Part C
Sediment and Stormwater Technical Procedures

Maryland Department of Transportation State Highway Administration
DRAFT Version 1.2
November 2024

Contents

1.0 Erosion & Sediment Control

The intent of this section is to provide a supplement to the "2011 Maryland Standards and Specifications for Soil Erosion and Sediment Control" (Standards and Specifications) in support of design efforts for Maryland Department of Transportation State Highway Administration (SHA) projects that will be reviewed by the MDOT SHA Plan Review Division (PRD). Future revisions and modifications to the Standards and Specifications may result in a conflict between this supplement and the current Standards and Specifications. The designer is reminded that the Standards and Specifications are the overriding design document and sound engineering judgment should be applied to all designs.

The supplemental information listed below is referenced by the section number in the Standards and Specifications that it refers to:

Add the following to Section A-5.I, Content of the Erosion and Sediment Control Plan:

Design Data on Plans

Some erosion and sediment control (ESC) measures (e.g. temporary gabion outlet structures, temporary stone outlet structures, traps, basins, etc.) require design data on the plans. For temporary stone outlet structures (TSOS) and temporary gabion outlet structures (TGOS) include: location and/or identification number (ID #), weir elevation, drainage area (DA) size, required storage, and actual storage. The ESC plan should include grading contours for sediment traps and basins. When excavation or additional grading is needed to achieve the required storage volume behind a TGOS or TSOS, show the temporary contours or provide enough information during plan review to demonstrate sufficient storage availability.

Standard Stabilization Note

All disturbed areas with slopes flatter than 2:1 must be stabilized with 4 inches of topsoil, seed, and mulch. For slopes 2:1 or steeper, refer to the "SHA Landscape Design Guide."

Same Day Stabilization:

Same Day Stabilization (SDS) is not a standard ESC measure. It should be limited to small areas where the ESC filtering practices provided in the Standards and Specifications are not feasible or practical. The SDS provision should also be limited to areas where the proposed work, including application of the permanent stabilization, can be completed in a single working day.

When a plan has an area that calls for same day stabilization, but the rest of the disturbance has ESC measures, the limits of SDS need to be clearly identified on the plans. This can be done with a bubble, shading, or hatching. If shading or hatching is used, the pattern should be identified in the legend.

SHA projects that include limited amounts of disturbances, such as sidewalk replacement or guard rail installation, often include a provision for same day stabilization in lieu of installation and removal of sediment control devices. A note detailing the requirements should be provided on the plans and referred to in the Sequence of Construction (SOC).

Removal (pulling) and resetting of W-Beam post and panel that does not require grading or earth disturbance may be excluded from the Limit of Disturbance (LOD). Type A and C end treatment installations include safety grading and should be included within the LOD. New installation of guard rail that requires safety grading should be included within LOD. For certain projects, the LOD may be shown on a typical section or detail.

Add the following after Section A-5.I, Content of the Erosion and Sediment Control Plan, Item H.6 (e):

(f) Details that deviate from the "2011 Maryland Standards and Specifications for Erosion and Sediment Control" must be shown on the plans.

Add the following to Section B-1:

Stabilized Construction Entrance

In certain situations, a stabilized construction entrance (SCE) may not be required. This special allowance is made for areas where it is either infeasible or unnecessary to provide an SCE. A typical example would be when the work area is smaller than the disturbance that would be created by an SCE. Where no SCE is provided, the contractor shall designate the construction equipment that shall be allowed within the LOD. This equipment shall be kept within the LOD until the proposed work is complete and shall have treads/tires cleaned prior to leaving the LOD. The method of cleaning shall be specified by the contractor. Washing of treads/tires requires an appropriate sediment filtering practice or capturing device.

Rumble Pad

Pre-constructed rumble pads may be used instead of stabilized construction entrances provided they are installed according to manufacturer's recommendations and a sufficient number of pads are installed to allow a minimum of four tire revolutions while on the pad. More pads may be needed depending on site conditions. The plan shall specify that accumulated materials be cleaned from the pads daily (or more often if necessary) and an acceptable disposed method be specified on the plan or in the specification.

