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**TECHNICAL MEMORANDUM #6**

**TO:** Applicants and Designers for State and Federal Projects

**FROM:** Sediment and Stormwater Plan Review Division  
Water and Science Administration

**DATE:** September 15, 2017

**SUBJECT:** Stormwater Management for Bridge Decks, Bridge Deck Replacement, Pedestrian Bridges, and Parking Decks

Bridge Decks and Bridge Deck Replacement

The stormwater management required for a bridge will be evaluated on a case-by-case basis. However, the following provides the framework for individual evaluations. Bridge decks are impervious surfaces that collect pollutants regardless of whether they span pervious areas, pavement, or water. Runoff is just as dirty from a bridge deck as from any other road surface. Water quality must be provided for this surface, and the area must be included in computations for the impervious area requiring treatment (IART). If the treatment cannot be provided at the source, compensatory water quality management for the IART can be provided elsewhere in the watershed.

When the super structure is being reconstructed, regardless of whether there is associated earth disturbance (e.g. the abutments are being replaced) or not, the portion equivalent to the original surface area will be considered redevelopment. Any additional impervious surface will be considered new impervious area. When the bridge super structure is not being reconstructed, deck replacement is considered maintenance.

When a bridge is being reconstructed, full depth replacement of the roadway approaches is typical. If the proposed approach maintains the same foot print, grade, line, and surface cross section as the existing roadway, MDE will consider the reconstructed road to be maintenance. If the foot print, grade, line, and surface cross section change, it will be considered development (i.e. redevelopment or new development depending on 40% threshold). Widening will be considered new development.

Quantity management requirements for bridges will be determined on a site specific basis. Quantity management will typically be waived for bridges over water as long as the runoff is delivered to the waterway in a non-erosive manner. When a bridge deck is suspended over non-water surfaces, how the water is collected and where it discharges will determine whether quantity management is required.

### Pedestrian Bridges and Overpasses

The discussion above is directed at regular roadway bridges spanning water and/or pervious area. Additional factors are considered when working with highway overpasses/underpasses and pedestrian bridges that span impervious surfaces. For roadway bridges and overpasses, pollutants from vehicular traffic are dropped on these impervious surfaces in equal quantities despite the volume of rainfall washing over their surface being less. Therefore, the IART should include all impervious surfaces that are exposed to rainfall and/or runoff, generally meaning each of the multiple layers of impervious surface in a given footprint.

Because pedestrian bridges are not being littered with vehicular oils and contaminants, water quality is only required for one impervious layer in the footprint of the bridge and should preferably be provided on the surface subject to vehicular use. For pedestrian bridges located over impervious surfaces or water, no additional management is required for the bridge surface if the runoff from the pedestrian bridge drops onto the surface below and follows the same flow path as the shadow area. Treatment requirements for pedestrian bridges located over pervious area are essentially the same as those for roadway bridges. If the pedestrian bridge crosses pervious area, water quality needs to be provided for the footprint of the bridge. However, management can be satisfied if the runoff from the bridge reaches the area below in a manner that disperses the flow over the area and does not create erosion, equivalent to non-rooftop disconnection. To meet this requirement, runoff from the bridge should flow over the edge of the bridge rather than being collected into a pipe and discharged as concentrated flow.

Quantity management requirements for both roadway and pedestrian bridges are dependent on sustaining non-erosive discharges in addition to the overall requirements for the respective point-of-investigation. Because they are elevated, bridge surfaces do not necessarily represent an increase in impervious area from a quantity management standpoint. However, the flow mechanism is critical and must be carefully considered. If runoff is collected in scuppers and discharges as concentrated flow, the impact to that discharge point, with respect to quantity and velocity, must be considered and management may be required. With respect to overpasses, quantity management requirements will be based on a single footprint of impervious surface, with consideration directed specifically at the discharge point for the highest level of impervious surface.

### Parking Decks

MDE views parking decks and parking garages similarly to overpasses. The surfaces that come into contact with runoff will need to be treated for water quality. Open parking decks may have multiple levels requiring water quality treatment. For parking garages, water quality treatment will typically be limited to the upper deck since the interior levels are often isolated from runoff and the drains are pipe to the sanitary sewer. Quantity management requirements will be based on a single footprint of impervious surface.

Questions about this information or other items relating to sediment and stormwater plans can be directed to Amanda Malcolm [amanda.malcolm@maryland.gov](mailto:amanda.malcolm@maryland.gov)