation or completing the operation out of the seeding season will necessitate the application of temporary stabilization.

B. Incremental Stabilization - Fill Slopes
1. Construct and stabilize fill slopes in increments not to exceed 15 feet in height. Prepare seedbed and apply seed and mulch on all slopes as the work progresses.
2. Stabilize slopes immediately when the vertical height of a lift reaches 15 feet, or when the grading operation ceases as prescribed in the plans.
3. At the end of each day, install temporary water conveyance practice(s), as necessary, to intercept surface runoff and convey it down the slope in a non-erosive manner.

Note: Once the placement of fill has begun the operation should be continuous from grubbing through the completion of grading and placement of topsoil (if required) and permanent seed and mulch. Any interruptions in the operation or completing the operation out of the seeding season will necessitate the application of temporary stabilization.
Temp. Soil Stabilization Matting – Channel Application

**B-4-6-A**

**CONSTRUCTION SPECIFICATIONS**

1. USE MATTING THAT HAS A DESIGN VALUE FOR SHEAR STRESS EQUAL TO OR HIGHER THAN THE SHEAR STRESS DESIGNATED ON APPROVED PLANS.

2. USE TEMPORARY SOIL STABILIZATION MATTING MADE OF DEGRADABLE (LASTS 6 MONTHS MINIMUM) NATURAL OR MAN-MADE FIBERS (MOSTLY ORGANIC). MAT MUST HAVE UNIFORM THICKNESS AND DISTRIBUTION OF FIBERS THROUGHOUT AND BE SMOLDER RESISTANT. CHEMICALS USED IN THE MAT MUST BE NON-LEACHING AND NON-TOXIC TO VEGETATION AND SEED GERMINATION AND NON-INJURIOUS TO THE SKIN. IF PRESENT, NETTING MUST BE EXTRUDED PLASTIC WITH A MAXIMUM MESH OPENING OF 2x2 INCHES AND SUITABLY BONDED OR SEWN ON 2 INCH CENTERS ALONG LONGITUDINAL AXIS OF THE MATERIAL TO PREVENT SEPARATION OF THE NET FROM THE PARENT MATERIAL.

3. SECURE MATTING USING STEEL STAPLES, WOOD STAKES, OR BIODEGRADABLE EQUIVALENT. STAPLES MUST BE "U" OR "T" SHAPED STEEL WIRE HAVING A MINIMUM GAUGE OF NO. 11 AND NO. 8 RESPECTIVELY. "U" SHAPED STAPLES MUST AVERAGE 1 TO 1 1/2 INCHES WIDE AND BE A MINIMUM OF 6 INCHES LONG. "T" SHAPED STAPLES MUST HAVE A MINIMUM 8 INCH MAIN LEG, A MINIMUM 1 INCH SECONDARY LEG, AND A MINIMUM 4 INCH HEAD. WOOD STAKES MUST BE ROUGH-SAWN HARDWOOD, 12 TO 24 INCHES IN LENGTH, 1X3 INCH IN CROSS SECTION, AND WEDGE SHAPED AT THE BOTTOM.

4. PERFORM FINAL GRADING, TOPSOIL APPLICATION, SEEDBED PREPARATION, AND PERMANENT SEEDING IN ACCORDANCE WITH SPECIFICATIONS. PLACE MATTING WITHIN 48 HOURS OF COMPLETING SEEDING OPERATIONS UNLESS END OF WORKDAY STABILIZATION IS SPECIFIED ON THE APPROVED EROSION AND SEDIMENT CONTROL PLAN.

5. UNROLL MATTING IN DIRECTION OF WATER FLOW, CENTERING THE FIRST ROLL ON THE CHANNEL CENTERLINE. WORK FROM CENTER OF CHANNEL OUTWARD WHEN PLACING ROLLS. LAY MAT SMOOTHLY AND FIRMLY ON THE SEEDBED SURFACE. AVOID STRETCHING THE MATTING.

6. KEY-IN UPSTREAM END OF EACH MAT ROLL BY DIGGING A 6 INCH (MINIMUM) TRENCH AT THE UPSTREAM END OF THE MATTING, PLACING THE ROLL END IN THE TRENCH, STAPLING THE MAT IN PLACE, REPLACING THE EXCAVATED MATERIAL, AND TAMMING TO SECURE THE MAT END.

7. OVERLAP OR ABUT THE ROLL EDGES AS MANUFACTURER RECOMMENDATIONS. OVERLAP ROLL ENDS BY 6 INCHES (MINIMUM). WITH THE UPSTREAM MAT OVERLAPPING ON TOP OF THE NEXT DOWNSTREAM MAT.

8. STAPLE/STAKE MAT IN A STAGGERED PATTERN ON 4 FOOT (MAXIMUM) CENTERS THROUGHOUT AND 2 FOOT (MAXIMUM) CENTERS ALONG SEAMS, JOINTS, AND ROLL ENDS.

9. ESTABLISH AND MAINTAIN VEGETATION SO THAT REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT ARE CONTINUOUSLY MET IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.
Temp. Soil Stabilization Matting – Slope Application

**CONSTRUCTION SPECIFICATIONS**

1. **USE MATTING THAT HAS A DESIGN VALUE FOR SHEAR STRESS EQUAL TO OR HIGHER THAN THE SHEAR STRESS DESIGNATED ON APPROVED PLANS.**

2. **USE TEMPORARY SOIL STABILIZATION MATTING MADE OF DEGRADABLE (LASTS 6 MONTHS MINIMUM) NATURAL OR MAN-MADE FIBERS (MOSTLY ORGANIC). MAT MUST HAVE UNIFORM THICKNESS AND DISTRIBUTION OF FIBERS THROUGHOUT AND BE SMOOTHER RESISTANT. CHEMICALS USED IN THE MAT MUST BE NON-LEACHING AND NON-TOXIC TO VEGETATION AND SEED GERMINATION AND NON-INJURIOUS TO THE SKIN IF PRESENT, NETTING MUST BE EXTENDED PLASTIC WITH A MAXIMUM MESH OPENING OF 2x2 INCHES AND SUITABLY BONDED OR SEWN ON 2 INCH CENTERS ALONG LONGITUDINAL AXIS OF THE MATERIAL TO PREVENT SEPARATION OF THE NET FROM THE PARENT MATERIAL.**

3. **SECURE MATTING USING STEEL STAPLES, WOOD STAKES, OR BIODEGRADABLE EQUIVALENT. STAPLES MUST BE "U" OR "T" SHAPED STEEL WIRE HAVING A MINIMUM GAUGE OF NO. 11 AND NO. 8 RESPECTIVELY. "U" SHAPED STAPLES MUST HAVE A LENGTH OF 6 INCHES LONG. "T" SHAPED STAPLES MUST HAVE A MINIMUM 8 INCH MAIN LEG, A MINIMUM 1 INCH SECONDARY LEG, AND A MINIMUM 4 INCH HEAD. WOOD STAKES MUST BE ROUGH-SAWN HARDWOOD, 12 TO 24 INCHES IN LENGTH, 1x3 INCH IN CROSS SECTION, AND MEGE SHAPED AT THE BOTTOM.**

4. **PERFORM FINAL GRADING, TOPSOIL APPLICATION, SEEDBED PREPARATION, AND PERMANENT SEEDING IN ACCORDANCE WITH SPECIFICATIONS. PLACE MATTING WITHIN 48 HOURS OF COMPLETING SEEDING OPERATIONS UNLESS END OF WORKDAY STABILIZATION IS SPECIFIED ON THE APPROVED EROSION & SEDIMENT CONTROL PLAN.**

5. **UNROLL MATTING DOWNSLOPE, LAY MAT SMOOTHLY AND FIRMLY UPON THE SEEDED SURFACE. AVOID STRETCHING THE MATTING.**

6. **OVERLAP OR ABUT ROLL EDGES PER MANUFACTURER RECOMMENDATIONS. OVERLAP ROLL EDGES BY 6 INCHES (MINIMUM), WITH THE UPSLOPE MAT OVERLAPPING ON TOP OF THE DOWNSLOPE MAT.**

7. **KEY IN THE UPSLOPE END OF MAT 6 INCHES (MINIMUM) BY DIGGING A TRENCH, PLACING THE MATTING ROLL END IN THE TRENCH, STAPLING THE MAT IN PLACE, REPLACING THE EXCAVATED MATERIAL, AND TAMING TO SECURE THE MAT END IN THE KEY.**

8. **STAPLE/STAKE MAT IN A STAGGERED PATTERN ON 4 FOOT (MAXIMUM) CENTERS THROUGHOUT AND 2 FOOT (MAXIMUM) CENTERS ALONG SEAMS, JOINTS, AND ROLL ENDS.**

9. **ESTABLISH AND MAINTAIN VEGETATION SO THAT REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT ARE CONTINUOUSLY MET IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.**
 Perm. Soil
Stabilization Matting –
Channel Application

**STANDARD SYMBOL**

PSSMC – * lb/ft²

(* INCLUDE SHEAR STRESS)

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**CONSTRUCTION SPECIFICATIONS**

1. USE MATTING THAT HAS A DESIGN VALUE FOR SHEAR STRESS EQUAL TO OR HIGHER THAN THE SHEAR STRESS DESIGNATED ON APPROVED PLANS.

2. USE PERMANENT SOIL STABILIZATION MATTING MADE OF OPEN WEAVE SYNTHETIC, NON-DEGRADABLE FIBERS OR ELEMENTS OF UNIFORM THICKNESS AND DISTRIBUTION THROUGHOUT. CHEMICALS USED IN THE MAT MUST BE NON-LEACHING AND NON-TOXIC TO VEGETATION AND SEED GERMINATION AND NON-INJURIOUS TO THE SKIN. IF PRESENT, NETTING MUST BE EXTRUSION PLASTIC WITH A MAXIMUM MESH SPACING OF 2/0 INCHES AND SUITABLY BONDED OR SEWN ON 2 INCH CENTERS ALONG LONGITUDINAL AXIS OF THE MATERIAL TO PREVENT SEPARATION OF THE NET FROM THE PARENT MATERIAL.

3. SECURE MATTING USING STEEL STAPLES OR WOOD STAKES. STAPLES MUST BE "U" OR "T" SHAPED STEEL WIRE HAVING A MINIMUM GAUGE OF NO. 11 AND NO. 8 RESPECTIVELY. "U" SHAPED STAPLES MUST HAVE AN AVERAGE 1 TO 1 ½ INCHES WIDE AND BE A MINIMUM OF 6 INCHES LONG. "T" SHAPED STAPLES MUST HAVE A MINIMUM 8 INCH LONG, 1 INCH SECONDARY LEG, AND MINIMUM 4 INCH HEAD. WOOD STAKES MUST BE ROUGH-SAWN HARDWOOD, 12 TO 24 INCHES IN LENGTH, 1 ½ INCH IN CROSS SECTION, AND WEDGE SHAPE AT THE BOTTOM.

4. PERFORM FINAL GRADING, TOPSOIL APPLICATION, SEEDED PREPARATION, AND PERMANENT SEEDING IN ACCORDANCE WITH SPECIFICATIONS. PLACE MATTING WITHIN 48 HOURS OF COMPLETING SEEDING OPERATIONS, UNLESS END OF WORKDAY STABILIZATION IS SPECIFIED ON THE APPROVED EROSION AND SEDIMENT CONTROL PLAN.

5. UNROLL MATTING IN DIRECTION OF WATER FLOW, CENTERING THE FIRST ROLL ON THE CHANNEL CENTER LINE. WORK FROM CENTERS OF CHANNEL OUTWARD WHEN PLACING ROLLS. LAY MATTING SMOOTHLY AND FIRMLY UPON THE SEEDED SURFACE. AVOID STRETCHING THE MATTING.

6. OVERLAP OR ABUT EDGES OF MATTING ROLLS PER MANUFACTURER RECOMMENDATIONS. OVERLAP ROLL ENDS BY 6 INCHES (MINIMUM), WITH THE UPSTREAM MAT OVERLAPPING ON TOP OF THE NEXT DOWNSTREAM MAT.

7. KEY IN THE TOP OF SLOPE END OF MAT 6 INCHES (MINIMUM) BY DIGGING A TRENCHE, PLACING THE MAT ROLL END IN THE TRENCH, STAPLING THE MAT IN PLACE, REPLACING THE EXCAVATED MATERIAL, AND TAMPPING TO SECURE THE MAT END IN THE KEY.

8. STAPLE/STAKE MAT IN A STAGGERED PATTERN ON 4 FOOT (MAXIMUM) CENTERS THROUGHOUT AND 2 FOOT (MAXIMUM) CENTERS ALONG SEAMS, JOINTS, AND ROLL ENDS.

9. IF SPECIFIED BY THE DESIGNER OR MANUFACTURER AND DEPENDING ON THE TYPE OF MAT BEING INSTALLED, OVERLAP THE MAT IS KEYED AND STAPLED IN PLACE. FULL THE MAT VOIDS WITH TOP SOIL OR GRANULAR MATERIAL AND LIGHTLY COMPACT OR ROLL TO MAXIMIZE SOIL/MAT CONTACT WITHOUT CRUSHING MAT.

10. ESTABLISH AND MAINTAIN VEGETATION SO THAT REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT ARE CONTINUOUSLY MET IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.
Perm. Soil Stabilization Matting – Slope Application

**Construction Specifications**

1. Use matting that has a design value for shear stress equal to or higher than the shear stress designated on approved plans.

2. Use permanent soil stabilization matting made of open weave synthetic, non-degradable fibers or elements of uniform thickness and distribution throughout. Chemicals used in the mat must be non-leaching and non-toxic to vegetation and seed germination and non-injurious to the soil. If present, netting must be extruded plastic with a maximum mesh opening of 2 x 2 inches and sufficiently bonded or sewn on 2 inch centers along longitudinal axis of the material to prevent separation of the net from the parent material.

3. Secure matting using steel staples or wood stakes. Staples must be "U" or "T" shaped steel wire having a minimum gauge of 11 and No. 8 respectively. "U" shaped staples must average 1 to 3 inches wide and be a minimum of 6 inches long. "T" shaped staples must have a minimum 8 inch main leg, a minimum 1 inch secondary leg, and minimum 4 inch head. Wood stakes must be rough-sawn hardwood, 12 to 24 inches in length, 1 x 3 inch in cross section, and wedge shape at the bottom.

4. Perform final grading, topsoil application, seeded preparation, and permanent seeding in accordance with specifications. Place matting within 48 hours of completing seeding operations, unless end of workday stabilization is specified on the approved erosion and sediment control plan.

5. Unroll matting down slope; lay matting smoothly and firmly upon the seeded surface. Avoid stretching the matting.

6. Overlap or abut edges of matting rolls per manufacturer recommendations. Overlap roll ends by 6 inches (minimum), with the upstream mat overlapping on top of the downslope mat.

7. Key in the top of sloped end of mat 6 inches (minimum) by digging a trench, placing the matting roll end in the trench, stapling the mat in place, replacing the excavated material, and tamping to secure the mat end in the key.

8. Staple/stake mat in a staggered pattern on 4 foot (maximum) centers throughout and 2 foot (maximum) centers along seams, joints, and roll ends.

9. If specified by the designer or manufacturer and depending on the type of mat being installed, once the matting is keyed and stapled in place, fill the mat voids with top soil or granular material and lightly compact or roll to maximize soil/mat contact without crushing mat.

10. Establish and maintain vegetation so that requirements for adequate vegetative establishment are continuously met in accordance with section B-4 vegetative stabilization.
Definition

The stabilization of areas frequently and intensively used by surfacing with suitable materials (e.g., mulch and aggregate).

Purpose

To provide a stable, non-eroding surface for areas frequently used and to improve the water quality from the runoff of these areas.

Conditions Where Practice Applies

This practice applies to intensively used areas (e.g., equipment and material storage, staging areas, heavily used travel lanes).

Criteria

1. A minimum 4-inch base course of crushed stone or other suitable materials including wood chips over nonwoven geotextile should be provided as specified in Section II-1 Materials.
2. Select the stabilizing material based on the intended use, desired maintenance frequency, and runoff control.
3. The transport of sediments, nutrients, oils, chemicals, particulate matter associated with vehicular traffic and equipment, and material storage needs to be considered in the selection of material. Additional control measures may be necessary to control some of these potential pollutants.
4. Surface erosion can be a problem on large heavy use areas. In these situations, measures to reduce the flow length of runoff or erosive velocities need to be considered.

Maintenance

The heavy use areas must be maintained in a condition that minimizes erosion. This may require adding suitable material, as specified on the approved plans, to maintain a clean surface.

Notes:

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**Stockpile Area**

**Definition**
A mound or pile of soil protected by appropriately designed erosion and sediment control measures.

**Purpose**
To provide a designated location for the temporary storage of soil that controls the potential for erosion, sedimentation, and changes to drainage patterns.

