Road/Ditch Stormwater Integration

Miller Engineers & Scientists has been pioneering a “rural road naturalized stormwater infiltration” approach as an alternative to detention basins for urbanizing towns and incorporated “fringe areas”. This method is a significantly lower cost alternative to detention basins for areas such as the Town of Wilson, Wisconsin, which abuts the City of Sheboygan. Along Terry Andrae Avenue in the Town of Wilson, a poorly drained roadside ditch was retrofitted with a biofilter and was re-graded for better flow. Stormwater emerging from the biofilter runs clear and water no longer stands in the ditch. An additional benefit of this design is improved pavement life because the road subgrade is now able to freely drain.

Modeling shows that these biofilters and grass swales, along with naturally permeable soil, allow the Town of Wilson to achieve the 40% reduction in TSS required by year 2013 without the use of ponds, with only minimal increases in the annual road budgets.

Along most roadways, utilization of infiltration roadside ditches and/or grassed swales allows the designer to manage stormwater *at the source* and minimize the land area lost to detention basins. Perhaps more importantly, the cost of roadside infiltration can be an order of magnitude less than detention basins, and the improved drainage significantly increases the service life of the pavement. Unless the storm water detention basins provide flood protection, function as a geothermal heat sink, or provide for recreation, the preferred strategy is to *keep storm water where it falls*.

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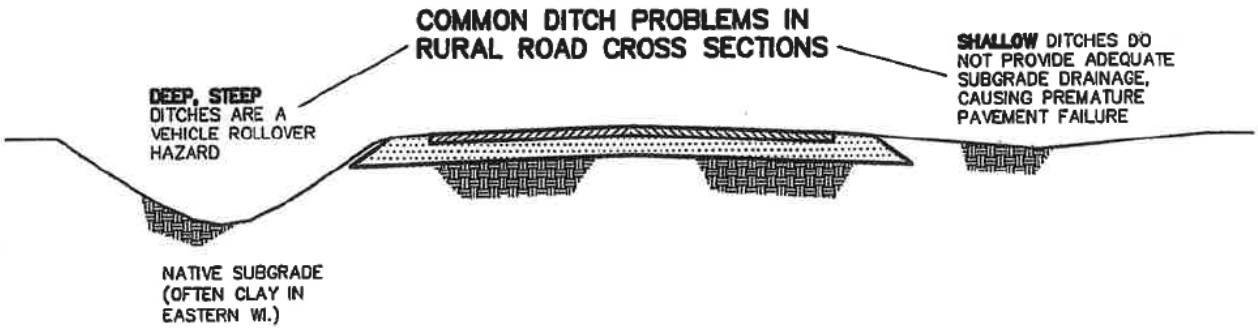
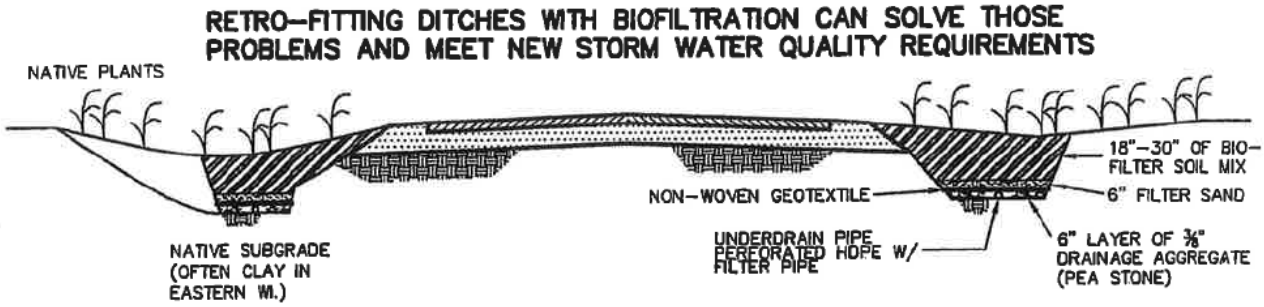
TYPICAL RURAL ROAD CROSS SECTION



IMPROVED RURAL ROAD CROSS SECTION



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STORM WATER QUALITY MANAGEMENT TECHNIQUES

BIOFILTRATION IN RURAL ROAD DITCHES