Public Safety Guidance for Urban Stormwater Facilities

Task Committee on Public Safety Considerations for Urban Stormwater Management Facilities

Sponsored by

The Urban Water Resources Research Council of the Environmental and Water Resources Institute of the American Society of Civil Engineers

American Planning Association

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Preface

The purpose of this document is to provide guidance for protecting public safety at urban stormwater management facilities, such as ponds, channels, water quality control measures (also widely referred to as best management practices, or BMPs) and low-impact development (LID) features, to engineers, landscape architects, land planners and other stormwater professionals. This guidance applies to the planning, design and operation/maintenance (including inspections) of such facilities. This guidance is conceptual and provides general observations and recommendations.

Unless site-specific circumstances clearly indicate otherwise, stormwater professionals should assume that members of the public will visit and interact with stormwater facilities in urban areas. People like to be around water, to be involved with it and to become stewards of it. Surveys have shown that properties adjacent to attractive, well-maintained water bodies hold a premium value. The hazards posed to the public by such facilities should be anticipated, discussed with relevant public and private parties, evaluated and mitigated as appropriate. Public education on the purpose of stormwater facilities and their potential dangers (including mitigation) is essential.

The cosponsors of this document recognize that it is impractical, if not impossible, to provide zero risk at stormwater management facilities. As with any other type of public works infrastructure, there are inherent risks associated with conveying, storing, treating and otherwise managing stormwater, and there are practical constraints related to budgets, appearance, access and other factors that preclude complete public protection. Also to be considered is that there are inherent risks associated with natural water bodies. However, failure to consider public safety is not consistent with the standard of care that professional engineers, landscape architects, planners and other stormwater and public works professionals are entrusted to uphold. Similarly, regular inspection and maintenance are essential to ensure that stormwater management facilities function safely and perform as designed. The American Society of Civil Engineers/Environmental & Water Resources Institute/Urban Water Resources Research Council (ASCE/EWRI/ UWRRC), the National Association of Flood & Stormwater Management Agencies (NAFSMA), the American Public Works Association (APWA), the Water Environment Federation (WEF), the American Water Resources Association (AWRA), the American Planning Association (APA) and the American Society of Landscape Architects (ASLA) recommend that protecting public safety should be a key objective when planning, designing, inspecting, operating and maintaining urban stormwater management facilities.

Chapter 1 Purpose and Overall Perspective

The purpose of this document is to provide guidance for protecting public safety at urban stormwater management facilities, such as ponds, channels, water quality control measures (best management practices, or BMPs) and low-impact development (LID) features, to engineers, landscape architects, land planners and other stormwater and public works professionals. This guidance applies to the planning, design and operation/maintenance (including inspections) of such facilities. This guidance is conceptual and provides general observations and recommendations.

The cosponsors of this document represent a broad coalition of public and private sector engineers, planners, landscape architects, regulators, public works staff and others who regularly practice in the areas of urban stormwater management, flood control and water quality protection. The cosponsors have previously published literature that provides suggestions for enhancing public safety. Representative excerpts are provided in Appendix A. Many general engineering, planning and landscape architecture references discuss public safety; examples are found in Appendix B. Appendix C contains photographs of both safe and unsafe stormwater facilities, while Appendix D contains example conceptual design drawings related to public safety.

As shown in Figures 1 and 2, potential hazards to the public can be apparent (such as overly steep side slopes, lack of escape route and maintenance access and high-velocity discharges onto a steep drop into a detention basin), but hazards can also be far more subtle. By contrast, Figure 3 provides an example of a facility that was designed with safety in mind; this stormwater retention pond has safety provisions, including mild, well-vegetated side slopes and a gentle drop-off below the water level, and it has trails safe for public use, receives regular maintenance, and is attractive, which promotes regular public use and thus improves safety and contributes to economic, environmental and community benefits.

This guidance addresses a wide range of safety issues and considerations. Safety considerations are site specific in nature and should be evaluated on a case-by-case basis.

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Figure 1. Dry Detention Basin with Safety Concerns Due to Steep Side Slopes and No Egress or Escape Route

Source: James Lenhart, P.E., D.WRE; reproduced with permission.



Figure 2. Dry Detention Basin, Culvert and Rundown with Safety Concerns Due to Steep Side Slopes and No Egress or Escape Route

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