**Conditions Where Practice Applies**
Stockpile areas are utilized when it is necessary to salvage and store soil for later use.

**Criteria**
1. The stockpile location and all related sediment control practices must be clearly indicated on the erosion and sediment control plan.
2. The footprint of the stockpile must be sized to accommodate the anticipated volume of material and based on a side slope ratio no steeper than 2:1. Benching must be provided in accordance with Section B-3 Land Grading.
3. Runoff from the stockpile area must drain to a suitable sediment control practice.
4. Access the stockpile area from the upgrade side.
5. Clear water runoff into the stockpile area must be minimized by use of a diversion device such as an earth dike, temporary swale or diversion fence. Provisions must be made for discharging concentrated flow in a non-erosive manner.
6. Where runoff concentrates along the toe of the stockpile fill, an appropriate erosion/sediment control practice must be used to intercept the discharge.
7. Stockpiles must be stabilized in accordance with the 3/7 day stabilization requirement as well as Standard B-4-1 Incremental Stabilization and Standard B-4-4 Temporary Stabilization.
8. If the stockpile is located on an impervious surface, a liner should be provided below the stockpile to facilitate cleanup. Stockpiles containing contaminated material must be covered with impermeable sheeting.

**Maintenance**
The stockpile area must continuously meet the requirements for Adequate Vegetative Establishment in accordance with Section B-4 Vegetative Stabilization. Side slopes must be maintained at no steeper than a 2:1 ratio. The stockpile area must be kept free of erosion. If the vertical height of a stockpile exceeds 20 feet for 2:1 slopes, 30 feet for 3:1 slopes, or 40 feet for 4:1 slopes, benching must be provided in accordance with Section B-3 Land Grading.

**Notes:**

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Earth Dike

CONSTRUCTION SPECIFICATIONS

1. REMOVE AND DISPOSE OF ALL TREES, BRUSH, STUMPS, OBSTRUCTIONS, AND OTHER OBJECTIONABLE MATERIAL SO AS NOT TO INTERFERE WITH PROPER FUNCTION OF EARTH DIKE.

2. EXCAVATE OR SHAPE EARTH DIKE TO LINE, GRADE, AND CROSS SECTION AS SPECIFIED. BANK PROJECTIONS OR OTHER IRREGULARITIES ARE NOT ALLOWED.

3. COMPACT FILL.

4. CONSTRUCT FLOW CHANNEL ON AN UNINTERRUPTED, CONTINUOUS GRADE, ADJUSTING THE LOCATION DUE TO FIELD CONDITIONS AS NECESSARY TO MAINTAIN POSITIVE DRAINAGE.

5. PROVIDE OUTLET PROTECTION AS REQUIRED ON APPROVED PLAN.

6. STABILIZE EARTH DIKE WITHIN THREE DAYS OF INSTALLATION. STABILIZE FLOW CHANNEL FOR CLEAR WATER DIVERSION WITHIN 24 HOURS OF INSTALLATION.

7. MAINTAIN LINE, GRADE, AND CROSS SECTION. REMOVE ACCUMULATED SEDIMENT AND DEBRIS, AND MAINTAIN POSITIVE DRAINAGE. KEEP EARTH DIKE AND POINT OF DISCHARGE FREE OF EROSION, AND CONTINUOUSLY MEET REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.

8. UPON REMOVAL OF EARTH DIKE, GRADE AREA FLUSH WITH EXISTING GROUND. WITHIN 24 HOURS OF REMOVAL STABILIZE DISTURBED AREA WITH TOPSOIL, SEED, AND MULCH, OR AS SPECIFIED ON APPROVED PLAN.

FLOW CHANNEL STABILIZATION

A-1 SEED WITH STRAW MULCH AND TACK. (NOT ALLOWED FOR CLEAR WATER DIVERSION.)

A-2/B-2 SEED WITH SOIL STABILIZATION MATTING OR LINE WITH SOD.

A-3/B-3 4 TO 7 INCH STONE OR EQUIVALENT RECYCLED CONCRETEpressed INTO SOIL A MINIMUM OF 7 INCHES AND FLUSH WITH GROUND.
FLOW CHANNEL STABILIZATION

A-1  SEED WITH STRAW MULCH AND TACK. (NOT ALLOWED FOR CLEAR WATER DIVERSION.)
A-2/B-2  SEED WITH SOIL STABILIZATION MATTING OR LINE WITH SOD.
A-3/B-3  4 TO 7 INCH STONE OR EQUIVALENT RECYCLED CONCRETE PRESSED INTO SOIL A MINIMUM OF 7 INCHES AND Flush WITH GROUND.

CONSTRUCTION SPECIFICATIONS

1. REMOVE AND DISPOSE OF ALL TREES, BRUSH, STUMPS, OBSTRUCTIONS, AND OTHER OBJECTIONABLE MATERIAL SO AS NOT TO INTERFERE WITH PROPER FUNCTION OF TEMPORARY SWALE.
2. EXCAVATE OR SHAPE TEMPORARY SWALE TO LINE, GRADE, AND CROSS SECTION AS SPECIFIED. BANK PROJECTIONS OR OTHER IRREGULARITIES ARE NOT ALLOWED.
3. STABILIZE TEMPORARY SWALE WITHIN THREE DAYS OF INSTALLATION. STABILIZE SWALES USED FOR CLEAR WATER DIVERSION WITHIN 24 HOURS OF INSTALLATION.
4. CONSTRUCT FLOW CHANNEL ON AN UNINTERRUPTED, CONTINUOUS GRADE, ADJUSTING THE LOCATION DUE TO FIELD CONDITIONS AS NECESSARY TO MAINTAIN POSITIVE DRAINAGE.
5. PROVIDE OUTLET PROTECTION AS REQUIRED ON APPROVED PLAN.
6. MAINTAIN LINE, GRADE, AND CROSS SECTION.REMOVE ACCUMULATED SEDIMENT AND DEBRIS, AND MAINTAIN POSITIVE DRAINAGE. KEEP TEMPORARY SWALE AND POINT OF DISCHARGE FREE OF EROSION, AND CONTINUOUSLY MEET REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.
7. UPON REMOVAL OF TEMPORARY SWALE, GRADE AREA FLUSH WITH EXISTING GROUND. WITHIN 24 HOURS OF REMOVAL STABILIZE DISTURBED AREA WITH TOPSOIL, SEED, AND MULCH, OR AS SPECIFIED ON APPROVED PLAN.
**Perimeter Dike/Swale**

**C-3**

**STANDARD SYMBOL**

PDS-1

PLACE DESIGNATION (POS-1 OR 2) ON FLOW CHANNEL SIDE OF DIKE-SWALE.

COMPACTED EARTH

1 FT MIN.

ALL SIDE SLOPES 2:1 OR FLATTER

FLOW

EXISTING GROUND

6 IN MIN.

3 FT MIN.

6 IN MIN.

1 FT MIN.

CROSS SECTION

FLOW CHANNEL STABILIZATION

PDS-1 SEED AND MULCH AND TACK (DRAINING < 1 ACRE)

( NOT ALLOWED FOR CLEAR WATER DIVERSION.)

PDS-2 SEED WITH SOIL STABILIZATION MATTING OR LINE WITH SOD

(DRAINING BETWEEN 1 AND 2 ACRES)

NOTE: THE MAXIMUM DRAINAGE AREA FOR THIS PRACTICE IS 2 ACRES.

CONSTRUCTION SPECIFICATIONS

1. REMOVE AND DISPOSE OF ALL TREES, BRUSH, STUMPS, OBSTRUCTIONS, AND OTHER OBJECTIONABLE MATERIAL SO AS NOT TO INTERFERE WITH PROPER FUNCTION OF DIKE/SWALE.

2. EXCAVATE OR SHAPE DIKE/SWALE TO LINE, GRADE, AND CROSS SECTION AS SPECIFIED. BANK PROJECTIONS OR OTHER IRREGULARITIES ARE NOT ALLOWED.

3. COMPACT FILL.

4. CONSTRUCT DIKE/SWALE ON AN UNINTERRUPTED, CONTINUOUS GRADE, ADJUSTING THE LOCATION DUE TO FIELD CONDITIONS AS NECESSARY TO MAINTAIN POSITIVE DRAINAGE.

5. PROVIDE OUTLET PROTECTION AS REQUIRED ON APPROVED PLAN.

6. STABILIZE DIKE/SWALE WITHIN 3 DAYS OF INSTALLATION. STABILIZE DIKE/SWALES USED FOR CLEAR WATER DIVERSION WITHIN 24 HOURS OF INSTALLATION.

7. MAINTAIN LINE, GRADE, AND CROSS SECTION. REMOVE ACCUMULATED SEDIMENT AND DEBRIS, AND MAINTAIN POSITIVE DRAINAGE. KEEP PERIMETER DIKE/SWALE AND POINT OF DISCHARGE FREE OF EROSION AND CONTINUOUSLY MEET REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.

8. UPON REMOVAL OF DIKE/SWALE, GRADE AREA FLUSH WITH EXISTING GROUND. WITHIN 24 HOURS OF REMOVAL STABILIZE DISTURBED AREA WITH TOPSOIL, SEED, MULCH, OR AS SPECIFIED ON APPROVED PLAN.

**FLOW CHANNEL STABILIZATION**

PDS-1 SEED AND MULCH AND TACK (DRAINING < 1 ACRE)

( NOT ALLOWED FOR CLEAR WATER DIVERSION.)

PDS-2 SEED WITH SOIL STABILIZATION MATTING OR LINE WITH SOD

(DRAINING BETWEEN 1 AND 2 ACRES)

NOTE: THE MAXIMUM DRAINAGE AREA FOR THIS PRACTICE IS 2 ACRES.

CONSTRUCTION SPECIFICATIONS

1. REMOVE AND DISPOSE OF ALL TREES, BRUSH, STUMPS, OBSTRUCTIONS, AND OTHER OBJECTIONABLE MATERIAL SO AS NOT TO INTERFERE WITH PROPER FUNCTION OF DIKE/SWALE.

2. EXCAVATE OR SHAPE DIKE/SWALE TO LINE, GRADE, AND CROSS SECTION AS SPECIFIED. BANK PROJECTIONS OR OTHER IRREGULARITIES ARE NOT ALLOWED.

3. COMPACT FILL.

4. CONSTRUCT DIKE/SWALE ON AN UNINTERRUPTED, CONTINUOUS GRADE, ADJUSTING THE LOCATION DUE TO FIELD CONDITIONS AS NECESSARY TO MAINTAIN POSITIVE DRAINAGE.

5. PROVIDE OUTLET PROTECTION AS REQUIRED ON APPROVED PLAN.

6. STABILIZE DIKE/SWALE WITHIN 3 DAYS OF INSTALLATION. STABILIZE DIKE/SWALES USED FOR CLEAR WATER DIVERSION WITHIN 24 HOURS OF INSTALLATION.

7. MAINTAIN LINE, GRADE, AND CROSS SECTION. REMOVE ACCUMULATED SEDIMENT AND DEBRIS, AND MAINTAIN POSITIVE DRAINAGE. KEEP PERIMETER DIKE/SWALE AND POINT OF DISCHARGE FREE OF EROSION AND CONTINUOUSLY MEET REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.

8. UPON REMOVAL OF DIKE/SWALE, GRADE AREA FLUSH WITH EXISTING GROUND. WITHIN 24 HOURS OF REMOVAL STABILIZE DISTURBED AREA WITH TOPSOIL, SEED, MULCH, OR AS SPECIFIED ON APPROVED PLAN.
CONSTRUCTION SPECIFICATIONS

1. Construct berm on an uninterrupted, continuous grade.
2. Install berm to conform to cross section dimensions of a uniform height of 8 inches minimum and approximate width of 3 1/2 feet.
3. Provide outlet protection as required on plan.
4. Compact asphalt berm.
5. Repair damaged asphalt, remove accumulated sediment and debris, maintain positive drainage.
6. Upon removal of asphalt berm, return to original conditions or as specified on approved plan.
**Clear Water Diversion Pipe**

**CONSTRUCTION SPECIFICATIONS**

1. **FLEXIBLE PIPE IS PREFERRED. HOWEVER, CORRUGATED METAL PIPE OR EQUIVALENT PVC PIPE CAN BE USED. MAKE ALL JOINTS WATERTIGHT.**

2. **FOR SANDBAGS USE MATERIALS THAT ARE RESISTANT TO ULTRA-VIOLENT RADIATION, TEARING, AND PUNCTURE AND WOVEN TIGHTLY ENOUGH TO PREVENT LEAKAGE OF FILM MATERIAL.**

3. **USE 10 MIL OR THICKER, UV RESISTANT, IMPERMEABLE SHEETING OR OTHER APPROVED MATERIAL THAT IS IMPERMEABLE AND RESISTANT TO PUNCTURING AND TEARING.**

4. **PLACE IMPERMEABLE SHEETING SUCH THAT UPGRADE PORTION OVERLAPS DOWNGRADE PORTION BY A MINIMUM OF 18 INCHES.**

5. **SET HEIGHT OF SANDBAG DIKE AT TWICE THE PIPE DIAMETER. MAINTAIN HEIGHT ALONG LENGTH OF SANDBAG DIKE. PLACE DOUBLE ROW OF SANDBAGS.**

6. **AT A MINIMUM, SECURELY ANCHOR DIVERSION PIPE AT EACH DOWNGRADE JOINT.**

7. **SET OUTLET END OF DIVERSION PIPE LOWER THAN INLET END.**

8. **PROVIDE OUTLET PROTECTION AS REQUIRED ON APPROVED PLAN.**

9. **DEWATER WORK AREA USING AN APPROVED EROSION AND SEDIMENT CONTROL PRACTICE AS SPECIFIED ON APPROVED PLAN.**

10. **KEEP POINT OF DISCHARGE FREE OF EROSION, MAINTAIN WATER TIGHT CONNECTIONS AND POSITIVE DRAINAGE. REPLACE SANDBAGS AND IMPERMEABLE SHEETING IF TORN.**
CONSTRUCTION SPECIFICATIONS

1. FOR SANDBAGS USE MATERIALS THAT ARE RESISTANT TO ULTRA-VIOLET RADIATION, TEARING, AND PUNCTURE AND WOVEN TIGHTLY ENOUGH TO PREVENT LEAKAGE OF FILL MATERIAL.

2. USE BARRIER MADE OF CONCRETE OR OTHER APPROVED MATERIAL.

3. USE 10 MIL OR THICKER, UV RESISTANT, IMPERMEABLE SHEETING OR OTHER APPROVED MATERIAL THAT IS IMPERMEABLE AND RESISTANT TO PUNCTURING AND TEARING.

4. ESTABLISH TOP ELEVATION AT H/2 + 1 FOOT FOR PROJECTS OF DURATION LESS THAN 2 WEEKS OR AS SPECIFIED ON APPROVED PLAN.

5. INSTALL DIVERSION STRUCTURE FROM UPGRADE TO DOWNGRADE.

6. PLACE IMPERMEABLE SHEETING SUCH THAT UPGRADE PORTION OVERLAPS DOWNGRADE PORTION BY A MINIMUM OF 18 INCHES.

7. USE SANDBAG BASE FOR LEVELING AND TO ESTABLISH MINIMUM TOP ELEVATION OF THE BARRIER AS REQUIRED.

8. DISPOSE OF ALL EXCAVATED MATERIALS IN AN APPROVED DISPOSAL AREA OUTSIDE OF THE 100-YEAR FLOODPLAIN.

9. DEWATER WORK AREA USING AN APPROVED EROSION AND SEDIMENT CONTROL PRACTICE AS SPECIFIED ON APPROVED PLAN.

10. KEEP ABUTMENTS BETWEEN CONCRETE BARRIERS WATER TIGHT. REPLACE SANDBAGS AND IMPERMEABLE SHEETING IF TORN.

1. FOR SANDBAGS USE MATERIALS THAT ARE RESISTANT TO ULTRA-VIOLET RADIATION, TEARING, AND PUNCTURE AND WOVEN TIGHTLY ENOUGH TO PREVENT LEAKAGE OF FILL MATERIAL.

2. USE BARRIER MADE OF CONCRETE OR OTHER APPROVED MATERIAL.

3. USE 10 MIL OR THICKER, UV RESISTANT, IMPERMEABLE SHEETING OR OTHER APPROVED MATERIAL THAT IS IMPERMEABLE AND RESISTANT TO PUNCTURING AND TEARING.

