



## Digouts

By Bill Anderson, NDLTAP Technical Support Representative

Throughout the area roadway failures in the surface and subgrade are occurring. The frost went deep. Culverts froze. Groundwater drainage has created failures.

The question is what do we do now? How deep do we dig? Do we have material to "bridge" the area? With today's increased traffic and heavier loads, the answers get more complicated and expensive. Some of the answers are hidden by the material we remove. Some of the answers may not be found.

Part of the problem may be found in a thin section of asphalt, as 2 1/2 inches instead of 4 inches in the failed area. The grade was changed during original construction and not seen until the surface fails.



How deep should we dig? It depends on what we find but 2 feet into the subgrade may be sufficient. Isn't this the standard depth of fill above water on our flooded roads?

We may also find saturated soil and aggregate. We need to ask: did this come from surface cracks, lateral drainage failures, from water standing in ditches, snow melting on the road shoulder, or a spring. Finding might be an impermeable soil layer in the digout. Edge drains or cross drains may be constructed with rock, metal, plastic concrete, geotextile or a combination of any or all of the above.

We can use rock or gravel for a permeable layer. We can install metal plastic concrete or geotextile drains within or along the edges of our roadway. If we install rock or gravel we may protect its integrity with a geotextile separation layer to limit damage by pumping of soft material into the gravel.

When we replace the material we can dry the existing material. Will we provide more gravel, asphalt or a geotextile to improve strength? We can add chemicals as cement, fly ash or lime. Many enzymes are now on the market to aid in soil and subgrade stabilization.

Many questions can arise with a small blowout in our roads. How we answer these questions will affect the road for years to come. The traffic in the oil patch magnifies any defects we might have.

The Bakken Briefing will be sent to you monthly to address important transportation infrastructure topics. The Bakken Briefing is sponsored by the North Dakota Association of Oil and Gas Producing Counties

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