Add the following to Section B-4-7 and B-4-8:

Heavy Use/Staging and Stockpile areas

Consider the need for Heavy Use/Staging and Stockpile areas for the proposed construction activities. If Heavy Use/Staging and Stockpile areas are needed, they should be denoted on the plans. If it is determined that there is no feasible on-site location to include Heavy Use/Staging and Stockpile areas, include a note stating such on the plans and direct the contractor to choose an acceptable location. The contractor is responsible for obtaining approvals for off-site locations as necessary.

Add the following to Section D-4, Conditions Where Practice Applies:

The exit slope must be flat. If the slope exceeds 0%, then use "NRCS Design Guide MD #6 Riprap Design Methods" on riprap channel design and the Isbasch equation.

http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs144p2_025594.pdf

Other Supplemental Information:

Notice of Intent (NOI)
For projects with an earth disturbance of 1.0 acre or greater, a National Pollutant Discharge Elimination System (NPDES) Individual Application or a Notice of Intent (NOI) to comply with General Permit to Discharge Stormwater Associated with Construction Activities must be completed online and approved by MDE prior to any earth disturbance. *It is suggested that projects with earth disturbance close to one acre should obtain permit coverage to avoid potential issues during construction*. Coordinate with SHA's Highway Hydraulics Division to ensure the project complies with the requirements of the 20-CP permit.

Notice of Termination (NOT)
The online Notice of Termination must be completed by MDOT SHA Compliance personnel or SHA responsible construction personnel before a project can be closed out. Stormwater facility as-builts must be accepted by Administration prior to the project closeout.

Material Removal by Pressure Washing
If a high-pressure water jet is to be used to remove concrete from existing structures, the plans or specifications should direct the contractor to submit a plan for effluent collection, removal, and off-site treatment. This activity may require an Industrial Discharge Permit from MDE.

Scarifying Soils
Refer to the latest specifications.

Three Day Dry NOAA forecast
Three Day NOAA weather forecasts are "Dry" when the probability of precipitation during each of the three consecutive days is less than 20%. National Weather Service precipitation forecasts for a project location can be found on www.weather.gov. Follow the steps below:

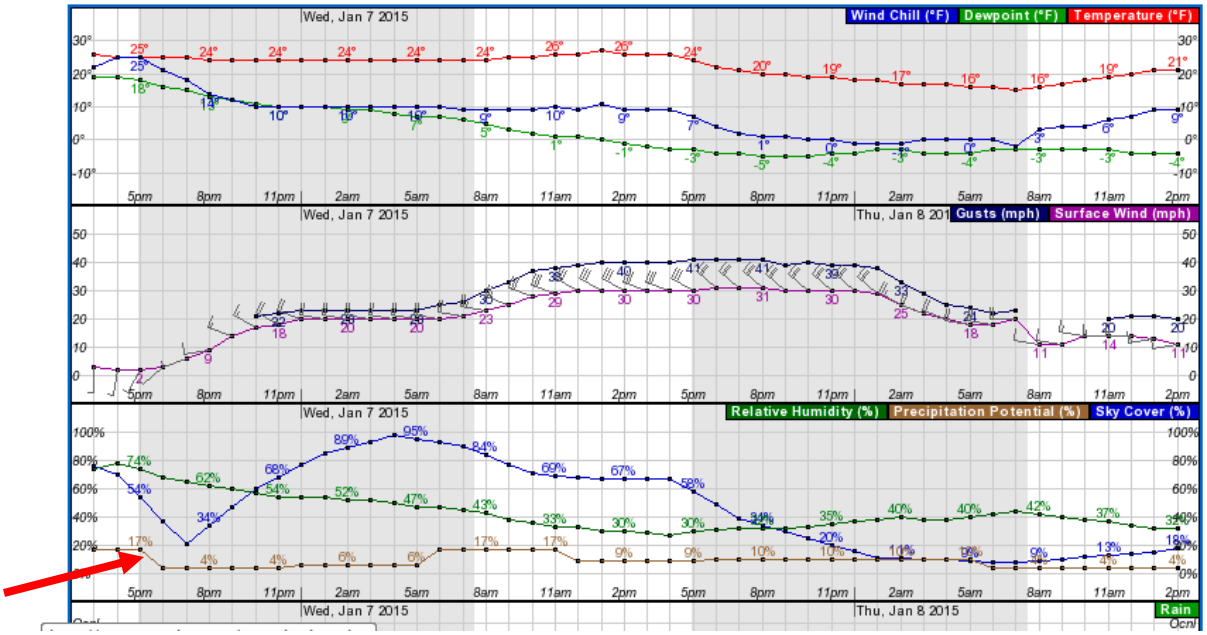
1) Enter the city/state or the zip code into the top-left blank.
2) Scroll down the page to see the detailed forecast.
3) Obtain the numerical probability of precipitation (0-100%) by clicking on "Hourly Weather Graph".
4) The brown line on the third section of the graph shows the hourly probability of precipitation.
5) To see this in a tabular form, instead of a graph, click "Tabular Forecast" near the bottom right of the web page.

