



Florida Department of Transportation Research Inlet Protection Devices and Their Effectiveness BDK78 977-03

Researchers at the Stormwater Management Academy, University of Central Florida, recently tested seven curb and six drop inlet protection devices (IPD) currently used in Florida during construction activities to determine their effectiveness in reducing sediment and other pollutants from entering the storm drainage system. Sediment and nutrients generated and transported during construction activities block stormwater conveyance systems, plug culverts, fill navigable channels, adversely impact wetlands and wildlife, and suppress aquatic life. Stormwater discharge is regulated by the National Pollutant Discharge Elimination System (NPDES).

Researchers conducted three experimental rain events with each product to observe performance, the third of which tested whether localized flooding would occur due to sediment accumulation. An effective IPD should let water flow through the device while capturing solids. Researchers used a 30-by-30-foot watershed which had a consistent amount and type of sediment placed on it prior to each test. The pavement



The above curb inlet IPD consists of rolled up recycled synthetic material wrapped in a net with 2-inch diameter orifices. The removal efficiency of nutrients, turbidity, and alkalinity for this product was higher than the average of all products tested.



The above drop inlet IPD is a wood chip wattle that is placed around the perimeter of the inlet. Its heavy weight prevents water from quickly flowing underneath, allowing total solids to settle, and performs some filtration.

leading to the curb inlet had a slope of 1:1 and 60:1. The drop inlet had a gradual slope of 20:1.

Researchers found that both curb and drop IPDs tested reduced the amount of sediment and nutrient runoff but to different degrees and with unique removal rates. All require proper design, installation, and routine maintenance to increase effectiveness and reduce flooding potential. Researchers recommend that products used for sediment and erosion control should meet specific standards before being permitted, and that turbidity and total solids removal benchmarks should be established.

Concerning drop inlets, researchers determined that a treatment system consisting of a product upstream of the inlet to attenuate flow and a product beneath the grate to filter water is a more efficient at removing pollutants than a product placed on top of the grate because the grate capture device must be maintained more frequently than the upstream device.