4. ESTABLISH TOP ELEVATION AT H/2 + 1 FOOT FOR PROJECTS OF DURATION LESS THAN 2 WEEKS OR AS SPECIFIED ON APPROVED PLAN.

5. INSTALL DIVERSION STRUCTURE FROM UPGRADE TO DOWNGRADE.

6. PLACE IMPERMEABLE SHEETING SUCH THAT UPGRADE PORTION OVERLAPS DOWNGRADE PORTION BY A MINIMUM OF 18 INCHES.

7. USE SANDBAG BASE FOR LEVELING AND TO ESTABLISH MINIMUM TOP ELEVATION OF THE BARRIER AS REQUIRED.

8. DISPOSE OF ALL EXCAVATED MATERIALS IN AN APPROVED DISPOSAL AREA OUTSIDE OF THE 100-YEAR FLOODPLAIN.

9. DEWATER WORK AREA USING AN APPROVED EROSION AND SEDIMENT CONTROL PRACTICE AS SPECIFIED ON APPROVED PLAN.

10. KEEP ABUTMENTS BETWEEN CONCRETE BARRIERS WATER TIGHT. REPLACE SANDBAGS AND IMPERMEABLE SHEETING IF TORN.
CONSTRUCTION SPECIFICATIONS

1. USE MINIMUM WIDTH OF 10 FEET TO ALLOW FOR VEHICULAR PASSAGE.
2. PLACE NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS, OVER THE EARTH MOUND PRIOR TO PLACING STONE.
3. PLACE 2 TO 3 INCH STONE OR EQUIVALENT RECYCLED CONCRETE AT LEAST 6 INCHES DEEP OVER THE LENGTH AND WIDTH OF THE MOUNTABLE BERM.
4. MAINTAIN LINE, GRADE, AND CROSS SECTION. ADD STONE OR MAKE OTHER REPAIRS AS CONDITIONS DEMAND TO MAINTAIN SPECIFIED DIMENSIONS. REMOVE ACCUMULATED SEDIMENT AND DEBRIS. MAINTAIN POSITIVE DRAINAGE.
CONSTRUCTION SPECIFICATIONS

1. Use 42 inch high, 9 gauge or thicker chain link fencing (2" inch maximum opening).

2. Use 2½ inch diameter galvanized steel posts of 0.095 inch wall thickness and six foot length spaced no further than 10 feet apart. The posts do not need to be set in concrete.

3. Fasten chain link fence securely to the fence posts with wire ties.

4. Secure 10 mil or thicker UV resistant, impermeable sheeting to chain link fence with ties spaced every 24 inches at top, mid section, and below ground surface.

5. Extend sheeting a minimum of 4 feet along flow surface and embed end a minimum of 8 inches into ground. Soil stabilization matting may be used in lieu of impermeable sheeting along flow surface.

6. When two sections of sheeting adjoin each other, overlap by 6 inches and fold with seam facing downgrade.

7. Keep flow surface along diversion fence and point of discharge free of erosion. Remove accumulated sediment and debris. Maintain positive drainage. Replace impermeable sheeting if torn. If undermining occurs, reinstall fence.
CONSTRUCTION SPECIFICATIONS


2. FLEXIBLE PIPE IS PREFERRED. HOWEVER, CORRUGATED METAL PIPE OR EQUIVALENT PVC PIPE CAN BE USED. ALL CONNECTIONS MUST BE WATERTIGHT.

3. ATTACH A FLARED END SECTION TO THE INLET END OF PIPE WITH A WATERTIGHT CONNECTION. AT THE INLET OF THE PIPE SLOPE DRAIN, INSTALL 4 TO 7 INCH STONE OR EQUIVALENT RECYCLED CONCRETE PLACED 12 INCHES IN DEPTH ON NONWOVEN GEOTEXTILE AND EXTEND OUT 5 FEET FROM THE INLET IN ALL DIRECTIONS.
4. PROVIDE NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS, UNDER THE BOTTOM AND ALONG SIDES OF ALL RIPRAP.

5. SECURELY ANCHOR THE PIPE SLOPE DRAIN (PSD) TO THE SLOPE. SPACE THE ANCHORS EVERY 10 FEET.

6. HAND TAMPER THE SOIL AROUND AND UNDER THE PIPE AND END SECTION IN 4 INCH LIFTS TO THE TOP OF THE EARTH DIKE.

7. UPON COMPLETING INSTALLATION OF THE PSD, STABILIZE ASSOCIATED DISTURBANCES WITH SEED, MULCH, AND TACK.

8. INSTALL OUTLET PROTECTION AS SPECIFIED ON APPROVED PLAN.

9. KEEP POINTS OF INFLOW AND OUTFLOW FREE OF EROSION. MAINTAIN WATER TIGHT CONNECTIONS AND POSITIVE DRAINAGE. REMOVE ACCUMULATED SEDIMENT AND DEBRIS.

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CONSTRUCTION SPECIFICATIONS

1. PREPARE SWALES IN ACCORDANCE WITH THE CONSTRUCTION SPECIFICATIONS DESCRIBED IN SECTION C-2, STANDARDS AND SPECIFICATIONS FOR TEMPORARY SWALE, OR AS SPECIFIED ON PLAN.

2. PLACE NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS, UNDER THE BOTTOM AND SIDES OF THE DAM PRIOR TO PLACEMENT OF STONE. CONSTRUCT THE CHECK DAM WITH WASHED 4 TO 7 INCH STONE OR EQUIVALENT RECYCLED CONCRETE (WITHOUT REBAR) WITH SIDE SLOPES OF 2:1 OR FLATTER AND A MINIMUM TOP WIDTH OF 12 INCHES. PLACE THE STONE SO THAT IT COMPLETELY COVERS THE WIDTH OF THE CHANNEL AND CHANNEL BANKS. FORM THE WEIR SO THAT TOP OF THE OUTLET CRESCENT IS APPROXIMATELY 6 INCHES LOWER THAN THE OUTER EDGES.

3. SET THE HEIGHT FOR THE WEIR CREST EQUAL TO ONE-HALF THE DEPTH OF THE CHANNEL OR DITCH. TO AVOID SCOUR THE MAXIMUM HEIGHT OF THE WEIR CRESENT MUST NOT EXCEED 2.0 FEET.

4. REMOVE ACCUMULATED SEDIMENT WHEN IT REACHES ONE-HALF OF THE HEIGHT OF THE WEIR CRESENT. MAINTAIN LINE, GRADE, AND CROSS SECTION.
CONSTRUCTION SPECIFICATIONS

1. PROVIDE NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS, UNDER THE BOTTOM AND ALONG SIDES OF ALL RIPRAP.

2. CONSTRUCT INFLOW CHANNEL WITH CLASS I RIPRAP OR EQUIVALENT RECYCLED CONCRETE LINING TO A MINIMUM DEPTH OF 19 INCHES (2 \times D_{50}) AND A 1 FOOT DEEP FLOW CHANNEL. INFLOW RIPRAP PROTECTION CHANNEL MUST HAVE A TRAPEZOIDAL CROSS SECTION WITH 2:1 OR FLATTER SIDE SLOPES AND A 4 FOOT MINIMUM BOTTOM WIDTH.

3. INSTALL ENTRANCE AND EXIT SECTIONS AS SHOWN ON THE PROFILE.

4. BLEND RIPRAP INTO EXISTING GROUND.

5. MAINTAIN LINE, GRADE, AND CROSS SECTION. REMOVE ACCUMULATED SEDIMENT AND DEBRIS. KEEP POINTS OF INFLOW AND OUTFLOW FREE OF EROSION.
**Construction Specifications**

1. Provide nonwoven geotextile, as specified in Section H-1 Materials, under the bottom and along sides of all gabion baskets.
2. Use baskets made of minimum 11 gauge wire.
3. Construct gabion inflow protection by arranging 9 x 3 x 1 foot gabion baskets to form a trapezoidal section with a 3 foot bottom width, 1 foot minimum depth, 3 foot side walls, and 2:1 or flatter side slopes. Fill gabion baskets with 4 to 7 inch stone or equivalent recycled concrete without rebar or wire mesh.
4. Install entrance and exit sections as shown on the profile.
5. Install gabions in accordance with manufacturer recommendations.
6. Blend gabions into existing ground.
7. Maintain line, grade, and cross section. Remove accumulated sediment and debris. Keep points of inflow and outflow free of erosion.
CONSTRUCTION SPECIFICATIONS

1. RIPRAP AND STONE MUST CONFORM TO THE SPECIFIED CLASS.
2. USE NONWOVEN GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS, AND PROTECT FROM PUNCTURING, CUTTING, OR TEARING. REPAIR ANY DAMAGE OTHER THAN AN OCCASIONAL SMALL HOLE BY PLACING ANOTHER PIECE OF GEOTEXTILE OVER THE DAMAGED PART OR COMPLETELY REPLACING ANOTHER PIECE OF GEOTEXTILE TOGETHER.
3. PREPARE THE SUBGRADE FOR GEOTEXTILE OR STONE FILTER TO A MINIMUM OF 18 INCHES.
4. EXTEND GEOTEXTILE AT LEAST 6 INCHES BEYOND EDGES OF RIPRAP AND EMBED AT LEAST 4 INCHES AT SIDES OF THE RIPRAP. PLACE STONE FOR RIPRAP OUTLET IN A MANNER TO PREVENT SPALLS FROM FILLING THE Voids BETWEEN THE LARGER STONES.
5. WHERE NO ENDWALL IS USED, CONSTRUCT THE UPSTREAM END OF THE APRON SO THAT THE WOTH IS TWO TIMES THE DIAMETER OF THE OUTLET PIPE, AND EXTEND THE STONE UNDER THE OUTLET BY A MINIMUM OF 18 INCHES. PLACE STONE SO THAT IT BLENDS IN WITH EXISTING GROUND.
6. MAINTAIN LINE, GRADE, AND CROSS SECTION. KEEP OUTLET FREE OF EROSION. REMOVE ACCUMULATED SEDIMENT AND DEBRIS AFTER HIGH FLOWS INSPECT FOR SCOUR AND DISLODGED RIPRAP. MAKE NECESSARY REPAIRS IMMEDIATELY.
CONSTRUCTION SPECIFICATIONS

1. RIPRAP AND STONE MUST CONFORM TO THE SPECIFIED CLASS.

2. USE NONWOVEN GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS, AND PROTECT FROM PUNCTURING, CUTTING, OR TEARING. REPAIR ANY DAMAGE OTHER THAN AN OCCASIONAL SMALL HOLE BY PLACING ANOTHER PIECE OF GEOTEXTILE OVER THE DAMAGED PART OR BY COMPLETELY REPLACING THE GEOTEXTILE. PROVIDE A MINIMUM OF ONE FOOT OVERLAP FOR ALL REPAIRS AND FOR JOINING TWO PIECES OF GEOTEXTILE TOGETHER.

3. PREPARE THE SUBGRADE FOR GEOTEXTILE OR STONE FILTER (½ TO 1½ INCH STONE FOR 6 INCH MINIMUM DEPTH) AND RIPRAP TO THE REQUIRED LINES AND GRADES. COMPACT ANY FILL REQUIRED IN THE SUBGRADE TO A DENSITY OF APPROXIMATELY THAT OF THE SURROUNDING UNDISTURBED MATERIAL.

4. EXTEND GEOTEXTILE AT LEAST 6 INCHES BEYOND EDGES OF RIPRAP AND EMBED AT LEAST 4 INCHES AT SIDES OF RIPRAP.

5. CONSTRUCT RIPRAP OUTLET TO FULL COURSE THICKNESS IN ONE OPERATION AND IN SUCH A MANNER AS TO AVOID DISPLACEMENT OF UNDERLYING MATERIALS. PLACE STONE FOR RIPRAP OUTLET IN A MANNER THAT WILL ENSURE THAT IT IS REASONABLY HOMOGENEOUS WITH THE SMALLER STONES AND SPALLS FILLING THE Voids BETWEEN THE LARGER STONES. PLACE RIPRAP IN A MANNER TO PREVENT DAMAGE TO THE STONE FILTER BLANKET OR GEOTEXTILE. HAND PLACE TO THE EXTENT NECESSARY.

6. WHERE NO ENDWALL IS USED, CONSTRUCT THE UPSTREAM END OF THE APRON SO THAT THE WIDTH IS TWO TIMES THE DIAMETER OF THE OUTLET PIPE, AND EXTEND THE STONE UNDER THE OUTLET BY A MINIMUM OF 18 INCHES.

7. CONSTRUCT APRON WITH 0% SLOPE ALONG ITS LENGTH AND WITHOUT OBSTRUCTIONS. PLACE STONE SO THAT IT BLENDS IN WITH EXISTING GROUND.

8. MAINTAIN LINE, GRADE, AND CROSS SECTION. KEEP OUTLET FREE OF EROSION. REMOVE ACCUMULATED SEDIMENT AND DEBRIS. AFTER HIGH FLOWS INSPECT FOR SCOUR AND DISLODGED RIPRAP. MAKE NECESSARY REPAIRS IMMEDIATELY.
**Construction Specifications**

1. Riprap and stone must conform to the specified class.

2. Use nonwoven geotextile, as specified in Section H-1 Materials, and protect from puncturing, cutting, or tearing. Repair any damage other than an occasional small hole by placing another piece of geotextile over the damaged part or by completely replacing the geotextile. Provide a minimum of one foot overlap for all repairs and for joining two pieces of geotextile together.

3. Prepare the subgrade for geotextile or stone filter (3/4 to 1 inch minimum stone for 6 inch minimum depth) and riprap to the required lines and grades. Compact any fill required in the subgrade to a density of approximately that of the surrounding undisturbed material.

4. Extend geotextile at least 6 inches beyond edges of riprap and embed at least 4 inches at sides of riprap.

5. Construct riprap outlet to full course thickness in one operation and in such a manner as to avoid displacement of underlying materials. Place stone for riprap outlet in a manner that will ensure that it is reasonably homogenous with the smaller stones and spalls filling the voids between the larger stones. Place riprap in a manner to prevent damage to the filter blanket or geotextile. Hand place to the extent necessary.

6. Where no endwall is used, construct the upstream end of the apron so that the width is two times the diameter of the outlet pipe, and extend the stone under the outlet by a minimum of 18 inches.

7. Construct apron with 0% slope along its length and without obstructions. Place stone so that it blends in with existing ground.

Rock Outlet Protection III  D-4-1-C

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CONSTRUCTION SPECIFICATIONS

1. USE SPECIFIED CLASS OF RIPRAP.

2. USE NONWOVEN GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS, AND PROTECT FROM PUNCHING, CUTTING, OR TEARING. REPAIR ANY DAMAGE OTHER THAN AN OCCASIONAL SMALL HOLE BY PLACING ANOTHER PIECE OF GEOTEXTILE OVER THE DAMAGED PART OR COMPLETELY REPLACING THE GEOTEXTILE. PROVIDE A MINIMUM OF ONE FOOT OVERLAP FOR ALL REPAIRS AND FOR JOINING TWO PIECES OF GEOTEXTILE.

3. PREPARE THE SUBGRADE FOR THE PLUNGE POOL TO THE REQUIRED LINES AND GRADES. COMPACT ANY FILL REQUIRED IN THE SUBGRADE TO A DENSITY OF APPROXIMATELY THAT OF THE SURROUNDING UNDISTURBED MATERIAL.


5. STONE FOR THE PLUNGE POOL MAY BE PLACED BY EQUIPMENT. CONSTRUCT TO THE FULL COURSE THICKNESS IN ONE OPERATION AND IN SUCH A MANNER AS TO AVOID DISPLACEMENT OF UNDERLYING MATERIALS. DELIVER AND PLACE THE STONE FOR THE PLUNGE POOL IN A MANNER THAT WILL ENSURE THAT IT IS REASONABLY HOMOGENEOUS WITH THE SMALLER STONES AND SPALLS FILLING THE Voids BETWEEN THE LARGER STONES. PLACE STONE FOR THE PLUNGE POOL IN A MANNER TO PREVENT DAMAGE TO THE GEOTEXTILE. HAND PLACE TO THE EXTENT NECESSARY.

6. AT THE PLUNGE POOL OUTLET, PLACE THE STONE SO THAT IT MEETS THE EXISTING GRADE.

7. MAINTAIN LINE, GRADE, AND CROSS SECTION. KEEP OUTLET FREE OF EROSION. REMOVE ACCUMULATED SEDIMENT AND DEBRIS. AFTER HIGH FLOWS INSPECT FOR SCOUR AND DISLODGED RIPRAP. MAKE NECESSARY REPAIRS IMMEDIATELY.
Silt Fence

**CONSTRUCTION SPECIFICATIONS**

1. **USE WOOD POSTS 1½ X 1½ ± ½ INCH (MINIMUM) SQUARE CUT OF SOUND QUALITY HARDWOOD. AS AN ALTERNATIVE TO WOODEN POST USE STANDARD "T" OR "U" SECTION STEEL POSTS WEIGHING NOT LESS THAN 1 POUND PER LINEAR FOOT.**

2. **USE 42 INCH MINIMUM POSTS DRIVEN 16 INCH MINIMUM INTO GROUND NO MORE THAN 6 FEET APART.**

3. **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 MIDDLE-SIDED.**
4. PROVIDE MANUFACTURER CERTIFICATION TO THE AUTHORIZED REPRESENTATIVE OF THE INSPECTION/ENFORCEMENT AUTHORITY SHOWING THAT THE GEOTEXTILE USED MEETS THE REQUIREMENTS IN SECTION H–I MATERIALS.