Point Forecast: Baltimore MD
39.29N 76.61W

Last Update: 1:4

Hourly Weather Forecast Graph

[dashes/dots] | [b/w] | [show menu]



2.0 Stormwater Management

The intent of this section is to provide clarifications to the current version of the 2000 Maryland Stormwater Design Manual, Volumes I & II (Design Manual) for MDOT SHA projects. Sound engineering judgment should be applied to all designs. The information listed below is referenced by the section number in the Design Manual that it refers to:

Chapter 2, Section 2.3 page 2.8, Clarification on Cpv requirements for Eastern Shore:

Based on the 2007 SWM Act and the revisions to Chapter 5 of the Design Manual, ESDv, and therefore Channel Protection Volume (Cpv), is required for the Eastern Shore. There are multiple Cpv waivers that Eastern Shore projects may qualify for due to the prevalence of tidal water. However, Chesapeake Bay Critical Area Regulations may require full ESDv on Eastern Shore. Critical Area required management cannot be waived by PRD.

Chapter 2, Section 2.4 and 2.5, The following is a clarification to information provided on page 2.12, and 2.13 of the manual:

Existing agricultural land uses within the project LOD should be modeled as meadow in good condition in the existing condition. Existing agricultural land uses that are outside the LOD should be modeled as the present land use in both the existing and proposed conditions.

When culverts are enlarged/augmented as part of a development project, a risk analysis of the upstream and downstream impacts is required. In many instances, a 3.3.B.3 waiver may be applicable, with County and downstream owner concurrence. See Sections 4.1.C and 4.2.C in the "SHA Sediment and Stormwater Guidelines and Procedures – Part A" (Guidelines).

Chapter 3, Section 3.1.1 page 3.8, Additional guidance on feasibility:

Dry detention facilities may be used to provide quantity management (Cpv, Qp2, Qp10, or Qf100).

Wet ponds are not permitted in Use III and IV Waters, or within 4 miles of airports.

Watershed and Stream Use information can be obtained from the following web sites:

Interactive 6, 8, and 12-Digit Watershed Map:
https://mdewin64.mde.state.md.us/WSA/TMDLWaterSheds/index.html

Interactive Stream Use Map:
https://mdewin64.mde.state.md.us/WSA/DesigUse/index.html

Chapter 5, Section 5.1.3.1, page 5.9, Add the following after the last paragraph of Site Fingerprinting and Development Layout:

Loss of water quality applies to both new development and redevelopment projects when an existing system that provides water quality is altered. It should be evaluated throughout the design development process. Changing a roadway from open section to closed section is considered to be a loss of water quality (LOWQ) or TMDL credit if the existing roadside swale has an SHA BMP number.

If the area to be developed was providing stormwater management (SWM) in existing conditions for an adjacent drainage area within SHA right-of-way (ROW) or through an agreement where SHA accepted responsibility for providing management, then the management being lost must be replaced. If a new BMP replaces an existing BMP or other SWM feature, such as a grass channel or disconnection, the new BMP must be designed to replace the existing management in addition to satisfying the proposed management requirements.

Chapter 5, Section 5.1.3.1 page 5.11, Add the following after the last paragraph of Review of Concept plans:

A discussion of the erosion & sediment control approach should be included in the Concept SWM narrative.

Chapter 5, Section 5.2, page 5.19: Add the following after Practices

The manual refers to and encourages the use of "treatment trains" as part of an overall system for meeting the project's stormwater water requirements. A minimum P_E of 1 inch needs to be treated by ESD, but it does not have to be attained in a single facility. It is acceptable to provide practices in parallel or in series. For example, a treatment train of three bioswales is essentially the same as a single bioswale with three separate segments or units for ESDv. The facilities are connected, and one drains to the other, but each individual unit has a sub-drainage area that drains directly to it.

