Rural Access Power Points:
10-minute briefing

Labour Based Road Works

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Why use Labour Based methods?

The resource base is very different in developing countries:

- **Labour wage rates typically <US£10/day (instead of >US$100/day in developed countries)**
- **Credit scarce and expensive >20%p.a. (instead of <10%p.a. and usually available in developed countries)**
- **Civil engineering heavy equipment is very expensive to purchase and maintain and usually cannot be economically deployed to achieve the high annual utilization typical of an advanced economy environment to justify its use**
- **Local labour and available construction sector skills, local community and enterprise resources are usually not mobilized sufficiently in rural road works**

We cannot directly transfer technology from developed countries into a limited resource environment.

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Applying Labour Based Methods

By breaking down the construction process into simple tasks that can be set out and controlled, labour with construction quality hand tools can build an engineered earth road using the insitu soils.

This is usually adequate for motor traffic of up to 50 motor vehicles per day, if maintained.

Once the camber and drainage system are established, if necessary, labour can then construct a range of durable surface options over weaker soils or for higher traffic levels.

The following slides show the process which can be adapted to different circumstances.

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Setting out and Vegetation Clearance

Simple setting out tools avoid the need for expensive survey equipment. Basic handtools are used to clear the vegetation.

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Boulder Removal

Boulders can be removed, or buried, using picks, mattocks, shovels and crowbars. Larger ones can be broken down using the 'fire and water' method to heat the rock and rapidly cool it to induce cracking. Solid rock can be tackled by hand drilled holes and plug and feathers.

FEATHERS AND A PLUG IN GROUPS OF FOUR TO BREAK ROCK ALONG A LINE

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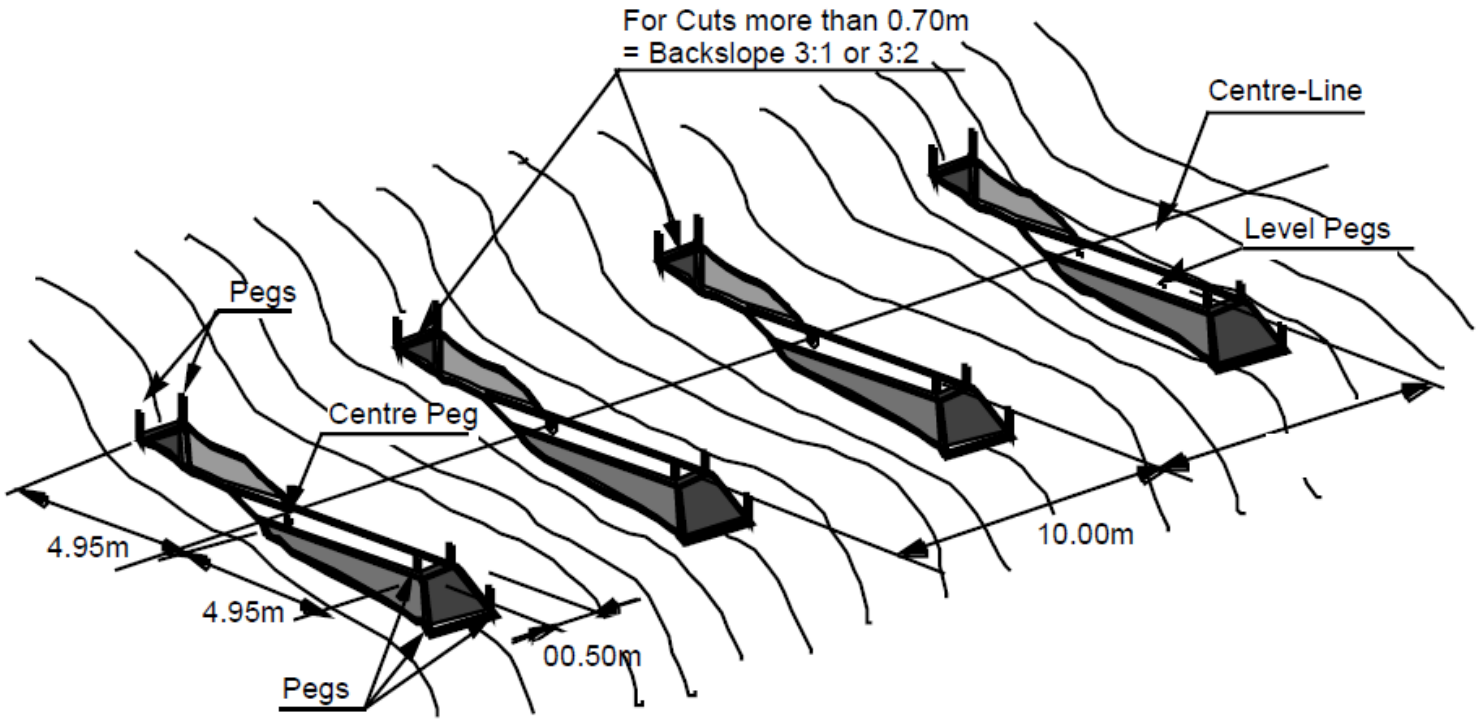
Create a Terrace - 1

Use 'slots' to guide lateral redistribution of the soil to create a level terrace at each point along the alignment. This can help to minimize longitudinal earthworks.