5. EMBED GEOTEXTILE A MINIMUM OF 8 INCHES VERTICALLY INTO THE GROUND. BACKFILL AND COMPACT THE SOIL ON BOTH SIDES OF FABRIC.

6. WHERE TWO SECTIONS OF GEOTEXTILE ADJOIN: OVERLAP, TWIST, AND STAPLE TO POST IN ACCORDANCE WITH THIS DETAIL.

7. 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.

8. 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.

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CONSTRUCTION SPECIFICATIONS

1. Use nominal 2 inch x 4 inch lumber.
2. Use woven silt film geotextile, as specified in Section H-1 materials.
3. 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.
4. Space upright supports no more than 10 feet apart.
5. Provide a two foot opening between every set of supports and place stone in the opening over geotextile.
7. Where two sections of geotextile adjoin, overlap, fold, and staple to post in accordance with this detail. Attach lathe.
8. Provide a mastic seal between pavement, geotextile, and 2x4 to prevent sediment–laden water from escaping beneath silt fence installation.
9. Secure boards to pavement with 40d 5 inch minimum length nails.
10. Remove accumulated sediment and debris when bulges develop in silt fence or when sediment reaches 25% of fence height. Replace geotextile if torn. Maintain water tight seal along bottom. Replace stone if displaced.
CONSTRUCTION SPECIFICATIONS

1. Install 2% INCH DIAMETER GALVANIZED STEEL POSTS OF 0.95 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 9 GAUGE OR HEAVIER GALVANIZED CHAIN LINK FENCE (2% INCH MAXIMUM OPENING) 42 INCHES IN HEIGHT SECURELY TO THE FENCE POSTS WITH WIRE TIES OR HUG 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 6 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 25% 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 HOG RING FASTENERS AT 18 IN. INTERVALS.
CONSTRUCTION SPECIFICATIONS

1. Install Silt Fence or Super Silt Fence in accordance with Detail E-1 or Detail E-2.

2. At the pipe location, cut and pull back the woven silt film geotextile and chain link fencing. Secure geotextile to pipe with gasket. Install additional stakes or posts if necessary to accommodate the installation of the baffle board.

3. Entrench ½ inch plywood baffle a minimum of 8 inches and secure to the upgrade side of the fence stakes or posts. Baffle should be at least the height of the fence.

4. Place ¾ to ½ inch stone or equivalent recycled concrete behind the plywood baffle on nonwoven geotextile and extend 12 inch min. along top of pipe and to a height of 4 inches above the top of pipe.

5. Use nonwoven and woven silt film geotextiles as specified in Section H-1 materials.

6. Remove accumulated sediment and debris when sediment reaches 6 inches in height. Replace geotextile if torn. If undermining occurs, reinstall baffle, chain link, and geotextile. Replace stone if displaced. Keep point of discharge free of erosion.
CONSTRUCTION SPECIFICATIONS

1. PLACE BERM ON THE CONTOUR WITH ENDS TURNED UPGRADE TO PREVENT BYPASS. DO NOT EXCEED GRADES OF 5 PERCENT ALONG THE BERM FOR A DISTANCE GREATER THAN 50 FEET.

2. CONSTRUCT BERM OF CLEAN WOOD CHIPS A MINIMUM SIZE OF 1X2 INCH AND A MAXIMUM OF 3X3 INCH.

3. COMPACT AND SHAPE MATERIAL TO CONFORM TO DIMENSIONS SPECIFIED ON THE APPROVED PLAN.

4. DO NOT PLACE UN-CHIPPED TREE PIECES, BRUSH, OR STUMPS IN THE BERM. BERM MUST BE FREE OF BANK PROJECTIONS OR OTHER IRREGULARITIES.

5. THE BERM MAY CONTAIN UP TO 50% COMPOST MATERIAL IN ACCORDANCE WITH SECTION H-1 MATERIALS.

6. MAINTAIN LINE, GRADE, AND CROSS SECTION. ADD WOOD CHIPS OR MAKE OTHER REPAIRS AS CONDITIONS DEMAND TO MAINTAIN SPECIFIED DIMENSIONS. REMOVE ACCUMULATED SEDIMENT AND DEBRIS WHEN THEY REACH 25% OF BERM HEIGHT.
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CONSTRUCTION SPECIFICATIONS

1. PRIOR TO INSTALLATION, CLEAR ALL OBSTRUCTIONS INCLUDING ROCKS, CLODS, AND DEBRIS GREATER THAN ONE INCH THAT MAY INTERFERE WITH PROPER FUNCTION OF FILTER LOG.

2. FILL LOG NETTING UNIFORMLY WITH COMPOST (IN ACCORDANCE WITH SECTION H-1 MATERIALS), OR OTHER APPROVED BIODEGRADABLE MATERIAL TO DESIRED LENGTH SUCH THAT LOGS DO NOT DEFORM.

3. INSTALL FILTER LOGS PERPENDICULAR TO THE FLOW DIRECTION AND PARALLEL TO THE SLOPE WITH THE BEGINNING AND END OF THE INSTALLATION POINTING SLIGHTLY UP THE SLOPE CREATING A "J" SHAPE AT EACH END TO PREVENT BYPASS.
4. FOR UNTRENCHED INSTALLATION BLOW OR HAND PLACE MULCH OR COMPOST ON UPHILL SIDE OF THE SLOPE ALONG LOG.

5. stake filter log every 4 feet or closer along entire length of log or trench log into ground a minimum of 4 inches and stake log every 8 feet or closer.

6. use stakes with a minimum nominal cross section of 2x2 inch and of sufficient length to attain a minimum of 12 inches into the ground and 3 inches protruding above log.

7. WHEN MORE THAN ONE LOG IS NEEDED, OVERLAP ENDS 12 INCHES MINIMUM AND STAKE.

8. REMOVE SEDIMENT WHEN IT HAS ACCUMULATED TO A DEPTH OF \( \frac{1}{3} \) THE EXPOSED HEIGHT OF LOG AND REPLACE MULCH. REPLACE FILTER LOG IF TORN. REINSTALL FILTER LOG IF UNDERMINING OR DISLODGING OCCURS. REPLACE CLOGGED FILTER LOGS. FOR PERMANENT APPLICATIONS, ESTABLISH AND CONTINUOUSLY MEET REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.
Temporary Stone Outlet Structure

**STANDARD SYMBOL**

**ISOMETRIC VIEW**

**SECTION A-A**

- Perforations for dewatering, 3 rows 1 in diameter holes on 6 in centers
- 2 in x 10 in x 12 ft baffler board
- 2 to 3 in stone

**SECTION B-B**

- Storage volume - excavate as necessary
- 6 in min.

**CONSTRUCTION SPECIFICATIONS**

1. Provide storage volume as specified on approved plans.
2. Use nonwoven geotextile on interface between ground and stone.
3. Perforate baffler board with 3 rows of 1 inch diameter holes 6 inches on center, embed a minimum of 4 inches into ground, and extend baffler board minimum of 12 inches into earth dike.

**EARTH DIKE**

- 2 to 3 in stone
- 2 ft min. top width
- 6 in min.
Temporary Stone Outlet Structure

4. USE CLEAN 2 TO 3 INCH STONE OR EQUIVALENT RECYCLED CONCRETE, PLACE WOVEN MONOFILAMENT GEOTEXTILE ON UPSTREAM FACE AND COVER WITH A MINIMUM OF 6 INCHES OF ADDITIONAL STONE.

5. USE NONWOVEN AND WOVEN MONOFILAMENT GEOTEXTILES AS SPECIFIED IN SECTION H-1 MATERIALS.

6. SET WEIR CREST OF STONE 6 INCHES LOWER THAN THE TOP OF EARTH DIKE. USE MINIMUM LENGTH OF 6 FEET FOR WEIR CREST.

7. REMOVE SEDIMENT WHEN IT HAS ACCUMULATED TO WITHIN 6 INCHES OF WEIR CREST, REPLACE GEOTEXTILE AND STONE FACING WHEN STRUCTURE CEASES TO DRAIN. MAINTAIN LINE, GRADE, AND CROSS SECTION.

8. UPON REMOVAL OF STONE 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.

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Temporary Stone Outlet Structure

4. USE CLEAN 2 TO 3 INCH STONE OR EQUIVALENT RECYCLED CONCRETE, PLACE WOVEN MONOFILAMENT GEOTEXTILE ON UPSTREAM FACE AND COVER WITH A MINIMUM OF 6 INCHES OF ADDITIONAL STONE.

5. USE NONWOVEN AND WOVEN MONOFILAMENT GEOTEXTILES AS SPECIFIED IN SECTION H-1 MATERIALS.

6. SET WEIR CREST OF STONE 6 INCHES LOWER THAN THE TOP OF EARTH DIKE. USE MINIMUM LENGTH OF 6 FEET FOR WEIR CREST.

7. REMOVE SEDIMENT WHEN IT HAS ACCUMULATED TO WITHIN 6 INCHES OF WEIR CREST, REPLACE GEOTEXTILE AND STONE FACING WHEN STRUCTURE CEASES TO DRAIN. MAINTAIN LINE, GRADE, AND CROSS SECTION.

8. UPON REMOVAL OF STONE 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.

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Temporary Gabion Outlet Structure

**E-8**

**STANDARD SYMBOL**

**T Gos**

**MAXIMUM DRAINAGE AREA** = ½ ACRE

**ELEVATION**

- TIE-IN (SEE EARTH DIKE TRANSITION DETAIL ON 2 OF 2)
- GRADE AT FRONT AND BACK FACE OF WALL
- GABION BASKETS TYPICAL DIMENSIONS 6 FT x 3 FT x 3 FT
- GABION MATRESS
- 9 IN GABION MATTRESS
- WEIR CREST 6 FT
- WEIR CREST 6 FT
- 1 FT MIN.

*ONE BASKET OR MULTIPLE MATTRESSES NEED TO EXTEND FROM THE GABION/EARTH INTERSECTION (TIE IN) TO A MINIMUM 1 FOOT BEYOND THE TIE IN.

**PLAN**

- 2 GABION BASKETS AT 6 FT EACH = 12 FT
- 3 FT
- 6 IN MIN. (TYP.)
- 4 TO 7 IN STONE

**SECTION A-A**

- EMBED WOVEN MONOFILAMENT GEOTEXTILE 9 IN MIN. INTO GROUND
- Channel Bottom
- Water Flow
- Storage Volume - Excavate in accordance with approved plan
- Nonwoven Geotextile
- 9 IN MIN. GABION BASKETS TYPICAL DIMENSIONS 6 FT x 3 FT x 3 FT

**EXPLANATION**

- Fabric is to be attached to all baskets up to the weir elevation.
- Place woven monofilament geotextile on upstream face of gabion basket prior to backfill. Fasten securely with ties spaced every 20 in at the top and mid-section.
- Top gabion structure weir crest.
- Tie-in (see earth dike transition detail on 2 of 2)
- Grade at front and back face of wall
- Gabion baskets typical dimensions 6 ft x 3 ft x 3 ft
- Gabion mattress
- 9 in gabion mattress
- Weir crest 6 ft
- Weir crest 6 ft
- 1 ft min.

*ONE BASKET OR MULTIPLE MATTRESSES NEED TO EXTEND FROM THE GABION/EARTH INTERSECTION (TIE IN) TO A MINIMUM 1 FOOT BEYOND THE TIE IN.
Temporary Gabion Outlet Structure

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 MONOFILAMENT 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 NONWOVEN MONOFILAMENT 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.
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<th>Notes:</th>
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CONSTRUCTION SPECIFICATIONS

1. USE WOVEN SLiT FILM GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS.

2. EXCAVATE COMPLETELY AROUND THE INLET TO A DEPTH OF 18 INCHES BELOW THE NOTCH ELEVATION.

For Type B, use 2½ inch diameter galvanized steel posts of 0.095 inch wall thickness and 6 foot length, driven a minimum of 36 inches below the weir crest at each corner of the structure. Fasten 9 gauge or heavier chain link fence, 42 inches in height, securely to the fence posts with wire ties. Fasten geotextile securely to the chain link fence with ties spaced every 24 inches at the top and mid section. Embed geotextile and chain link fence a minimum of 18 inches below the weir crest.

4. Backfill around the inlet in loose 4 inch lifts and compact until soil is level with the notch elevation on the ends and top elevation on the sides.

5. Storm drain inlet protection requires frequent maintenance. Remove accumulated sediment after each rain event to maintain function and avoid premature clogging. If inlet protection does not completely drain within 24 hours after a storm event, it is clogged. When this occurs, remove accumulated sediment and clean, or replace geotextile and stone.

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CONSTRUCTION SPECIFICATIONS

1. USE NONWOVEN GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS.
2. LIFT GRATE AND WRAP WITH NONWOVEN GEOTEXTILE TO COMPLETELY COVER ALL OPENINGS. SECURE WITH WIRE TIES AND SET GRATE BACK IN PLACE.
3. PLACE CLEAN ¾ TO 1½ INCH STONE OR EQUIVALENT RECYCLED CONCRETE 6 INCHES THICK ON THE GRATE.
4. STORM DRAIN INLET PROTECTION REQUIRES FREQUENT MAINTENANCE. REMOVE ACCUMULATED SEDIMENT AFTER EACH RAIN EVENT TO MAINTAIN FUNCTION AND AVOID PREMATURE CLOGGING. IF INLET PROTECTION DOES NOT COMPLETELY DRAIN WITHIN 24 HOURS AFTER A STORM EVENT, IT IS CLOGGED. WHEN THIS OCCURS, REMOVE ACCUMULATED SEDIMENT AND CLEAN, OR REPLACE GEOTEXTILE AND STONE.
CONSTRUCTION SPECIFICATIONS:

1. USE NOMINAL 2 INCH x 4 INCH LUMBER
2. USE NONWOVEN GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS.
3. NAIL THE 2x4 WEIR TO 9 INCH LONG VERTICAL SPACERS (MAXIMUM 6 FEET APART).
4. ATTACH A CONTINUOUS PIECE OF %4 INCH GALVANIZED HARDWARE CLOTH, WITH A MINIMUM WIDTH OF 30 INCHES AND A MINIMUM LENGTH OF 4 FEET LONGER THAN THE THROAT OPENING, TO THE 2x4 WEIR, EXTENDING IT 2 FEET BEYOND THROAT ON EACH SIDE.
5. PLACE A CONTINUOUS PIECE OF NONWOVEN GEOTEXTILE OF THE SAME DIMENSIONS AS THE HARDWARE CLOTH OVER THE HARDWARE CLOTH AND SECURELY ATTACH TO THE 2x4 WEIR.
6. PLACE THE ASSEMBLY AGAINST THE INLET THROAT AND NAIL TO 2x4 ANCHORS (MINIMUM 2 FEET LENGTH), EXTEND THE ANCHORS ACROSS THE INLET TOP AND HOLD IN PLACE BY SANDBAGS OR OTHER APPROVED ANCHORING METHOD.
7. INSTALL END SPACERS A MINIMUM OF 1 FOOT BEYOND THE ENDS OF THE THROAT OPENING.
8. FORM THE HARDWARE CLOTH AND THE GEOTEXTILE TO THE CONCRETE GUTTER AND FACE OF CURB TO SPAN THE INLET OPENING. COVER THE HARDWARE CLOTH AND GEOTEXTILE WITH CLEAN %4 TO %1 INCH STONE OR EQUIVALENT RECYCLED CONCRETE.
9. AT NON-SUMP LOCATIONS, INSTALL A TEMPORARY SANDBAG OR ASPHALT BERM TO PREVENT INLET BYPASS.
10. STORM DRAIN INLET PROTECTION REQUIRES FREQUENT MAINTENANCE. REMOVE ACCUMULATED SEDIMENT AFTER EACH RAIN EVENT TO MAINTAIN FUNCTION AND AVOID PREMATURE CLOGGING. IF INLET PROTECTION DOES NOT COMPLETELY DRAIN WITHIN 24 HOURS AFTER A STORM EVENT, IT IS CLOGGED. WHEN THIS OCCURS, REMOVE ACCUMULATED SEDIMENT AND CLEAN, OR REPLACE GEOTEXTILE AND STONE.
Median Inlet Protection E-9-4

Construction Specifications:

1. Use nonwoven geotextile as specified in Section H-1 materials.

2. Install silt fence on all sides of inlet receiving sheet flow. Fence is to be installed in accordance with silt fence detail E-1, except posts are to be spaced a maximum of 5 feet apart.

