NCHRP 20-68A – “US Domestic Scan Program”

# Domestic Scan 16-02 Leading Landscape Design Practices for Cost-Effective Roadside Water Management

Hotter, drier summers; warmer, wetter winters; and more frequent extreme weather events are confronting transportation agencies with increasingly frequent and intense ﬂoods, droughts, and temperature extremes that adversely affect transportation infrastructure.  Transportation agencies, seeking ways to mitigate these adverse impacts, have been exploring principles and practices of “green infrastructure” for roadside water management, using such as techniques as water harvesting, landform grading, rain gardens, micro-catchment basins, and large-watershed actions as components of transportation development projects and operations.  The fundamental intent of these techniques is to work with natural processes, to “build with nature.”  While the details of particular applications often are determined by geography, many of the techniques are transferrable to other climatic and landscape settings; the principles and practices being developed for designing, developing, and managing green infrastructure are generally applicable.

This scan will review recent experience with green infrastructure practices for roadside water management to identify planning and design criteria, management practices, and exemplary applications that may be broadly useful in transportation agencies nationwide.  Because much of the leading-edge experience is coming from local and regional (sub-state) agencies, an important feature of this scan will be consideration of how exemplary applications may be scaled up to inter-city corridor and statewide systems.  The scan may contribute toward development of nationally useful guidelines and policies on effective green infrastructure practice.

The following applications, recognized as successful advances in green infrastructure practice, are candidates for the scan team’s attention:

* Green Infrastructure Center in Charlottesville, Virginia’s use of GIS mapping
* City of Hot Springs, Arkansas 2015 project on identification and restoration of the city's highest value natural resources
* Meadowood Mall and Mount Rose I-580 Nevada, construction of  micro-catchment basins in a dry arid climate
* Green Infrastructure Planning Guide 2013 developed for Ulster County, New York
* Construction of the Staten Island Bluebelt, Staten Island, New York,
* Landscape-based, green infrastructure approaches utilized along Lake Michigan, Chicago, Il.

The scan results will be documented in a report focusing on information gathered and lessons learned on how green infrastructure techniques can best be utilized to mitigate extreme weather events, and address the programming, planning, and mitigating, requirements of projects by transportation agencies. The information gathered will also provide transportation professionals examples of best management practices for green infrastructure while focusing on the larger regional scale of GIS mapping to determine the best smaller site-scale solutions. The results will explore how to think at multiple scales — from the site to the neighborhood, to the town, city, county, watershed and region — and then back again. It will explore the assumption that working multiple scales yields multiple beneﬁts that might be missed through small scale approaches.

The scan is envisioned to be conducted as a Type 2 Scan (Reverse Scan). The scan will be a strong tool for transportation agencies, partners, and the public by sharing successful strategies, emerging practices and lessons learned that will help them to make better decisions on balancing growth and development with the conservation of natural assets over the long term while dealing with changing weather patterns.Original Scan Proposal Title(s): Leading Landscape Design Practices for Cost-Effective Roadside Water Management

**Execution Schedule**

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| **Milestone** | **Anticipated Date** |
| Chairs and Team Members Identified | January, 2017 |
| Desk Scan Completed | May, 2017 |
| Prescan Meeting Held | May 2017 |
| Scan Conducted | September-October 2017 |
| Draft PowerPoint submitted by SME | November 2017 |
| Draft Report Delivered to NCHRP and Panel | February 2018 |
| Final Report Delivered to NCHRP | May 2018 |

**Estimated Scan Cost:** $175,000

Anticipated Duration: 2 weeks (type 2 scan)

*Last Reviewed/Revised March 7, 2017*