Create a Terrace - 2

The slots guide the material excavation and placement work

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Excavate Side Drain

Cast the material to the marked out central area. Use a rectangular template to check the ditch shape.

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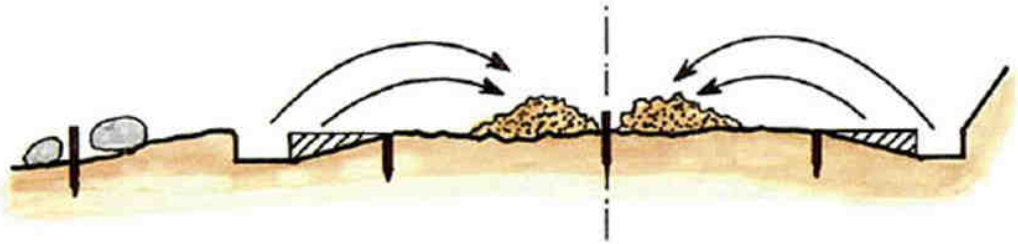
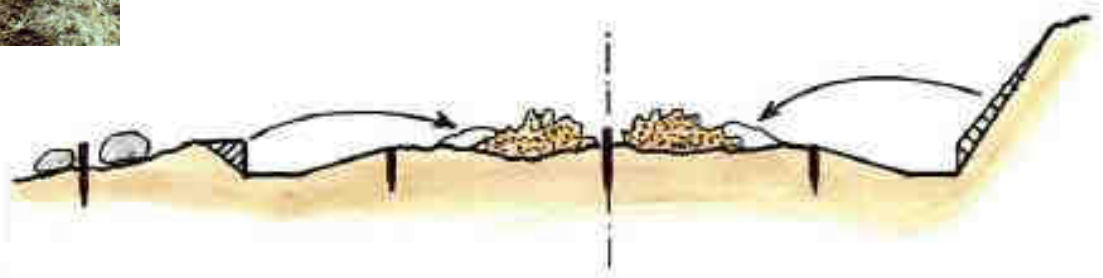
Excavate Side Slope and Back Slope

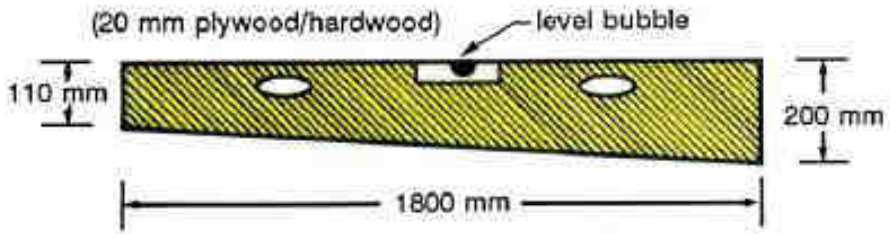
Use material from side slopes, and if necessary back slopes, to provide sufficient for the camber





Form Camber and Compact

Use a camber board and spirit level to achieve the correct camber, water & compact.



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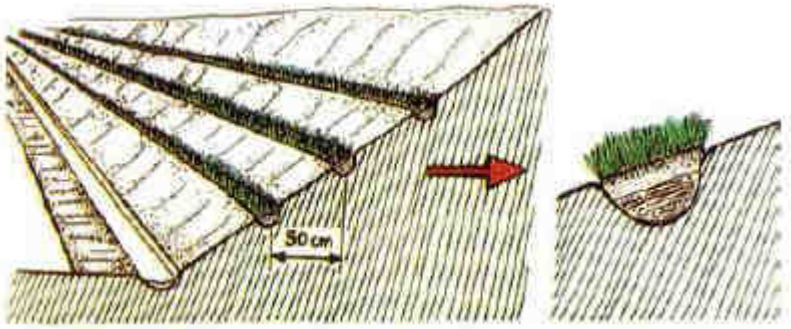
Provide Turnouts, Cross Drainage and Erosion Control



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Provide Surfacing if necessary

Further Information

Further information may be obtained from various publications and websites.