

## DOTs Use Ditch System to Repair Outfalls, Slope Failures

The amount of ongoing highway construction across the U.S.—widening lanes, building new overpasses and expanding bridges—adds up to more concrete, more slopes and more storm water runoff at higher velocities. Traditional drainage systems like concrete-lined channels and riprap simply cannot handle the amount of water flow or control erosion. The results are evident everywhere you look: failed drainage ditches and outfalls, scoured riprap, unstable and severely eroded overpass slopes, and road damage caused by soil erosion beneath the surface.

The smooth surface of concrete channels has no way of controlling flow during the heavy and lengthy rain events that typically cause erosion or flooding. Riprap, especially when placed on steep grades, can end up at the bottom of slope, resulting in erosion above it and flooding below it. Historically, maintenance crews are sent out to the affected ditch to either replace the lost soil from erosion and reseed the embankment, and/or haul a truckload of new riprap to reconstruct the perpetually failing channel. The bottom line is that these types of storm water drainage channels simply do not work and are a costly maintenance problem for departments of transportation (DOTs), municipalities and drainage districts.

Over the past few years, several DOTs have grown tired of some of the problem ditches and channels and have chosen a different route: SmartDitch, a high-density polyethylene, trapezoidal-shaped ditch lining system that features a ribbed design to help control water flow and erosion, especially in steep slope or embankment conditions.

Depending on the amount of water flow and slope, SmartDitch is manufactured in two sizes: 12-in. depth and 24-in. depth. With each section less than 10 ft in length, they are easy to handle and transport to the job site. Installation is fairly simple and requires no heavy equipment to complete.

In Wisconsin, SmartDitch replaced a riprap channel to eliminate a severe storm water runoff situation. Flooding and erosion were undermining the road above and the underpass below. The project included 107 ft of 24-in. SmartDitch, which was installed in two separate ditches to handle runoff. The slope was approximately 3:1 (horizontal to vertical) on the longer ditch and 5:1 on the shorter ditch. The installation was completed by the local county's maintenance crew. Including excavation, the project was completed in two days.



In Michigan, a highway overpass drainage outfall had repeatedly failed—to the point where the road had begun to collapse near the outfall drain outlet.

In addition, flooding on an entry ramp below the bridge

was a common complaint received by the district. The DOT made several attempts to repair the steep-pitched drainage channel with riprap, but it continued to scour and flood the road below. Ultimately, SmartDitch was specified as a replacement. It took just two days to prep and install 100 ft of 24-in. SmartDitch, which fixed a drainage problem that had required constant maintenance for several years.

To address the growing demand for a fast and effective ditch repair solution, the system has been packaged in a convenient and affordable SmartDitch Ditch Maintenance Pack, which includes seven 24-in. sections, seven 12-in. sections, two comparably sized flared-end sections and an installation hardware kit. It is shipped on one pallet and can be easily stored in any maintenance yard. SWS



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