3. Install stone structure with the weir 10 inches above the invert of the channel, and the weir opening the same width as the channel bottom or 2 feet minimum. Use clean 4 to 7 inch stone or equivalent recycled concrete. Place nonwoven geotextile on the upstream face and cover with a 12 inch thick layer of clean ¾ to 1½ inch stone or equivalent recycled concrete.

4. Construct "Wings" in accordance with diversion fence detail C-9.

5. Storm drain inlet protection requires frequent maintenance. Remove accumulated sediment after each rain event to maintain function and avoid premature clogging. If inlet protection does not completely drain within 24 hours after a storm event, it is closed. When this occurs, remove accumulated sediment and clean, or replace geotextile and stone.
Median Sump Inlet Protection

**Construction Specifications**

1. **Use Nonwoven Geotextile as Specified in Section H-1 Materials.**

2. **Install Silt Fence on All Sides of Inlet Receiving Sheet Flow.** Fence is to be installed in accordance with Silt Fence Detail E-1, except posts are to be spaced a maximum of 5 feet apart.

3. **Install Each Stone Structure with the Weir 10 Inches Above the Invert of the Channel and the Weir Opening the Same Width as the Channel Bottom or 2 Feet Minimum.** Use clean 4 to 7 inch stone or equivalent recycled concrete. Place nonwoven geotextile on the upstream face and cover with a 12 inch thick layer of clean 4 to 10 inch stone or equivalent recycled concrete.

4. **Construct "Wings" in Accordance with Diversion Fence Detail C-9.**

5. **Storm Drain Inlet Protection Requires Frequent Maintenance.** Remove accumulated sediment after each rain event to maintain function and avoid premature clogging. If inlet protection does not completely drain within 24 hours after a storm event, it is clogged. When this occurs, remove accumulated sediment and clean, or replace geotextile and stone.
Median Sump
Inlet Protection

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Combination Inlet Protection

CONSTRUCTION SPECIFICATIONS

1. Use nominal 2 inch x 4 inch lumber.
2. Use nonwoven geotextile as specified in Section H-1 materials.
3. Lift grate, and wrap with nonwoven geotextile to completely cover all openings, then set grate back in place.
4. Attach a continuous piece of ½ inch galvanized hardware cloth with a minimum width of 30 inches and a minimum length of 4 feet longer than the throat opening, to the 2x4 weir, extending 2 feet beyond throat on each side.
5. Place a continuous piece of nonwoven geotextile the same dimensions as the hardware cloth over the hardware cloth and securely attach it to the weir.
Combination Inlet Protection  

6. Nail the 2x4 weir to the top of a 9 inch long vertical spacer to be located between the weir and the inlet face (maximum 4 feet apart).

7. Place the assembly against the inlet throat and nail to 2x4 anchors (minimum 2 foot lengths of 2x4 inch to the top of the weir at spacer locations). Extend 2x4 anchors across the inlet top and hold in place by sandbags or other approved anchoring method.

8. Install end spacers a minimum of 1 foot beyond both ends of the throat opening.

9. Form the ¼ inch hardware cloth and the geotextile to the concrete gutter and against the face of the curb on both sides of the inlet. Place clean ¾ to 1½ inch stone or equivalent recycled concrete over the hardware cloth and geotextile in such a manner to prevent water from entering the inlet under or around the geotextile.

10. At non-sump locations, install a temporary sandbag or asphalt berm to prevent inlet bypass.

11. Storm drain inlet protection requires frequent maintenance. Remove accumulated sediment after each rain event to maintain function and avoid premature clogging. If inlet protection does not completely drain within 24 hours after a storm event, it is clogged. When this occurs, remove accumulated sediment and clean, or replace geotextile and stone.

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Gabion Inlet Protection

CONSTRUCTION SPECIFICATIONS

1. Use baskets made of 11 gauge wire or heavier.

2. Wrap 3 feet x 3 feet gabion baskets (length variable) with nonwoven geotextile, as specified in section H-1 materials, overlapping at the top and fasten the geotextile at the top of the basket with wire fasteners (hog rings) at a maximum of 1 foot intervals along the seam.

3. Avoid tearing or damaging geotextile.

4. Entrench gabion baskets to a depth of 6 inches.

5. Place and interlock gabion baskets with no gaps.

6. Fill gabion baskets with clean 4 to 7 inch stone or equivalent recycled concrete without rebar or mesh.

7. Storm drain inlet protection requires frequent maintenance. Remove accumulated sediment after each rain event to maintain function and avoid premature clogging. If inlet protection does not completely drain within 24 hours after a storm event, it is clogged. When this occurs, remove accumulated sediment and clean, or replace geotextile and stone.
CONSTRUCTION SPECIFICATIONS

1. Lift grate and place woven polypropylene geotextile insert in position so that the geotextile forms a basket shape within the inlet. Leave approximately 6 inches of the fabric outside the frame.

2. This type of protection must be inspected frequently and the geotextile insert replaced or cleaned when clogged with sediment.

3. To remove catch basin insert, place rebar through the lifting loops on each side of the sack.

4. The geotextile will be manufactured from a woven polypropylene geotextile that meets or exceeds the following specifications:

<table>
<thead>
<tr>
<th>Properties</th>
<th>Test Method</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grab Tensile Strength</td>
<td>ASTM D-4632</td>
<td>300 LBS</td>
</tr>
<tr>
<td>Grab Tensile Elongation</td>
<td>ASTM D-4632</td>
<td>20%</td>
</tr>
<tr>
<td>Puncture</td>
<td>ASTM D-4833</td>
<td>120 LBS</td>
</tr>
<tr>
<td>Mullen Burst</td>
<td>ASTM D-3786</td>
<td>800 PSI</td>
</tr>
<tr>
<td>Trapezoidal Tear</td>
<td>ASTM D-4533</td>
<td>120 LBS</td>
</tr>
<tr>
<td>UV Resistance</td>
<td>ASTM D-4555</td>
<td>80%</td>
</tr>
<tr>
<td>Apparent Opening Size</td>
<td>ASTM D-4751</td>
<td>40 US SIEVE</td>
</tr>
<tr>
<td>Flow Rate</td>
<td>ASTM D-4491</td>
<td>40 GAL/MIN/SQ.FT.</td>
</tr>
<tr>
<td>Permittivity</td>
<td>ASTM D-4491</td>
<td>0.55 SEC-1</td>
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5. Inspect and provide necessary maintenance periodically and after each rain event.
Catch Basin Insert

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Removable Pumping Station

**STANDARD SYMBOL**

**I8IRPS**

**CONSTRUCTION SPECIFICATIONS**

1. Use corrugated metal or plastic pipe with 1 inch diameter perforations 6 inches on center.
2. Use a minimum 12 inch diameter inner pipe with an outer pipe a minimum 6 inches larger in diameter. Bottom of each pipe must be capped with watertight seal.
3. Wrap each pipe with 1/2 inch galvanized hardware cloth. On inner pipe wrap nonwoven geotextile, as specified in section H-1 materials, over the hardware cloth.
4. Excavate 8 feet x 8 feet x 4 feet deep pit for pipe placement. Place clean 3/4 to 1 1/2 inch stone or equivalent recycled concrete, 6 inches in depth prior to pipe placement.
5. Set top of inner and outer pipes minimum 12 inches above anticipated water surface elevation (or riser crest elevation when dewatering a basin).
6. Backfill pit around the outer pipe with 3/4 to 1 1/2 inch clean stone or equivalent recycled concrete and extend stone a minimum of 6 inches above anticipated water surface elevation.
7. Discharge to a stable area at a nonerosive rate.
8. A removable pumping station requires frequent maintenance. If system clogs, pull out inner pipe and replace geotextile. Keep point of discharge free of erosion.
Removable Pumping Station

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Removable Pumping Station

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CONSTRUCTION SPECIFICATIONS

1. Use 12 inch or larger diameter corrugated metal, HDPE, or PVC pipe with 1 inch diameter perforations, 6 inches on center. Bottom of pipe must be capped with watertight seal.

2. Wrap pipe with 1/6 inch galvanized hardware cloth and wrap nonwoven geotextile, as specified in Section H-1 Materials, over the hardware cloth.

3. Excavate pit to three times the pipe diameter and four feet in depth. Place 3/4 to 1 1/2 inch stone or equivalent recycled concrete, 6 inches in depth prior to pipe placement.

4. Set top of pipe minimum 12 inches above anticipated water surface elevation.

5. Backfill pit around the pipe with 3/4 to 1 1/2 inch clean stone or equivalent recycled concrete and extend stone a minimum of 6 inches above anticipated water surface elevation.

6. Discharge to a stable area at a nonerosive rate.

7. A sump pit requires frequent maintenance. If system clogs, remove perforated pipe and replace geotextile and stone. Keep point of discharge free of erosion.
CONSTRUCTION SPECIFICATIONS

1. PROVIDE 1 CUBIC FOOT OF STORAGE FOR EACH GALLON PER MINUTE OF PUMP CAPACITY. REQUIRED STORAGE VOLUME MAY BE ATTAINED BY PLACEMENT OF TANKS IN PARALLEL WITH INFLOW EVENLY DISTRIBUTED AMONG TANKS. OVERTOPPING OF TANKS IS NOT PERMITTED.

2. USE 60 INCH CORRUGATED METAL OR PLASTIC PIPE WITH 1 INCH DIAMETER PERFORATIONS, 6 INCHES ON CENTER FOR THE INNER PIPE, LINE PIPE WITH NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS. SANDWICHED BETWEEN, AND ATTACHED TO, ¼ INCH HARDWARE CLOTH.

3. OVERLAP GEOTEXTILE 8 INCHES MINIMUM AT VERTICAL SEAM AND AT THE BOTTOM PLATE.

4. ANCHOR GEOTEXTILE AT BOTTOM OF TANK WITH 4 INCHES OF 2 TO 3 INCH CLEAN STONE OR EQUIVALENT RECYCLED CONCRETE.

5. USE 72 INCH CORRUGATED METAL OR PLASTIC OUTER PIPE WITH PERMANENT OUTFLOW PIPE WITH INVERT LOWER THAN INFLOW PIPE.

6. INFLOW PIPE MUST DISCHARGE INTO INNER PIPE AND BE REMOVABLE.

7. PLACE TANK ON LEVEL SURFACE AND DISCHARGE TO A STABLE AREA AT A NONEROSIVE RATE.

8. A PORTABLE SEDIMENT TANK REQUIRES FREQUENT MAINTENANCE. REMOVE ACCUMULATED SEDIMENT FROM INNER PIPE WHEN IT REACHES TWO FEET IN DEPTH. IF SYSTEM CLOGS, PULL OUT INNER PIPE, REMOVE ACCUMULATED SEDIMENT, AND REPLACE GEOTEXTILE. KEEP POINT OF DISCHARGE FREE OF EROSION.
CONSTRUCTION SPECIFICATIONS

1. Tightly seal sleeve around the pump discharge hose with a strap or similar device.

2. Place filter bag on suitable base (e.g., mulch, leaf/wood compost, woodchips, sand, or straw bales) located on a level or 5% maximum sloping surface. Discharge to a stabilized area. Extend base a minimum of 12 inches from edges of bag.

3. Control pumping rate to prevent excessive pressure within the filter bag in accordance with the manufacturer recommendations. As the bag fills with sediment, reduce pumping rate.

4. Remove and properly dispose of filter bag upon completion of pumping operations or after bag has reached capacity, whichever occurs first. Spread the dewatered sediment from the bag in an approved upland area and stabilize with seed and mulch by the end of the work day. Restore the surface area beneath the bag to original condition upon removal of the device.

5. Use nonwoven geotextile with double stitched seams using high strength thread. Size sleeve to accommodate a maximum 4 inch diameter pump discharge hose. The bag must be manufactured from a nonwoven geotextile that meets or exceeds minimum average roll values (MARV) for the following:

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<thead>
<tr>
<th>Property</th>
<th>Value</th>
<th>Standard</th>
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<tr>
<td>Grab Tensile</td>
<td>250 LB</td>
<td>ASTM D-4632</td>
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<tr>
<td>Puncture</td>
<td>150 LB</td>
<td>ASTM D-4633</td>
</tr>
<tr>
<td>Flow Rate</td>
<td>70 GAL/MIN/FT²</td>
<td>ASTM D-4491</td>
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<tr>
<td>Permeability (SEC⁻¹)</td>
<td>1.2</td>
<td>ASTM D-4491</td>
</tr>
<tr>
<td>UV Resistance</td>
<td>70% Strength @ 500 Hours</td>
<td>ASTM D-4355</td>
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<tr>
<td>Apparent Opening Size (AOS)</td>
<td>0.15-0.18 MM</td>
<td>ASTM D-4751</td>
</tr>
<tr>
<td>Seam Strength</td>
<td>10%</td>
<td>ASTM D-4632</td>
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</table>

6. Replace filter bag if bag clogs or has rips, tears, or punctures. During operation keep connection between pump hose and filter bag water tight. Replace bedding if it becomes displaced.

6. Replace filter bag if bag clogs or has rips, tears, or punctures. During operation keep connection between pump hose and filter bag water tight. Replace bedding if it becomes displaced.
Filter Bag

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Filter Bag

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Filter Bag

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Pipe Outlet Sediment Trap ST-I

**CONSTRUCTION SPECIFICATIONS**

1. Construct trap in such a manner that erosion and water pollution are avoided.
2. Clear, grub, and strip any vegetation and root mat from the area under the embankment and trap bottom.
3. Perforate the riser with 1 inch diameter holes spaced 6 inches on center with the lowest perforations at the wet storage elevation or provide a horizontal or vertical draw-down device perforated according to approved plan. Do not perforate the riser within 6 inches of the top of the horizontal barrel.

**NOTE:**
- Refer to detail G-2-1 - Typical Anti-Sept Collars
- Refer to detail G-2-2 - Riser Base
- Refer to detail G-2-3 - Concentric Trash Rack and Anti-Vortex Device
Pipe Outlet
Sediment Trap ST-I

4. SET RISER/BARREL ASSEMBLY PRIOR TO EMBANKMENT CONSTRUCTION. MAKE ALL PIPE CONNECTIONS WATERTIGHT. OFFSET RISER FROM EMBANKMENT TO ACCOMODATE PLACEMENT OF THE TRASH RACK. ANCHOR THE RISER WITH EITHER A REINFORCED CONCRETE BASE OR STEEL PLATE BASE TO PREVENT FLOTATION. MAKE CONCRETE BASES AT LEAST TWICE THE RISER DIAMETER AND 18 INCHES THICK WITH THE RISER EMBEDDED 9 INCHES.

5. USE FILL MATERIAL FREE OF ROOTS, WOODY VEGETATION, OVERSIZED STONES, ROCKS, ORGANIC MATERIAL, OR OTHER OBJECTIONABLE MATERIAL FOR THE EMBANKMENT.

6. HAND COMPACT IN 4 INCH LAYERS FILL MATERIAL AROUND THE PIPE SPILLWAY. PLACE A MINIMUM OF 2 FEET OF HAND COMPACTED BACKFILL OVER THE PIPE SPILLWAY BEFORE CROSSING IT WITH CONSTRUCTION EQUIPMENT.

7. CONSTRUCT TOP OF EMBANKMENT 1 FOOT MINIMUM ABOVE RISER CREST. COMPACT THE EMBANKMENT BY TRAVERSING WITH EQUIPMENT WHILE IT IS BEING CONSTRUCTED.

8. MAKE ALL CUT AND FILL SLOPES 2:1 OR FLATTER.

9. WRAP THE RISER WITH ¼ INCH GALVANIZED HARDWARE CLOTH THEN WRAP WITH NONWOVEN GEOTEXTILE. DO NOT WRAP WITH MORE THAN ONE LAYER OF GEOTEXTILE. EXTEND HARDWARE CLOTH AND GEOTEXTILE AT LEAST 6 INCHES ABOVE THE HIGHEST PERFORATIONS AND AT LEAST 6 INCHES BELOW THE LOWEST PERFORATIONS. OVERLAP, FOLD AND FASTEN WHERE ENDS OF GEOTEXTILE COME TOGETHER TO PREVENT BYPASS. REPLACE GEOTEXTILE AS NECESSARY TO PREVENT CLOGGING.

10. USE STRAPS OR CONNECTING BANDS AT THE TOP AND BOTTOM OF THE GEOTEXTILE TO HOLD THE GEOTEXTILE AND HARDWARE CLOTH IN PLACE.