For ESDv design purposes, the drainage area is the portion that drains directly to the individual unit. If each unit in the treatment train is designed to treat the same level of P_E from its individual sub drainage area, there should be no overflow into the downhill unit during the ESDv design storm, except for grass swales. However, if the P_E treated varies from unit to unit, the downhill facility will have to include overflow from the uphill facility for the ESDv design storm. For quantity analysis (Qp), the drainage area is cumulative and gets progressively larger for each downhill practice, as it does with a storm drain system. See the Design Manual for design constraints for swales.

If the cumulative ESDv provided meets the target Pe and ESDv, then the ESDv treatment provided by the treatment train is satisfactory. Water quality credit is not given for the portion of P_E above 1.0 inch, except for TMDL projects.

SWM Analysis

Refer to MDE's Technical Memorandum #10 and #11 for guidance on identifying, evaluating, and classifying POI/LOI for SHA projects and calculating treatment requirements. Link to MDE's website: https://mde.maryland.gov/Pages/index.aspx

Add the following to Step 1 in MDE Technical Memorandum #10

Considerations regarding easements: There is a distinction between ROW and easements. By definition, easements are not considered fee ROW. However, when circumstances allow based on the project scope, the designer can choose either the ROW line or a perpetual drainage easement limit to set the POI's within one project. If the LOD for the project extends into the perpetual easement, it is acceptable to locate the POI at the easement/LOD limit. PRD would require sufficient justification as to why an easement is being used for selecting POIs (Qp assessment, stability along the easement, confluence of numerous project POIs) where there is no LOD within the easements during SWM concept review.

Add the following after the Terms section of Step 5 in MDE Technical Memorandum #10

Impervious areas associated with isolated small foundations or posts for signs and lighting structures are considered de minimis and should also be excluded from IART computations. Large structures and areas or concrete pads should be included in IART calculations. ΔAi will be negative when there is a net decrease in impervious area.

Add the following after the last paragraph of Topic 1: Stormwater Management Study Area and Calculating Percent Impervious

For the project, SSA is based on:

- Proposed drainage area boundary and the LOD; or
- Proposed drainage area boundary and the proposed ROW

On projects where there is shift in drainage patterns, it may be beneficial to use the Existing drainage area for SSA determination. In such instances, the SWM report must include justification for utilizing the Existing conditions drainage area.

SHA PRD may allow for "areas used for stormwater management" to be excluded from the SWM Study Area. Include supporting documentation to justify the determination. The following areas can be considered for exclusion from the LOD for SSA determination purposes:

- BMP's and their associated elements
- Slopes and supporting grading where development is infeasible, along with any associated E&S measures at the toe of the slope
- Necessary grading to ensure safe and stable water conveyance due to impervious area removal

SWM Design Requirements

If Chapter 5 practices are demonstrated to be impracticable, Chapter 3 facilities may be used. However, a variance for providing ESD treatment for new development impervious surfaces must be justified and approved by PRD for Chapter 3 facilities to be used. If both Chapter 5 and Chapter 3 facilities are impracticable, a debit from the SHA Water Quality bank may be used if there is sufficient credit for the watershed and the Highway Hydraulics Division (HHD) approves the transaction. A debit from the WQ Bank satisfies both WQv and Rev requirements for the debited acreage. Typically, WQ Bank debits are intended for projects with a limited scope where IART requirements are minimal and there are circumstances that preclude the use of SWM facilities, such as limited ROW, wooded areas, karst, steep slopes, or urbanized corridors. Examples include Americans with Disabilities Act (ADA) sidewalk projects, safety and resurfacing projects, and projects of a similar nature.

Chapter 5, Section 5.2.3, Add the following after the last paragraph under Reduced RCNs:

The Reduced Runoff Curve Number method is permitted for the 2-year analysis only. As an alternative, WinTR-20, HydroCAD, or Haestad software may be used to route the 2-year or 10-year storm through the SWM BMPs to demonstrate peak flow reduction for those storms.

Routing through ESD facilities is acceptable for 10- and 100-year peak discharge attenuation prior to Cpv treatment. Storage in the voids of the BSM should not be included in the routing. Stage/Storage routing should commence at the surface of the ESD practices, using the flowrate through the BSM as the release rate.

