



Drainage Maintenance

By Bill Anderson, NDLTAP Technical Support Representative

I have been told several times there are three very important areas of road design. These are drainage, drainage and drainage. In looking at roadway distress water is often a major contributor to the distress.

Water flows in streams and the ditches along roads. It seeps into the subgrade and ground and subgrade. Water sheets across the traveled way hopefully into the ditch or other storm water catchment.

Frozen and plugged culverts are a bigger issue this year than normal. Vegetation and debris block culverts and bridges. Scour creates ponds where we don't want ponds. Cracks and pot holes allow entrance of water into the surface structure of our road. These create scenarios for frost heaves, consolidation of aggregates, saturation and

strength loss of the road structure.

There is not a lot we can do with the sloughs and lakes adjacent to our roads other than providing structures to maintain even hydraulic levels on each side of the road and provide greater elevation above the water surface.

Most other water issues can be alleviated with good construction and maintenance practices.

Typically the first drainage crossings that are maintained are those that threaten overtopping the roadway. Often these are the only maintained crossings until failure. Although the worst first philosophy is generally accepted and used it is not considered the best practice today. Having to defer crews, negotiate emergency contracts leads to high costs and results in other uncompleted work which may promote the worst first process.

20% - 25% of the drainage structures can be reviewed annually by in house people. This would in itself create a 4 or 5 year maintenance program. An action plan can usually be formulated with this information within budget constraints. This should help delay rehabilitation/reconstruction and provide a more consistent program.

I see water ponded along the traveled way edge. Can a grader or skid steer be scheduled to remove this dam at the road edge? Water seepage into the base course and subgrade will create soft spots. In asphalt, the outside wheel track will usually show the greatest distress. In gravel, ruts may develop near the road edge.

Unsealed cracks in asphalt and pot holes allow are the passageway for water to infiltrate the base and deeper. Cupping of transverse cracks occurs, leading to a very rough ride. Pot holes get larger in a hurry. How much maintenance can be bought with the rehabilitation dollars needed to repair extensively damaged surfaces?

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Please contact Bill with any questions or comments:

Bill Anderson

701.220.9337

William.anderson.5@ndsu.edu

or

Dale Heglund, NDLTAP Program Director
dale.heglund@ndsu.edu
701.328.9857

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