11. USE NONWOVEN GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS.

12. STABILIZE THE EMBANKMENT AND INTERIOR SLOPES WITH SEED AND MULCH. STABILIZE POINTS OF CONCENTRATED INFLOW AS SHOWN ON APPROVED PLAN.

13. CONSTRUCT AND MAINTAIN THE OUTLET ACCORDING TO THE APPROVED PLAN AND IN SUCH A MANNER THAT EROSION AT OR BELOW THE OUTLET DOES NOT OCCUR.

14. REMOVE SEDIMENT AND RESTORE TRAP TO ORIGINAL DIMENSIONS WHEN SEDIMENT HAS ACCUMULATED TO CLEANSOUT ELEVATION (50% OF WET STORAGE DEPTH). DEPOSIT REMOVED SEDIMENT IN AN APPROVED AREA AND IN SUCH A MANNER THAT IT WILL NOT ERODE. KEEP POINTS OF INFLOW AND OUTFLOW AS WELL AS INTERIOR OF THE TRAP FREE FROM EROSION, AND REMOVE ACCUMULATED DEBRIS. MAINTAIN EMBANKMENTS TO CONTINUOUSLY MEET REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION. REMOVE ANY TREES, BRUSH, OR OTHER WOODY VEGETATION GROWING ON EMBANKMENT OR NEAR PRINCIPAL SPILLWAY. MAINTAIN LINE, GRADE, AND CROSS SECTION. MAINTAIN WATER TIGHT CONNECTIONS. REPLACE GEOTEXTILE AROUND PERFORATED RISER IF DRY STORAGE VOLUME DOES NOT DRAW DOWN WITHIN 10 HOURS.

15. WHEN DEWATERING TRAP, PASS REMOVED WATER THROUGH AN APPROVED SEDIMENT CONTROL PRACTICE.

16. UPON REMOVAL, GRADE AND STABILIZE THE AREA OCCUPIED BY TRAP.

Notes:

Pipe Outlet
Sediment Trap ST-I

4. SET RISER/BARREL ASSEMBLY PRIOR TO EMBANKMENT CONSTRUCTION. MAKE ALL PIPE CONNECTIONS WATERTIGHT. OFFSET RISER FROM EMBANKMENT TO ACCOMODATE PLACEMENT OF THE TRASH RACK. ANCHOR THE RISER WITH EITHER A REINFORCED CONCRETE BASE OR STEEL PLATE BASE TO PREVENT FLOTATION. MAKE CONCRETE BASES AT LEAST TWICE THE RISER DIAMETER AND 18 INCHES THICK WITH THE RISER EMBEDDED 9 INCHES.

5. USE FILL MATERIAL FREE OF ROOTS, WOODY VEGETATION, OVERSIZED STONES, ROCKS, ORGANIC MATERIAL, OR OTHER OBJECTIONABLE MATERIAL FOR THE EMBANKMENT.

6. HAND COMPACT IN 4 INCH LAYERS FILL MATERIAL AROUND THE PIPE SPILLWAY. PLACE A MINIMUM OF 2 FEET OF HAND COMPACTED BACKFILL OVER THE PIPE SPILLWAY BEFORE CROSSING IT WITH CONSTRUCTION EQUIPMENT.

7. CONSTRUCT TOP OF EMBANKMENT 1 FOOT MINIMUM ABOVE RISER CREST. COMPACT THE EMBANKMENT BY TRAVERSING WITH EQUIPMENT WHILE IT IS BEING CONSTRUCTED.

8. MAKE ALL CUT AND FILL SLOPES 2:1 OR FLATTER.

9. WRAP THE RISER WITH ¼ INCH GALVANIZED HARDWARE CLOTH THEN WRAP WITH NONWOVEN GEOTEXTILE. DO NOT WRAP WITH MORE THAN ONE LAYER OF GEOTEXTILE. EXTEND HARDWARE CLOTH AND GEOTEXTILE AT LEAST 6 INCHES ABOVE THE HIGHEST PERFORATIONS AND AT LEAST 6 INCHES BELOW THE LOWEST PERFORATIONS. OVERLAP, FOLD AND FASTEN WHERE ENDS OF GEOTEXTILE COME TOGETHER TO PREVENT BYPASS. REPLACE GEOTEXTILE AS NECESSARY TO PREVENT CLOGGING.

10. USE STRAPS OR CONNECTING BANDS AT THE TOP AND BOTTOM OF THE GEOTEXTILE TO HOLD THE GEOTEXTILE AND HARDWARE CLOTH IN PLACE.

11. USE NONWOVEN GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS.

12. STABILIZE THE EMBANKMENT AND INTERIOR SLOPES WITH SEED AND MULCH. STABILIZE POINTS OF CONCENTRATED INFLOW AS SHOWN ON APPROVED PLAN.

13. CONSTRUCT AND MAINTAIN THE OUTLET ACCORDING TO THE APPROVED PLAN AND IN SUCH A MANNER THAT EROSION AT OR BELOW THE OUTLET DOES NOT OCCUR.

14. REMOVE SEDIMENT AND RESTORE TRAP TO ORIGINAL DIMENSIONS WHEN SEDIMENT HAS ACCUMULATED TO CLEANSOUT ELEVATION (50% OF WET STORAGE DEPTH). DEPOSIT REMOVED SEDIMENT IN AN APPROVED AREA AND IN SUCH A MANNER THAT IT WILL NOT ERODE. KEEP POINTS OF INFLOW AND OUTFLOW AS WELL AS INTERIOR OF THE TRAP FREE FROM EROSION, AND REMOVE ACCUMULATED DEBRIS. MAINTAIN EMBANKMENTS TO CONTINUOUSLY MEET REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION. REMOVE ANY TREES, BRUSH, OR OTHER WOODY VEGETATION GROWING ON EMBANKMENT OR NEAR PRINCIPAL SPILLWAY. MAINTAIN LINE, GRADE, AND CROSS SECTION. MAINTAIN WATER TIGHT CONNECTIONS. REPLACE GEOTEXTILE AROUND PERFORATED RISER IF DRY STORAGE VOLUME DOES NOT DRAW DOWN WITHIN 10 HOURS.

15. WHEN DEWATERING TRAP, PASS REMOVED WATER THROUGH AN APPROVED SEDIMENT CONTROL PRACTICE.

16. UPON REMOVAL, GRADE AND STABILIZE THE AREA OCCUPIED BY TRAP.

Notes:
**Stone/RipRap Outlet G-1-2**

**Sediment Trap ST-II**

**STANDARD SYMBOL**

**ST-II**

**MAXIMUM DRAINAGE AREA = 10 ACRES**

**COMPACTED EARTH EMBANKMENT**

**DISCHARGE TO STABLE AREA OR RECEIVING CHANNEL**

**ISOMETRIC VIEW**

**CREST ELEVATION**

19 IN. MIN. THICKNESS OF CLASS 1 RIPRAP

**OUTLET ELEVATION**

**APRON**

10 FT MIN.

**TOP OF EMBANKMENT**

1 FT MIN.

**EXISTING GROUND**

**4 TO 7 IN. STONE**

**EMBED NONWOVEN GEOTEXTILE MIN. 6 IN. INTO GROUND**

**FLOW**

**DRAINAGE TO STABLE AREA OR RECEIVING CHANNEL**

**CONSTRUCTION SPECIFICATIONS**

1. CONSTRUCT TRAP IN SUCH A MANNER THAT EROSION AND WATER POLLUTION ARE AVOIDED.
2. CLEAR, GRUB, AND STRIP ANY VEGETATION AND ROOT MAT FROM THE AREA UNDER THE EMBANKMENT AND TRAP BOTTOM.
3. USE FILL MATERIAL FREE OF ROOTS, WOODY VEGETATION, OVERSIZED STONES, ROCKS, ORGANIC MATERIAL, OR OTHER OBJECTIONABLE MATERIAL FOR THE EMBANKMENT.
4. CONSTRUCT TOP OF EMBANKMENT 1 FOOT MINIMUM ABOVE WEIR CREST. COMPACT THE EMBANKMENT BY TRAVERSING WITH EQUIPMENT WHILE IT IS BEING CONSTRUCTED.
5. Make all cut and fill slopes 2:1 or flatter.

6. Place nonwoven geotextile, as specified in Section H-1 Materials, over the bottom and sides of outlet and apron prior to placement of riprap. Overlap sections of geotextile at least 1 foot with the section nearer to the trap placed on top. Embed geotextile at least 6 inches into existing ground at entrance of outlet channel.

7. Use clean 4 to 7 inch riprap to construct the weir. Use Class I riprap for the apron. Use of recycled concrete equivalent is acceptable.

8. Place 1 foot of clean ¾ to 1½ inch stone or equivalent recycled concrete on the upstream face of the weir.

9. Construct and maintain the outlet according to approved plan, and in such a manner that erosion at or below the outlet does not occur.

10. Stabilize the embankment and interior slopes with seed and mulch. Stabilize points of concentrated inflow as shown on approved plan.

11. Remove sediment and restore trap to original dimensions when sediment has accumulated to cleanout elevation (50% of wet storage depth). Deposit removed sediment in an approved area and in such a manner that it will not erode. Keep points of inflow and outflow as well as interior of the trap free from erosion, and remove accumulated debris. Maintain embankments to continuously meet requirements for adequate vegetative establishment in accordance with Section B-4 Vegetative Stabilization. Remove any trees, brush, or other woody vegetation growing on embankment or near principal spillway. Maintain line, grade, and cross section.

12. When dewatering trap, pass removed water through an approved sediment control practice.

13. Upon removal, grade and stabilize the area occupied by trap.

Notes:
CONSTRUCTION SPECIFICATIONS

1. CONSTRUCT TRAP IN SUCH A MANNER THAT EROSION AND WATER POLLUTION ARE AVOIDED.

2. CLEAR, GRUB, AND STRIP ANY VEGETATION AND ROOT MAT FROM THE AREA UNDER THE EMBANKMENT AND TRAP BOTTOM.

3. USE FILL MATERIAL FREE OF ROOTS, WOODY VEGETATION, OVERSIZED STONES, ROCKS, ORGANIC MATERIAL, OR OTHER OBJECTIONABLE MATERIAL FOR THE EMBANKMENT.

4. CONSTRUCT TOP OF EMBANKMENT 1 FOOT MINIMUM ABOVE TOP OF RIPRAP OUTLET. COMPACT THE EMBANKMENT BY TRAVERSING WITH EQUIPMENT WHILE IT IS BEING CONSTRUCTED.
RipRap Outlet Sediment Trap ST-III  G-1-3

5. Make all cut and fill slopes 2:1 or flatter.

6. Place nonwoven geotextile, as specified in Section H-1 materials, over the bottom and sides of outlet and apron prior to placement of riprap. Overlap sections of geotextile at least 1 foot with the section nearer to the trap placed on top. Embed geotextile at least 6 inches into existing ground at entrance of outlet channel.

7. Use clean Class 1 Riprap placed 19 inches in depth for the outlet and apron. Use of recycled concrete equivalent is acceptable.

8. Construct and maintain the outlet according to approved plan, and in such a manner that erosion at or below the outlet does not occur.

9. Stabilize the embankment and interior slopes with seed and mulch. Stabilize points of concentrated inflow as shown on approved plan.

10. Remove sediment and restore trap to original dimensions when sediment has accumulated to cleanup elevation (25% of wet storage depth). Deposit removed sediment in an approved area and in such a manner that it will not erode. Keep points of inflow and outflow as well as interior of the trap free from erosion and remove accumulated debris. Maintain embankments to continuously meet requirements for adequate vegetative establishment in accordance with Section B-4 vegetative stabilization. Remove any trees, brush, or other woody vegetation growing on embankment or near principal spillway. Maintain line, grade, and cross section.

11. When de-watering trap, pass the removed water through an approved sediment control practice.

12. Upon removal, grade and stabilize the area occupied by trap.

Notes:

RipRap Outlet Sediment Trap ST-III  G-1-3

5. Make all cut and fill slopes 2:1 or flatter.

6. Place nonwoven geotextile, as specified in Section H-1 materials, over the bottom and sides of outlet and apron prior to placement of riprap. Overlap sections of geotextile at least 1 foot with the section nearer to the trap placed on top. Embed geotextile at least 6 inches into existing ground at entrance of outlet channel.

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11. When de-watering trap, pass the removed water through an approved sediment control practice.

12. Upon removal, grade and stabilize the area occupied by trap.

Notes:
Typical Anti-Seep Collars

G-2-1

INSTALL COLLAR WITH CORRUGATIONS VERTICAL.

P=2 FT MIN.

WELD SEAM

THE LAST TWO CORRUGATIONS, MINIMUM, ON EACH END MUST BE ANNULAR OR FLANGE.

CONTINUOUS WELD OF COLLAR TO BARREL THE FULL CIRCUMFERENCE OF THE COLLAR ON BOTH SIDES.

PLATES TO BE PRECUT, CLAMPED TOGETHER, PRE-DRILLED, AND LABELED TO FACILITATE WATERTIGHT FIELD ASSEMBLY.

FABRICATED STEEL PLATE

USE BUTYL SEALANT BETWEEN PLATE AND FLANGE.

COLLAR FOR FLANGE JOINT PIPE

G-2-1

INSTALL COLLAR WITH CORRUGATIONS VERTICAL.

P=2 FT MIN.

WELD SEAM

THE LAST TWO CORRUGATIONS, MINIMUM, ON EACH END MUST BE ANNULAR OR FLANGE.

CONTINUOUS WELD OF COLLAR TO BARREL THE FULL CIRCUMFERENCE OF THE COLLAR ON BOTH SIDES.

PLATES TO BE PRECUT, CLAMPED TOGETHER, PRE-DRILLED, AND LABELED TO FACILITATE WATERTIGHT FIELD ASSEMBLY.

FABRICATED STEEL PLATE

USE BUTYL SEALANT BETWEEN PLATE AND FLANGE.

COLLAR FOR FLANGE JOINT PIPE
Corrugated Riser Base

CONSTRUCTION SPECIFICATIONS
1. BOTTOM OF CONCRETE BASE TO BE PLACED ON UNDISTURBED, NATURAL GROUND.
2. NO STONE IS ALLOWED UNDER BASE. IF NECESSARY, TO ACHIEVE STABILITY INCREASE DEPTH OF CONCRETE BASE.

Corrugated Riser Base

CONSTRUCTION SPECIFICATIONS
1. BOTTOM OF CONCRETE BASE TO BE PLACED ON UNDISTURBED, NATURAL GROUND.
2. NO STONE IS ALLOWED UNDER BASE. IF NECESSARY, TO ACHIEVE STABILITY INCREASE DEPTH OF CONCRETE BASE.
Concentric Trash Rack and Anti-Vortex Device

**Concentric Trash Rack and Anti-Vortex Device**

**G-2-3**

STANDARD SYMBOL

INSPECTION PORTS/ PRESSURE RELIEF HOLES 3 IN DIAMETER

SPOT WELD ALL AROUND TOP

WELD SUPPORT BARS TO THE TOP OF THE RISER OR ATTACH BY STRAPS TO THE TOP OF RISER.
### Concentric Trash Rack and Anti-Vortex Device

<table>
<thead>
<tr>
<th>Riser Diam. (IN)</th>
<th>Dia. (IN)</th>
<th>Thickness (GAUGE)</th>
<th>h (IN)</th>
<th>Minimum Size Support Bar</th>
<th>Minimum Top</th>
<th>Thickness (GAUGE)</th>
<th>Stiffener</th>
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<td>18</td>
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<td>44</td>
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<td>2 x 2 x ½ ANGLE</td>
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<td>2½ x 2½ x ½ ANGLE</td>
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**NOTE:**

THE ABOVE TRASH RACK AND ANTI-VORTEX DEVICE INFORMATION IS FOR CORRUGATED METAL PIPE ONLY. CONCRETE RISERS MUST MEET THE REQUIREMENTS OF MD 378.
Sediment Basin - Baffle Boards

STANDARD SYMBOL

INFLOW POINT

WET, POOL, SET ELEVATION AT \(\frac{1}{2}\) OF THE DRY STORAGE (WET STORAGE ELEVATION + DRY STORAGE ELEVATION / 2) OR 6 IN BELOW WEIR CREST (OUTLET) WHICHEVER IS LOWER

POSTS MINIMUM 4 IN SQUARE OR 5 IN ROUND SET AT LEAST 3 FT INTO THE GROUND

4 FT CENTER TO CENTER

BAFFLE DETAIL

Sheets of 4 FT x 8 FT x \(\frac{3}{8}\) IN CDX EXTERIOR GRADE PLYWOOD OR EQUIVALENT

EXISTING GROUND

SET ELEVATION AT \(\frac{1}{2}\) OF THE DRY STORAGE (WET STORAGE ELEVATION + DRY STORAGE ELEVATION / 2) OR 6 IN BELOW WEIR CREST (OUTLET) WHICHEVER IS LOWER

POSTS MINIMUM 4 IN SQUARE OR 5 IN ROUND SET AT LEAST 3 FT INTO THE GROUND

4 FT CENTER TO CENTER

BAFFLE DETAIL
Types of Couplers For Corrugated Steel Pipe

1. **FLANGE JOINT**
   - Bolted flanges are attached to pipe ends.
   - Gasket

2. **PRE-PUNCHED GASKET**
   - O-Ring

3. **HUGGER (SEMI-CORRUGATED) BAND**
   - Bar and strap connector
   - O-Ring gasket

4. **SLEEVE GASKET**
   - Rod & lug connector

5. **ANULAR CORRUGATED BAND**
   - Band is secured by rod around band connected by lugs.