Stormwater Management Report

The Stormwater Management report and calculations should address the following:

a. Demonstrate that the impervious area treated (IAT) ≥ IART. This should be evaluated for each watershed. WQv can be provided anywhere in the project as long as it is in the same six-digit watershed.
b. Demonstrate that IART is treated for a P_E of at least 1.0 inch in ESD facilities.
c. Demonstrate that the provided ESDv ≥ the required ESDv for each POI. If not, discuss how the shortfall is being addressed.
d. Demonstrate that Cpv requirements have been addressed at each POI.
e. Demonstrate that Qp and Qf requirements have been addressed at each POI.
f. Address the following for each outfall:
    i. Discuss where each POI outfalls and what is downstream (open channel, pipe, pond, dam, structure, etc.). If it flows to an open channel, demonstrate that it is stable under existing conditions and the proposed velocities are non-erosive. If it is not stable in existing conditions, discuss how this will be addressed and whether proposed velocities have been designed to be at or below existing velocities. Additional management may be required at outfalls that are not stable.

ii. If a new point of concentrated discharge is being created, discuss what measures have been taken to prevent future erosion (level spreader, BMP, etc.).
iii. Demonstrate that adequate outfall protection is provided.
iv. If the POI outfalls into a closed storm drain system, demonstrate, at a minimum, there is available capacity in the system for the 10-year design storm. Capacity for larger storm events may be required in cases where ponding water may create an unsafe condition.
v. Outfall assessment is required for all outfalls at concept stage. Unstable outfalls must be stabilized as part of the project. Exceptions can be requested when the project scope is limited in nature and flows are maintained or reduced at the outfall. If the unstable outfall is not stabilized as part of the project, confirm that the outfall will be added to the HHD, TMDL, or district list of outfalls to be monitored and stabilized when warranted or other mutually acceptable option.
vi. Outfall stabilization is required as part of the project for POI's with Cpv variances.

Chapter 5, Section 5.4.1, Page 5.55, the following are additional ESD practices:

Innovative Technology and Proprietary Devices

PRD recognizes the need for and encourages the development of innovative practices where site constraints are exceptionally limiting. If these devices are proposed, provide the MDE approval letter for the practice and MDOT SHA material acceptance letter in the stormwater management report.

Equations 5.1, 5.2, and 5.3, Chapter 5, Pages: 5.83, 5.98 and 5.105:

Equations 5.1, 5.2, and 5.3 in Chapter 5 are regarded as planning tools to be used for site layout during concept design. These equations provide a two-dimensional approximation of the respective three-dimensional ESD practice. However, in the case of grass swales, the practice is two-dimensional, and Equation 5.3 provides an accurate assessment of the Pe.

Equation 5.1 should not be used for M-1 Rainwater Harvesting, M-2 Submerged Gravel Wetlands, M-3 Landscape Infiltration, other than for very rudimentary planning.

Equation 5.2 should not be used for: M-4 Infiltration Berms, M-5, Dry Wells, M-6 Micro-Bioretention, and M-8 Bioswales other than for very rudimentary planning.

Equation 5.3 should not be used for M-7 Rain Gardens, other than for very rudimentary planning.

M-8 Swales, Chapter 5, Page 5.108:

The Design Manual states that the drainage area contributing to all the design variants for swales should be less than one acre. However, exceptions may be allowed when swale

drainage area includes off-site lawn or wooded areas and the flow does not reach the swale until well after the runoff from the impervious areas. If the flow velocity and depth requirements are met for the ESDv and 10-year storms, the drainage area limitations may be exceeded, since the Design Manual allows swales to be used for conveyance.

Grass Swales, Chapter 5, Page 5.109:

Grass swales are included in the Design Manual to encourage the use of open section roadways. Grass swales should be parallel to the contributing roadway and the runoff from the impervious surface must sheet flow into the swale. Being a linear application, the grass swale must be the same length as the surface it treats.

Since there is no storage volume in a grass swale, the provided ESD_v should be calculated based on the achieved P_E using Equation 5.3.

