

Rural Access Power Points: A Challenge

**What could possibly go
wrong?
Answers**

**This PPT identifies the most likely reasons for the
various disasters.**



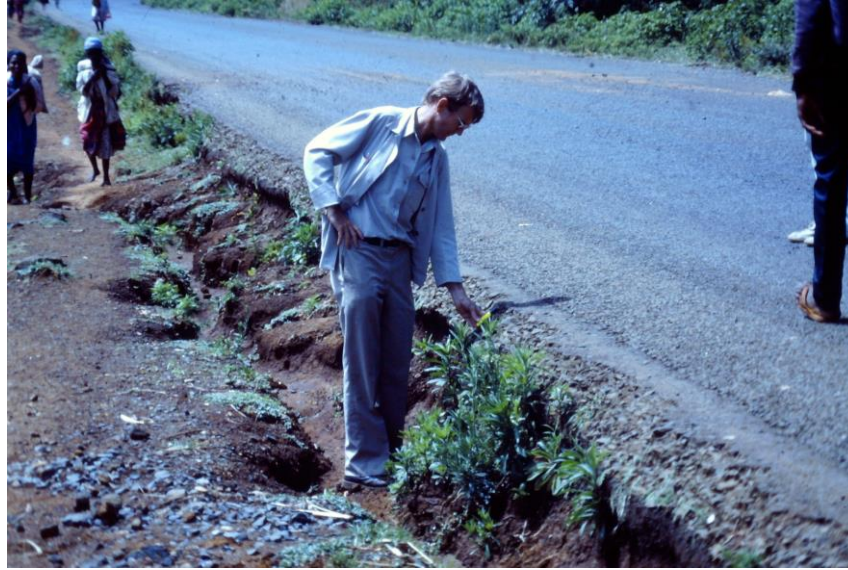
Road Surface



The road surface consists of the in-situ, generally single sized particle sand with no fines able to bind the material together. Any traffic displaces the material and vehicles get bogged down. The solution would have been to stabilise the material or cover it with a more robust surface material, unfortunately both expensive solutions.



Shoulder



The road shoulder has been severely eroded by rainwater. The cause is inadequate drainage measures at the design/construction stage and failure to maintain the shoulder. Obviously a highly dangerous situation, particularly at night.



Drainage Structure



Where do you start?? It seems that attempts to ‘improve’ the structure have been made at various times – unsuccessfully! Design shortcomings indicate lack of peak flow capacity, lack of substructure and side seepage measures. There were also no restraints to prevent vehicles falling off into the watercourse.



Drainage Structure



The culvert was substantially undersized and suffered from overtopping, support and backfill erosion, and foundation failure (absence of anti-seepage measures).



Multiple?



Poor pavement drainage arrangements and lack of timely maintenance. This was exacerbated by uncontrolled overloading of trucks.



Structure



This image was taken in the dry season. The structure was obviously not designed long enough to bridge wet season flows leading to erosion of the abutment foundation and failure.



Drainage

This was the location of a side drain outfall on an unpaved rural roads on highly erodible soils.

Much greater care should have been taken in the design of drainage measures under the principle of 'little and often' to discharge accumulated rainwater safely onto the surrounding ground. This could have include bio-engineering erosion prevention measures.



Productivity



The poor labourers were struggling to achieve the standard excavation task rates with these worn out tools with poor handles. Construction quality hand tools with properly designed handles should be provided as shown above right to achieve productive output.



Drainage

The photograph was taken on the line of the original road.

This is obviously a significant watercourse crossing.

There was evidently failure to properly assess the characteristics of the watercourse, its stability and necessary measures to protect the structure and roadway.



Drainage



The classic absence of camber, side drainage and water dispersal measures, and of course maintenance.

'Highway' should be implemented as a means of passage ABOVE the surrounding ground!



Conclusion?

Drainage is important!



We hope that you scored well.

