

This topic is “practice ready.” Yes No

Evaluation and Enhancement of Construction Stormwater Controls using Large-Scale Testing Techniques

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Abstract

The construction of roadways typically consist of mass clearing and grading leaving many areas unstable, lacking ground cover to protect against rainfall induced erosion. As linear roadway projects progress, unstabilized areas (i.e., roadbeds, cut and fill slopes, and other embankments) tend to be highly compacted, reducing infiltration. Surface stormwater runoff from these unstabilized areas could increase as a result of limited infiltration. Stormwater runoff from unstabilized grading operations on construction sites can yield sediment losses of 35 to 45 tons/acre per year. Eroded sediment from construction sites is one of the most harmful pollutants to the environment resulting in over 80 million tons of sediment washing from construction sites into surface water bodies each year. In linear construction, stormwater runoff is typically diverted to a series of constructed stormwater conveyances (i.e., berms, swales, and ditches), which may also be unstabilized prior to vegetative establishment. Therefore, runoff control measures must be installed to minimize channel erosion, especially during peak periods of a storm event. Stormwater runoff control is the practice of managing concentrated flows and reducing peak runoff caused by modification of the site topography.

Runoff control practices are an essential part of a stormwater pollution prevention plan (SWPPP). These devices help control stormwater runoff in concentrated flow situations by impounding stormwater within the channel. These pools of impounded stormwater create areas of low velocity flow which minimizes channel erosion and creates conditions suitable for large particle sedimentation. Many different methods and materials have been traditionally used as runoff control practices to control channelized stormwater runoff, which includes: (1) wire-backed silt fence, (2) rip rap, (3) sand bags, and (4) wattles. Each of these ditch checks require an understanding of their capabilities and knowledge of how to properly install these various types of runoff control practices to achieve their intended performance.

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