$P_E(in) = 10\,in. \times \frac{A_f}{DA}$ (Equation 5.3) and $ESD_v(ac-ft.) = \frac{P_E(in) \times R_v \times A(ac)}{12\,in/ft}$

Equation 5.3 is effectively requiring the surface area of the grass swale to be 10% of the drainage area when treating a P_E of 1.0 inch. To treat a target P_E of 2.6 inches, the surface area would have to be 26% of the drainage area.

If the P_E achieved by the grass swale is less than the target P_E, additional ESD practices (i.e. "treatment train") will have to be provided.

Grass swales may provide full ESDv treatment and, therefore, Cpv treatment. They automatically meet recharge requirements. However, because there is no storage volume captured in a grass swale, they cannot be used to compute a reduced RCN.

Bio-swales, Chapter 5, Page 5.109:

The MDE Surface Storage Volume Tables for Bioretention, Bioswales, Rain Gardens, and Landscape infiltration provide computational evidence that 75% surface storage is not required for full water quality treatment. For the surface storage requirements of the bioswale in combination with using MDOT SHA bioretention soil mix, the designer may use the MDE Surface Storage tables. Alternatively, the designer may choose to provide 75% surface storage instead.

3.0 Other Supplemental Information:

Precision of Computations for TR-55 and TR-20

Engineering judgement should be used when rounding input and output data for TR-55 and TR-20 based on the size of the watershed. As a general guidance for MDOT SHA projects, input and output data should be rounded as follows unless the drainage area is large enough to warrant fewer significant digits. If so, the designer should state this in the SWM narrative. The information below is provided as general guidance. The designer should use engineering

judgement and document any decisions to round differently than shown below:

- Drainage area: acres are preferred, rounded to two decimal places. If square miles are used for larger watersheds, they should be rounded to four decimal places.
- Impervious area: acres, rounded to two decimal places.
- Composite RCN: rounded to one decimal place
- Tc: hours, rounded to two decimal places.
- Pe: inches, rounded to one decimal place.
- Q: cubic feet per second, rounded to one decimal place.
- Tc path length: feet, rounded to the nearest whole number.
- Slope: feet/feet, rounded to two decimal places for ground surfaces and three decimal places for hard surfaces.

Dividing Drainage Areas

Roadways (and particularly highways) are not hydrologically homogeneous to the rest of the area draining to the point of investigation, so the roadway should be subdivided as a separate sub-drainage area. The time of concentration for the sub-drainage area with the roadway will be much shorter and the RCN will be higher than the adjoining drainage area. When determining Tc or flow to a BMP, similar considerations may be applicable.

Bridge Deck and Bridge Replacement

Refer to MDE's Technical Memo #6 for general guidance on SWM associated with bridge construction. Additional clarification is below:

Bridge deck replacement is maintenance and qualifies for a 3.3.A waiver. When an existing bridge is fully or partially reconstructed to the original footprint, elevation, and design without any widening, the work is also considered to be maintenance and qualifies for a 3.3.A waiver. In either case, full depth replacement of the roadway approaches is typical for proper transition of slopes. PRD will consider 50 feet on each side of the bridge of the pavement replacement to be maintenance when the work on the bridge is also maintenance.

When a bridge is widened, or the design otherwise altered such as a grade change, an area equal to the original impervious surface area will be considered reconstruction. Any additional surface area will be considered new impervious cover and requires both WQv and Cpv. County quantity management requirements, if applicable, must be addressed. Replacement of bridge approaches will be considered reconstruction within the existing footprint and new impervious outside the existing footprint.

When bridge scuppers are relocated, the extent of relocation shall be reviewed in determining its impact on stormwater management. It is preferred that scuppers not discharge directly into bodies of water. Water quality opportunities should be sought at the new discharge point. Water quantity and channel protection needs should be evaluated.

Pervious Pavement

Pervious pavements are designed to allow rainfall to pass through pavement surface to infiltrate into the soils below that surface. In the SWM calculations, pervious pavements should be included in the IART calculations, but the surface area of the pervious pavements should also be included in the IAT. Care must be taken during the plan review and construction process to ensure that the in-situ soils below proposed pervious pavement areas are not compacted.

It is typical for drive aisles in permeable pavement parking lots to be constructed of traditional non-permeable pavement. It is acceptable for these pavement drive aisles to drain to the pervious pavement if the impervious run-on is limited, and the discharge onto the pervious pavement is evenly distributed and sheet flow. To consider these impervious pavement areas as treated, the pervious pavement section must provide storage for the ESDv required to treat those impervious areas in addition to the ESDv required to treat the pervious pavement itself.