**NOTE:**
Under no circumstance is a dimple (universal) band acceptable for use in a sediment control or stormwater management structure.

**CONSTRUCTION SPECIFICATIONS**

1. Use a rubber or neoprene gasket when joining pipe sections. The end of each pipe shall be re-rolled with an adequate number of corrugations to accommodate the band width.

2. For pipes less than 24 inches in diameter, provide one of the following types of connections:
   a. Flanged joints with ¾ inch closed cell gasket the full width of the flange, pre-punched to the flange bolt circles, sandwiched between adjacent flanges, or
   b. 12 inch wide hugger type band with O-ring gasket having a minimum diameter of ¾ inch greater than the corrugation depth.

3. For pipes 24 inches in diameter and larger, provide one of the following types of connections:
   a. 24 inch wide annular corrugated band with 24 inch wide by ¾ inch thick closed cell circular sleeve gasket with 12 inches on the end of each pipe, connected with a minimum of 4 rods and lugs, 2 on each connecting pipe end, or
   b. Flanged joints with ¾ inch closed cell gasket the full width of the flange, pre-punched to the flange bolt circles, and sandwiched between adjacent flanges.
Sediment Basin - Horizontal Draw Down Device

**CONSTRUCTION SPECIFICATIONS**

1. PERFORATE PIPE WITH 1 INCH DIAMETER PERFORATIONS SPACED 6 INCHES APART LONGITUDDINALLY AND RADIALY OR IN ACCORDANCE WITH APPROVED PLAN.

2. WRAP THE PERFORATED PORTION OF THE DRAW-DOWN DEVICE FIRST WITH ¼ INCH GALVANIZED HARDWARE CLOTH, THEN WITH NONWOVEN GEOTEXTILE. USE NONWOVEN GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS. DO NOT WRAP WITH MORE THAN ONE LAYER OF GEOTEXTILE.

3. AS AN ALTERNATE TO STONE ANCHORING, SECURE DRAW-DOWN DEVICE WITH TWO 1 INCH STEEL ANGLES SET 3 FEET MINIMUM INTO THE GROUND ATTACHED TO DRAW-DOWN DEVICE BY A 1 INCH WIDE GALVANIZED STEEL STRAP OR 12 GAUGE OR HEAVIER WIRE.

4. REMOVE SEDIMENT WHEN IT ACCUMULATES TO CLEANOUT ELEVATION (50% OF THE WET STORAGE DEPTH). DEPOSIT REMOVED SEDIMENT IN AN APPROVED AREA IN SUCH A MANNER THAT IT WILL NOT ERODE. MAINTAIN WATER TIGHT CONNECTIONS. REPLACE GEOTEXTILE AROUND PERFORATED RISER IF DRY STORAGE VOLUME DOES NOT DRAW DOWN WITHIN 10 HOURS.
CONSTRUCTION SPECIFICATIONS

1. PERFORATE PIPE WITH 1 INCH DIAMETER PERFORATIONS SPACED 6 INCHES APART LONGITUDINALLY AND RADIIALLY OR IN ACCORDANCE WITH APPROVED PLAN.

2. DO NOT EXTEND PERFORATIONS IN THE DRAW-DOWN DEVICE INTO WET STORAGE.

3. WRAP THE PERFORATED PORTION OF THE DRAW-DOWN DEVICE FIRST WITH 1/4 INCH GALVANIZED HARDWARE CLOTH, THEN WITH NONWOVEN GEOTEXTILE, USE NONWOVEN GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS. DO NOT WRAP WITH MORE THAN ONE LAYER OF GEOTEXTILE.

4. AS AN ALTERNATE TO STONE ANCHORING, SECURE DRAW-DOWN DEVICE WITH TWO 1 INCH STEEL ANGLES SET 3 FEET MINIMUM INTO THE GROUND ATTACHED TO DRAW-DOWN DEVICE BY A 1 INCH WIDE GALVANIZED STEEL STRAP OR 12 GAUGE OR HEAVIER WIRE.

5. REMOVE SEDIMENT WHEN IT ACCUMULATES TO CLEANOUT ELEVATION (90% OF THE WET STORAGE DEPTH). DEPOSIT REMOVED SEDIMENT IN AN APPROVED AREA IN A SUCH A MANNER THAT IT WILL NOT ERODE, MAINTAIN WATER TIGHT CONNECTIONS, REPLACE GEOTEXTILE AROUND PERFORATED RISER IF DRY STORAGE VOLUME DOES NOT DRAW DOWN WITHIN 10 HOURS.
CONSTRUCTION SPECIFICATIONS
1. FABRICATE PLATE CONNECTORS FROM STAINLESS STEEL CONFORMING TO ASTM A666-72, GRADE A OR B.
2. USE TYPE 304 STAINLESS STEEL FOR BOLTS.
3. PROVIDE CONNECTORS AT CENTERLINE OF EACH PRECAST BOX FACE. FOR MANHOLES PROVIDE FOUR PLATES SPACED AT 90°.
CONSTRUCTION SPECIFICATIONS
1. CAST 1 FOOT THICK CONCRETE COLLAR TO OUTLET STRUCTURE WITH FOUR #4 U-SHAPED REBARS.
Subsurface Drains

H-2

STANDARD SYMBOL

--- SSD ---

WET AREAS

RANDOM PATTERN

HERRINGBONE PATTERN

PARALLEL PATTERN

LATERAL DRAINS

MAIN COLLECTOR DRAIN

WATER TABLE ELEVATION

SEEPAGE AREA

INTERCEPTOR DRAIN

PLAN

PROFILE

NOTE: AN MOE WETLANDS AND WATERWAYS PERMIT MAY BE REQUIRED
CONSTRUCTION SPECIFICATIONS

1. DO NOT USE DEFORMED, Warped, OR OTHERWISE DAMAGED PIPE OR TUBING.

2. LAY ALL SUBSURFACE DRAINS TO A UNIFORM LINE AND COVER WITH ENVELOPE MATERIAL. LAY THE PIPE TUBING WITH PERFORATIONS DOWN AND ORIENTED SYMMETRICALLY ABOUT THE VERTICAL CENTER LINE. MAKE CONNECTIONS WITH MANUFACTURED COUPLING DEVICES COMPATIBLE IN STRENGTH WITH SPECIFIED PIPE OR TUBING UNLESS OTHERWISE SPECIFIED. USE METHOD OF PLACEMENT AND BEDDING AS SPECIFIED ON THE DRAWING.

3. PROVIDE ENVELOPE MATERIAL CONSISTING OF WOVEN MONOFILAMENT GEOTEXTILE OR A SAND/GRAVEL MIXTURE WITH 100 PERCENT PASSING THE 1/8 INCH SIEVE, 90 TO 100 PERCENT PASSING THE 3/8 INCH SIEVE, AND NOT MORE THAN 10 PERCENT PASSING THE NUMBER 60 SIEVE.

4. USE WOVEN MONOFILAMENT GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS.

5. CAP THE UPPER END OF EACH SUBSURFACE DRAINLINE WITH A TIGHT FITTING CAP OF THE SAME MATERIAL AS THE CONDUIT OR OTHER DURABLE MATERIAL, UNLESS CONNECTED TO A STRUCTURE.

6. USE A CONTINUOUS 10 FOOT SECTION OF CORRUGATED METAL, CAST IRON, OR STEEL PIPE WITHOUT PERFORATIONS AT THE OUTLET END OF THE LINE WITH NO ENVELOPE MATERIAL AROUND THE 10 FOOT SECTION PIPE. INSTALL AN ANIMAL GUARD ON THE OUTLET END OF THE PIPE.

7. PLACE EARTH BACKFILL MATERIAL IN THE TRENCH IN SUCH A MANNER THAT DISPLACEMENT OF THE DRAIN WILL NOT OCCUR.

8. WHERE SURFACE WATER IS ENTERING THE SYSTEM, PROVIDE A SWING TYPE TRASH AND ANIMAL GUARD AT THE PIPE OUTLET SECTION OF THE SYSTEM.

9. KEEP POINT OF DISCHARGE FREE OF EROSION. MAINTAIN ANIMAL GUARD AT OUTLET.

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CONSTRUCTION SPECIFICATIONS

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Notes:

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Temporary Access Bridge

STANDARD SYMBOL

NOTE:
SECURELY ANCHOR BRIDGE WITH SAFETY CHAIN OR STEEL CABLE

LOCATION PLAN

CONSTRUCTION SPECIFICATIONS

1. CONSTRUCT TEMPORARY BRIDGE STRUCTURE AT OR ABOVE THE BANK ELEVATION TO PREVENT IMPACTS FROM FLOATING MATERIALS AND DEBRIS.
2. PLACE ABUTMENTS PARALLEL TO, AND ON, STABLE BANKS.
3. CONSTRUCT BRIDGE TO SPAN ENTIRE CHANNEL UNLESS OTHERWISE INDICATED ON APPROVED PLAN.
4. USE STRINGERS CONSISTING OF LOGS, SAWN TIMBER, PRESTRESSED CONCRETE BEAMS, METAL BEAMS, OR OTHER APPROVED MATERIALS.
5. SELECT DECKING MATERIALS TO PROVIDE SUFFICIENT STRENGTH TO SUPPORT THE ANTICIPATED LOAD. PLACE ALL DECKING MEMBERS PERPENDICULAR TO THE STRINGERS, BUTT TIGHTLY, AND SECURELY FASTEN. DECKING MATERIALS MUST BE BUTTED TIGHTLY TO PREVENT ANY SOIL MATERIAL TRACKED ONTO THE BRIDGE FROM FALLING INTO THE WATERWAY BELOW.
6. SECURELY FASTEN OPTIONAL RUN PLANKING FOR THE LENGTH OF THE SPAN. PROVIDE A RUN PLANK FOR EACH TRACK OF THE EQUIPMENT WHENCE, ALTHOUGH RUN PLANKS ARE OPTIONAL, THEY MAY BE NECESSARY TO PROPERLY DISTRIBUTE LOADS.

NOTE:
TIME OF YEAR RESTRICTIONS DO NOT APPLY TO THE CONSTRUCTION OR REMOVAL OF A TEMPORARY ACCESS BRIDGE UNLESS THERE IS DISTURBANCE TO THE STREAM CHANNEL.
Temporary Access Bridge

H-4-1

7. INSTALL CURB ON THE ENTIRE LENGTH OF THE OUTER SIDES OF THE DECK TO PREVENT SEDIMENT FROM ENTERING THE STREAM CHANNEL.

8. ANCHOR BRIDGE SECURELY AT ONLY ONE END USING STEEL CABLE OR CHAIN. ANCHORING AT ONLY ONE END WILL PREVENT CHANNEL OBSTRUCTION IN THE EVENT THAT FLOODWATERS FLOAT THE BRIDGE. ACCEPTABLE ANCHORS ARE LARGE TREES, LARGE BOULDERS, OR DRIVEN STEEL POSTS. ANCHOR MUST BE SUFFICIENT TO PREVENT THE BRIDGE FROM FLOATING DOWNSTREAM.

9. AREAS DISTURBED DURING BRIDGE INSTALLATION AND/OR REMOVAL MUST NOT BE LEFT UNSTABILIZED OVERNIGHT UNLESS THE RUNOFF IS DIRECTED TO AN APPROVED SEDIMENT CONTROL DEVICE.

10. STABILIZE APPROACH TO BRIDGE AND KEEP FREE OF EROSION. CLEAN SEDIMENT FROM DECKING AND CURB DAILY BY SCRAPING, SWEEPING, AND/OR VACUUMING. ENSURE THAT DECKING AND CURBS REMAIN TIGHTLY BUTTED WITHOUT GAPS. REMOVE DEBRIS TRAPPED BY BRIDGE. MAINTAIN AREAS ADJACENT TO CROSSING TO CONTINUOUSLY MEET REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.

11. AFTER THE TEMPORARY CROSSING IS NO LONGER NEEDED, REMOVE IT WITHIN 14 CALENDAR DAYS. IF SUBJECT TO THE USE DESIGNATION CLOSURE, REMOVE AT THE END OF CLOSURE PERIOD. PROTECT STREAM BANKS DURING BRIDGE REMOVAL AND STABILIZE ALL DISTURBED AREAS WITH EROSION CONTROL MATTING. ACCOMPLISH REMOVAL OF THE BRIDGE AND CLEAN UP OF THE AREA WITHOUT CONSTRUCTION EQUIPMENT WORKING IN THE WATERWAY CHANNEL. STORE ALL REMOVED MATERIALS IN AN APPROVED STAGING AREA.

Notes:

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Temporary Access Bridge

H-4-1

7. INSTALL CURB ON THE ENTIRE LENGTH OF THE OUTER SIDES OF THE DECK TO PREVENT SEDIMENT FROM ENTERING THE STREAM CHANNEL.

8. ANCHOR BRIDGE SECURELY AT ONLY ONE END USING STEEL CABLE OR CHAIN. ANCHORING AT ONLY ONE END WILL PREVENT CHANNEL OBSTRUCTION IN THE EVENT THAT FLOODWATERS FLOAT THE BRIDGE. ACCEPTABLE ANCHORS ARE LARGE TREES, LARGE BOULDERS, OR DRIVEN STEEL POSTS. ANCHOR MUST BE SUFFICIENT TO PREVENT THE BRIDGE FROM FLOATING DOWNSTREAM.

9. AREAS DISTURBED DURING BRIDGE INSTALLATION AND/OR REMOVAL MUST NOT BE LEFT UNSTABILIZED OVERNIGHT UNLESS THE RUNOFF IS DIRECTED TO AN APPROVED SEDIMENT CONTROL DEVICE.

10. STABILIZE APPROACH TO BRIDGE AND KEEP FREE OF EROSION. CLEAN SEDIMENT FROM DECKING AND CURB DAILY BY SCRAPING, SWEEPING, AND/OR VACUUMING. ENSURE THAT DECKING AND CURBS REMAIN TIGHTLY BUTTED WITHOUT GAPS. REMOVE DEBRIS TRAPPED BY BRIDGE. MAINTAIN AREAS ADJACENT TO CROSSING TO CONTINUOUSLY MEET REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.

11. AFTER THE TEMPORARY CROSSING IS NO LONGER NEEDED, REMOVE IT WITHIN 14 CALENDAR DAYS. IF SUBJECT TO THE USE DESIGNATION CLOSURE, REMOVE AT THE END OF CLOSURE PERIOD. PROTECT STREAM BANKS DURING BRIDGE REMOVAL AND STABILIZE ALL DISTURBED AREAS WITH EROSION CONTROL MATTING. ACCOMPLISH REMOVAL OF THE BRIDGE AND CLEAN UP OF THE AREA WITHOUT CONSTRUCTION EQUIPMENT WORKING IN THE WATERWAY CHANNEL. STORE ALL REMOVED MATERIALS IN An APPROVED STAGING AREA.

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Temporary Access Culvert

**CONSTRUCTION SPECIFICATIONS**

1. Construction or removal of a temporary access culvert will not be permitted during the following periods:

<table>
<thead>
<tr>
<th>Use Case</th>
<th>Periods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use I and IP</td>
<td>March 1 – June 15 (excluding Year)</td>
</tr>
<tr>
<td>Use II</td>
<td>June 1 – September 30 and December 16 – March 14</td>
</tr>
<tr>
<td>Use III and IIP</td>
<td>October 1 – March 31</td>
</tr>
<tr>
<td>Use IV</td>
<td>March 1 – May 31 (excluding Year)</td>
</tr>
</tbody>
</table>

*Submerged aquatic vegetation*
2. Extend the culvert(s) a minimum of one foot beyond the upstream and downstream toe of the aggregate placed around the culvert.

3. Place nonwoven geotextile on the stream bed and stream banks prior to placement of the pipe culvert(s) and aggregate. Cover the stream bed with the geotextile and extend it a minimum six inches and a maximum of one foot beyond the end of the culvert and bedding material. Use nonwoven geotextile as specified in Section H-1 Materials. Geotextile reduces settlement and improves crossing stability.