Gravel and Ballast

Stone surfaces that are used for vehicular traffic, such as GAB or CR-6, are considered impervious because vehicles compact the surface over time, causing the surface to have the same hydrologic characteristics as a paved surface.

Stone used with a cellular confinement system or riprap used for erosion control or infiltration systems should not compact if it is properly installed. It is therefore considered a pervious or alternative surface.

Stone that is not used for vehicular traffic purpose is considered pervious. Examples of such use are: in stormwater management facilities, on pedestrian walkways, or as pads around electrical utilities, and outlet protections.

A 50/50 mixture, by volume, of stone and topsoil, seed, and mulch utilized for shoulder edge drop off is considered pervious. Use of CR-6 or millings for the shoulder edge drop off is considered impervious.

Railroad ballast is generally considered to be pervious. Some railroad beds, however, are constructed atop compacted areas, thereby making the ballast impervious.

Soils Investigation

Refer to MDE Technical Memorandum 7 for required soils investigation information.

Stormwater Management BMP Recharge Volume

When a SWM facility has an underdrain, storage for the recharge volume must be provided in the facility if there is a recharge requirement. Typically, this is provided below the invert of the underdrain. When this is not feasible, it may be provided in a separate facility. If the recharge volume is provided upstream of the WQ or ESD facility, the required quality treatment volume may be reduced by the provided Rev. If the Rev is provided below the underdrain, it does not contribute additional volume to the provided WQv or ESDv by the treatment facility. This is consistent with page 2.5 of the Design Manual which says “Rev and

WQv are inclusive. When treated separately, the Rev may be subtracted from the WQv when sizing the water quality BMP."

In Karst and hotspot locations, where Rev is not desirable, a variance letter must be submitted as part of the SWM analysis justifying why Rev is not being provided.

Noisewalls

For New Noisewalls

1. *Quality* - IART will not be considered for the width of the noisewall itself (assumed 6-12 inches) in almost all instances. For ease in analysis, the wall thickness can be assumed to be a line on the DA and WQ mapping, therefore having no width or area.
    a. *Justification* - for most applications, runoff along the wall will drain to a pervious area (i.e. grass strip or stone reservoir) prior to reaching pavement and/or a closed SD system. PRD considers this to behave similar to a 'Rooftop Disconnect' situation of SWM credit for the wall thickness.
    b. Exceptions would be where a new wall is built upon and drains directly to impervious area (example: Noisewall built atop a F-type traffic barrier at the edge of paved shoulder). In such situations, PRD may consider both the wall & traffic barrier (and any associated pavement widening) as IART when computing Water Quality requirement.
2. *Quantity* - As noted in the Quality section, the width of the noisewall will not be considered as additional impervious for Qp purposes. Similarly, the wall thickness can be assumed to be a line on the DA and WQ mapping, therefore having no width or area.
    a. *Justification* - Same as 1.a
    b. Qp requirements must be quantified and considered for any changes in drainage patterns associated with the noisewall construction. Changes in Tc paths must be modeled to evaluate if quantity management is necessary for all POIs.
        i. In most instances, it is acknowledged that any increases in flow are likely minor. Hence, PRD will consider Cpv variances for POIs with 1 yr increases. Evidence of outfall conditions must be evaluated for any Cpv variance requests.
        ii. For associated Qp increases, 3.3.B.3 waivers can be requested. County concurrence will be required, and evidence of outfall conditions must be evaluated.

For Rehab of Existing Noisewalls

1. *Quality/Quantity* - IART and Qp will not be considered for the width of the noisewall itself (assumed 6-12 inches) in almost all instances. For ease in analysis, the wall thickness can be assumed to be a line on the DA and WQ mapping, therefore having no width or area.
    a. For most cases, rehab/repair/replace of existing noisewalls may qualify for a 3.3.A waiver. Evidence of outfall conditions must be evaluated for any waiver requests.
    b. Exceptions can include projects where major drainage changes are being incorporated in the design, which could affect peak flow conditions. In such cases, PRD may request H&H analysis and Cpv/Qp requirements may apply.

Submerged Gravel Wetland (SGW) Clarifications

Coordinate with SHA HHD on the latest design guidance on SGWs

Use of impermeable liners around SGW's to establish wet conditions (i.e. water table not intercepted) may be allowed, if justifiable. Coordinate with SHA HHD regarding applicability.

i. In cases where hotspots or Karst topography are present, a HHD design exception are necessary to consider impermeable liners for SGWs.
ii. When SGW designs are proposed for TMDL treatment, further exceptions can be considered. Coordinate with PRD, HHD and WPD in such instances.

Impacts to Existing TMDL BMP's

Roadway projects may impact the contributing DA to existing BMP's that were designed/retrofitted for TMDL credit. TMDL facilities do not provide water quality treatment per ESD design criteria. They are not included in the WQSS or MDE SWM condensed calculator and their treatments are not deposited into the Water Quality Bank. Thus, impacts of TMDL facilities do not cause loss of ESDv or IART. Coordinate with your HHD liaison on how to show these BMPs on the WQSS for tracking purposes.

Any impact to TMDL facilities causes TMDL replacement credits requirement only within the 8-digits watershed. Designers should identify these impacts at an early design stage and coordinate with the OED WPD.

Site-by-Site Projects

For projects that include various locations where construction will occur under a single contract, PRD allows for SWM/ESC approvals to be obtained on a Site-by-Site basis. For permitting purposes, individual sites are defined as being both non-contiguous and within separate 12-digit watersheds. Designers must identify sites within a single contract and provide evaluation confirming which sites are distinct and separate. Sites contained within a single 12-digit watershed must be combined. See page 8 for a link to MDE's GIS mapping depicting 12-digit watersheds. For contracts where sites are unidentified at the advertisement stage, judgment will be used when a site is constructed and stabilized and a second site within the same 12-digit watershed is identified and advanced to construction. Coordinate these sites with PRD and with HHD for any NPDES NOI concerns.

SWM/ESC for Signing/Lighting/Traffic Barrier or other similar Projects

For projects with limited scope that do not involve roadway improvements (i.e. pavement disturbance), SWM and ESC design can be scoped as follows:

1. If a project is exempt from SWM, but still exceeds 100 cy of earthwork (requiring ESC approval), a SWM report is not required. This should be stated in the 1.D application. A final WQSS and a set of ESC plans are needed for final approval. If there is no HHD liaison for the project, PRD will assist in coordination with HHD on processing the WQSS. The review process can be simplified with a combined concept, site development and final approval.
2. If a project has 5,000 sf or more disturbance, there is a SWM requirement. A 3.3.A waiver is applicable to address the SWM requirement. There are two scenarios.
    a. If the limit of disturbance does not include any impervious area:
        - No outfall investigation or outfall pictures are required.
        - One Project POI with zeroes on the WQSS is acceptable.
        - A project narrative is required. It must include a summary of the proposed work, any present environmental features and associated impacts, brief discussion of erosion and sediment control measures, and justification why a 3.3.A waiver request is adequate.
        - A signed WQSS, signed 3.3.A waiver request and a set of ESC plans are necessary for final approval.
        - The review process can be simplified with a combined concept, site development and final approval.

b. If the limit of disturbance involves impervious area but no added impervious area and no hydrologic change:
    - Individual POIs/LOIs must be identified, along with their outfall stabilization assessment.
    - Unstable outfalls should be addressed in the project if possible. If the scope cannot be addressed in the project, the outfall condition must be communicated to OHD HHD, TMDL or district maintenance for inclusion on their list of unstable outfalls.
    - A report with description of work, SWM requirements, justification of a 3.3.A waiver, brief discussion of each POI/LOI and their outfall stability, any environmental features and disturbance, erosion and sediment control measures, water quality summary sheet, etc. are adequate. A detailed H&H analysis is not required.
    - Assuming all POIs/LOIs of a project qualify for a 3.3.A waiver, one project-wide POI on the WQSS and one waiver request for the whole project instead of individual POIs are recommended.
    - The review process can be simplified with a concept approval, and then a combined site/final approval.

3. If the project scope includes an increase of discharge or net increase of impervious area, the outfall needs to be assessed and stabilized by the subject project. If there is hardship in addressing the repairs in the project, PRD can decide, on a case-by-case basis, if the repair can be deferred to a separate project. For this case, a full SWM report and a normal three step review process is necessary.