4. Place culvert(s) on the natural stream bed grade to minimize interference with fish passage.

5. Cover the culvert with a minimum of one foot of washed aggregate. For multiple culverts provide at least 12 inches of compacted aggregate fill between culverts.

6. Stabilize all areas disturbed during culvert installation within 24 hours of the disturbance in accordance with standards for permanent stabilization, Section B-4-5, or temporary stabilization, Section B-4-4, as applicable.

7. Stabilize approach to crossing and keep free of erosion. Replace displaced stone, and maintain high flow areas. Remove debris trapped by culvert. Replace damaged pipe(s). Maintain areas adjacent to crossing to continuously meet requirements for adequate vegetative establishment in accordance with Section B-4 vegetative stabilization.

8. After the temporary crossing is no longer needed, remove it within 14 calendar days. If subject to the use designation closure, remove at the end of closure period. Protect stream banks during culvert removal and stabilize all disturbed areas with erosion control matting. Accomplish removal of the culvert and clean up of the area without construction equipment working in the waterway channel. Store all removed materials in an approved staging area.

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Dust Control

**Definition**
Controlling the suspension of dust particles from construction activities.

**Purpose**
To prevent blowing and movement of dust from exposed soil surfaces to reduce on and off-site damage including health and traffic hazards.

**Conditions Where Practice Applies**
Areas subject to dust blowing and movement where on and off-site damage is likely without treatment.

**Specifications**
1. **Mulches**: See Section B-4-2 Soil Preparation, Topsoiling, and Soil Amendments, Section B-4-3 Seeding and Mulching, and Section B-4-4 Temporary Stabilization. Mulch must be anchored to prevent blowing.
2. **Vegetative Cover**: See Section B-4-4 Temporary Stabilization.
3. **Tillage**: Till to roughen surface and bring clods to the surface. Begin plowing on windward side of site. Chisel-type plows spaced about 12 inches apart, spring-toothed harrows, and similar plows are examples of equipment that may produce the desired effect.
4. **Irrigation**: Sprinkle site with water until the surface is moist. Repeat as needed. The site must not be irrigated to the point that runoff occurs.
5. **Barriers**: Solid board fences, silt fences, snow fences, burlap fences, straw bales, and similar material can be used to control air currents and soil blowing.
6. **Chemical Treatment**: Use of chemical treatment requires approval by the appropriate plan review authority.
Onsite Concrete Washout Structure

CONSTRUCTION SPECIFICATIONS

1. LOCATE WASHOUT STRUCTURE A MINIMUM OF 50 FEET AWAY FROM OPEN CHANNELS, STORM DRAIN INLETS, 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 ML 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., RIPPED 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 HARVESTED 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.

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### Routine/Maintenance Inspection – Troubleshooting

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<tr>
<th>Control Measure</th>
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<th>Possible Remedies</th>
</tr>
</thead>
<tbody>
<tr>
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<td><strong>Erosion along slopes</strong></td>
<td>Check top-of-slope diversion for positive drainage, install diversion if needed</td>
</tr>
<tr>
<td></td>
<td><strong>Bare soil patches</strong></td>
<td>Fill erosion, regrade eroded slopes, &amp; restabilize</td>
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<tr>
<td></td>
<td><strong>Sediment at toe-of-slope</strong></td>
<td>Remove sediment, &amp; restabilize</td>
</tr>
<tr>
<td><strong>Dikes</strong></td>
<td><strong>Erosion on backside of dike</strong></td>
<td>Verify positive drainage; repair eroded area, compact, &amp; restabilize</td>
</tr>
<tr>
<td></td>
<td><strong>Loose soil</strong></td>
<td>Compact dike</td>
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<tr>
<td></td>
<td><strong>Erosion on front face of dike</strong></td>
<td>Verify channel lining, repair erosion, &amp; restabilize</td>
</tr>
<tr>
<td><strong>Swales</strong></td>
<td><strong>Erosion on slope below swale</strong></td>
<td>Verify positive drainage; repair eroded area, compact, &amp; restabilize</td>
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<td><strong>Water ponding in swale</strong></td>
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<td><strong>Sediment or debris in channel</strong></td>
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<td>Bare areas</td>
<td>Reseed, add lime &amp; fertilizer; install soil stabilization matting</td>
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<tr>
<td>Channel capacity reduced</td>
<td>Remove sediment/debris accumulations; or mow high growth</td>
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<td>Construct a berm at the inflow point</td>
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</tr>
<tr>
<td>Erosion at the outlet</td>
<td>Increase size of riprap apron, use larger riprap; or convey runoff to a more stable outlet</td>
<td></td>
</tr>
<tr>
<td>Riprap Lined Waterways</td>
<td>Scour underneath riprap</td>
<td>Verify proper channel dimensions; regrade, install &amp; key-in geotextile, &amp; place riprap</td>
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<tr>
<td>Scour along the side of the waterway</td>
<td>Verify proper channel dimensions; and reconstruct waterway</td>
<td></td>
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<tr>
<td>Riprap dislodged</td>
<td>Replace with larger sized riprap</td>
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<td>Outlet Protection</td>
<td>Scour at or below outlet</td>
<td>Verify depth, dimensions, &amp; configuration of riprap outlet; reconstruct riprap apron; outlet should be at 0% slope</td>
</tr>
<tr>
<td>Sediment Traps &amp; Basins</td>
<td>Sediment accumulation is half the height of the wet storage elevation</td>
<td>Dewater facility using approved pumping methods &amp; restore facility to elevations and grades shown on the plans, allow material to dry in an approved location.</td>
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<td>Stone outlet structure is full of sediment</td>
<td>Remove clogged stone &amp; replace with new stone</td>
</tr>
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<td>Basin not dewatering as designed</td>
<td>Inspect riser structure; remove any blockages from orifices; remove clogged stone &amp; replace with new stone</td>
</tr>
<tr>
<td></td>
<td>Riser floating or leaning</td>
<td>Construct riser in concrete footing. Remove and reconstruct riser subgrade and verify joints.</td>
</tr>
<tr>
<td></td>
<td>Embankment misaligned, sliding, or sloughing is occurring</td>
<td>Reconstruct embankment immediately and restabilize. Facility subject to failure</td>
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<tr>
<td>Sediment Traps &amp; Basins (Continued)</td>
<td>Outlet erosion</td>
<td>Verify depth, dimensions, &amp; configuration of riprap outlet; reconstruct riprap apron; outlet should be at 0% slope.</td>
</tr>
<tr>
<td>Stone outlet structure erosion</td>
<td>Verify plans for spillway elevations, rock size, &amp; dimensions. Verify design drainage area is not exceeded. Verify installation of baffle boards.</td>
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</tr>
<tr>
<td>Wet storage requires regular maintenance</td>
<td>Verify plans for facility dimensions. Stabilize as much of the drainage area as possible. Install interim E&amp;S Controls prior to discharging to the sediment facilities.</td>
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</tr>
<tr>
<td>Excessive discharge to and from facility.</td>
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<td>Silt Fence</td>
<td>Flow undermining Fence</td>
<td>Entrench geotextile 8&quot;, backfill, and compact.</td>
</tr>
<tr>
<td></td>
<td>Sediment exceeds 25% the height of the fence</td>
<td>Remove sediment when sediment is 25% the height of the fence.</td>
</tr>
<tr>
<td></td>
<td>Fence leaning or collapsing</td>
<td>Verify post size and geotextile. Verify drainage area, slope length, and gradient behind fence. Correct any substandard condition.</td>
</tr>
<tr>
<td></td>
<td>Torn fabric</td>
<td>Replace geotextile from post to post and install properly.</td>
</tr>
<tr>
<td></td>
<td>Runoff escaping around end</td>
<td>Extend fence and turn end upslope.</td>
</tr>
<tr>
<td></td>
<td>Excessive sediment</td>
<td>Remove sediment when sediment is within 6&quot; of weir crest.</td>
</tr>
<tr>
<td></td>
<td>Stone voids filled with sediment</td>
<td>Remove sediment filled stone and replace with new stone.</td>
</tr>
<tr>
<td></td>
<td>Displaced stone</td>
<td>Verify drainage area and reconstruct structure.</td>
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<td>Flow escaping around the sides of the structure</td>
<td>Extend stone on each side and provide a low area in the center for spillway.</td>
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<td>Inlet Protection</td>
<td>Inlet protection not dewatering and geotextile or stone voids filled with sediment</td>
<td>Replace geotextile or stone.</td>
</tr>
<tr>
<td></td>
<td>Runoff undermining the inlet protection</td>
<td>Key-in geotextile, backfill, and compact.</td>
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<td>Sediment exceeds half the height of the structure</td>
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<tr>
<td></td>
<td>Inlet protection leaning or collapsing</td>
<td>Verify construction of inlet protection. Verify drainage area. Reconstruct inlet protection.</td>
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<tr>
<td></td>
<td>Discharge from hose is sediment laden</td>
<td>Reconstruct and replace geotextile and stone or install new sump pit.</td>
</tr>
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<td></td>
<td>Water not entering pipe for pumping</td>
<td>Reconstruct and replace geotextile and stone or install new sump pit.</td>
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<tr>
<td>Sump Pit</td>
<td>Discharge from outlet is sediment laden</td>
<td>Cease pumping and remove sediment from tank, and replace geotextile. If sediment laden discharge continues, slow pumping rate of flow or use sump pit in conjunction.</td>
</tr>
<tr>
<td>Portable Sediment Tank</td>
<td>Discharge from outlet is becoming sediment laden once it discharges back onto the ground.</td>
<td>Relocate tank to a stabilized area, or place polyethylene sheeting or use hose to convey discharge to stabilized area.</td>
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<td>------------------</td>
</tr>
<tr>
<td>Filter Bag</td>
<td>Sediment laden discharge is escaping around the hose insert.</td>
<td>Cease pumping and insert discharge hose further into bag. Retie bag around the discharge hose or use heavy hose clamps to create a tight seal. Periodically check this connection.</td>
</tr>
<tr>
<td></td>
<td>Bag is not dewatering efficiently.</td>
<td>Remove and replace bag and dispose of bag in proper location.</td>
</tr>
<tr>
<td></td>
<td>Discharge from bag is becoming sediment laden once it discharges on the ground.</td>
<td>Relocate bag to a stabilized area or place polyethylene sheeting to convey discharge to stabilized area.</td>
</tr>
<tr>
<td></td>
<td>Discharge is becoming sediment laden once it discharges on the ground.</td>
<td>Relocate bag to a stabilized area or place polyethylene sheeting to convey discharge to stabilized area.</td>
</tr>
</tbody>
</table>
## Appendix B

### Materials Tables

#### Table H.1: Geotextile Fabrics

<table>
<thead>
<tr>
<th>PROPERTY</th>
<th>TEST METHOD</th>
<th>WOVEN SLIT FILM GEOTEXTILE</th>
<th>WOVEN MONOFILAMENT GEOTEXTILE</th>
<th>NONWOVEN GEOTEXTILE</th>
<th>MD</th>
<th>CD</th>
<th>MD</th>
<th>CD</th>
<th>MD</th>
<th>CD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grab Tensile Strength</td>
<td>ASTM D-4632</td>
<td>200 lb</td>
<td>200 lb</td>
<td>370 lb</td>
<td>370 lb</td>
<td>250 lb</td>
<td>250 lb</td>
<td>200 lb</td>
<td>200 lb</td>
<td>200 lb</td>
</tr>
<tr>
<td>Grab Tensile Elongation</td>
<td>ASTM D-4632</td>
<td>15%</td>
<td>15%</td>
<td>15%</td>
<td>15%</td>
<td>50%</td>
<td>50%</td>
<td>50%</td>
<td>50%</td>
<td>50%</td>
</tr>
<tr>
<td>Triaxial Tear Strength</td>
<td>ASTM D-4533</td>
<td>75 lb</td>
<td>75 lb</td>
<td>100 lb</td>
<td>100 lb</td>
<td>60 lb</td>
<td>60 lb</td>
<td>80 lb</td>
<td>80 lb</td>
<td>80 lb</td>
</tr>
<tr>
<td>Permeability</td>
<td>ASTM D-6244</td>
<td>450 lb</td>
<td>450 lb</td>
<td>900 lb</td>
<td>900 lb</td>
<td>450 lb</td>
<td>450 lb</td>
<td>450 lb</td>
<td>450 lb</td>
<td>450 lb</td>
</tr>
<tr>
<td>Apparent Opening Size&lt;sup&gt;2&lt;/sup&gt;</td>
<td>ASTM-D-4751</td>
<td>U.S. Sieve 30 (0.59 mm)</td>
<td>U.S. Sieve 70 (0.21 mm)</td>
<td>U.S. Sieve 70 (0.21 mm)</td>
<td>0.28 sec&lt;sup&gt;-1&lt;/sup&gt;</td>
<td>0.28 sec&lt;sup&gt;-1&lt;/sup&gt;</td>
<td>1.1 sec&lt;sup&gt;-1&lt;/sup&gt;</td>
<td>1.1 sec&lt;sup&gt;-1&lt;/sup&gt;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ultraviolet Resistance Retained at 500 hours</td>
<td>ASTM D-4355</td>
<td>70% strength</td>
<td>70% strength</td>
<td>70% strength</td>
<td>70% strength</td>
<td>70% strength</td>
<td>70% strength</td>
<td>70% strength</td>
<td>70% strength</td>
<td>70% strength</td>
</tr>
</tbody>
</table>

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 (NTPEP) and conform to the values in Table H.1.

The geotextile must be able to contain most 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 mixture of 95 percent by weight of polyethylene or polystyrene, and formed into a stable network so that fibers or yarns retain their dimensional stability relative to each other, including selvages.

When more than one section of geotextile is necessary, overlap the sections by at least one foot. The geotextile must be pulled taught over the applied surface. Equipment must not run over exposed fabric. When placing ripples on geotextile, do not exceed a one foot drop height.
Table H.2: Stone Size

<table>
<thead>
<tr>
<th>TYPE</th>
<th>SIZE RANGE</th>
<th>$d_{50}$</th>
<th>$d_{90}$</th>
<th>AASHTO</th>
<th>MIDSIZE WEIGHT</th>
</tr>
</thead>
<tbody>
<tr>
<td>NUMBER 57</td>
<td>3/8 to 1 1/8 inch</td>
<td>1/2 in</td>
<td>1 1/2 in</td>
<td>M43</td>
<td>N/A</td>
</tr>
<tr>
<td>NUMBER 1</td>
<td>2 to 3 inch</td>
<td>2 3/4 in</td>
<td>3 in</td>
<td>M43</td>
<td>N/A</td>
</tr>
<tr>
<td>RIPRAP² (CLASS 0)</td>
<td>4 to 7 inch</td>
<td>5 1/2 in</td>
<td>7 in</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>CLASS I</td>
<td>N/A</td>
<td>9 1/2 in</td>
<td>15 in</td>
<td>N/A</td>
<td>40 lb</td>
</tr>
<tr>
<td>CLASS II</td>
<td>N/A</td>
<td>16 in</td>
<td>24 in</td>
<td>N/A</td>
<td>200 lb</td>
</tr>
<tr>
<td>CLASS III</td>
<td>N/A</td>
<td>23 in</td>
<td>34 in</td>
<td>N/A</td>
<td>600 lb</td>
</tr>
</tbody>
</table>

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 midsize.

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 charts. 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 $d_{50}$ selected from Table H.2. The $d_{50}$ refers to the median diameter of the stone. This is the size for which 50 percent, by weight, will be smaller and 50 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

<table>
<thead>
<tr>
<th>Parameters¹</th>
<th>Acceptable Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>pH</td>
<td>5.0 - 8.5</td>
</tr>
<tr>
<td>Moisture content</td>
<td>30% - 60%, wet weight basis</td>
</tr>
<tr>
<td>Organic matter content</td>
<td>25% - 65%, dry weight basis</td>
</tr>
<tr>
<td>Particle size</td>
<td>% passing a selected mesh size, dry weight basis</td>
</tr>
<tr>
<td>3 in (75 mm), 100% passing</td>
<td></td>
</tr>
<tr>
<td>1 in (25 mm), 90 - 100% passing</td>
<td></td>
</tr>
<tr>
<td>0.75 in (19 mm), 70 - 100% passing</td>
<td></td>
</tr>
<tr>
<td>0.25 in (6.4 mm), 30 - 60% passing</td>
<td></td>
</tr>
<tr>
<td>0.04 in (1 mm), 30% min. passing</td>
<td></td>
</tr>
<tr>
<td>Physical contaminants (manmade inerts)</td>
<td>&lt;1% dry weight basis</td>
</tr>
</tbody>
</table>

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).

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