

GRAVEL / LATERITE**(SURFACE OPTION No. S 03)**

Source: Intech Associates

DESCRIPTION

One or more layers of compacted natural gravel / laterite. Before placing, the existing earth should be shaped and compacted with a camber (crossfall) of about 3 - 7% sloping down each side from the road centre line. The gravel should be laid to the same crossfall and a constant thickness. Maximum particle size is 40mm for good performance and to avoid compaction, high material loss and surface roughness problems. The overall constructed gravel thickness is typically 15 - 30cm. Individual gravel layer thickness usually up to 15cm (compacted) maximum. Finished camber after compaction 3 - 7%. Natural gravel can be blended with selected soil/sand to improve quality.

Note: Laterite is one particular type of natural gravel material used for road surfaces.

ADVANTAGES	DISADVANTAGES
<ul style="list-style-type: none"> <input type="checkbox"/> Proven performance in tropical and sub-tropical, gravel-rich environments. <input type="checkbox"/> Suitable for light to medium traffic <200 motor vehicles per day (MVPD). <input type="checkbox"/> Often lower initial cost than most other surfacing options. <input type="checkbox"/> Can be used as an intermediate surface in a planned and resourced 'stage construction' strategy. 	<ul style="list-style-type: none"> <input type="checkbox"/> Occurs in limited natural deposits of variable quality <input type="checkbox"/> Often difficult to meet grading and plasticity specifications. <input type="checkbox"/> Gravel surfaces WASTE. Typically 10-50mm/year/100MVPD). It is essential to have a sustained maintenance programme and regular re-gravelling to replace gravel loss. <input type="checkbox"/> High maintenance costs; regular surface reshaping & re-gravelling. <input type="checkbox"/> Dust pollution in dry weather. Health & Environmental concerns. <input type="checkbox"/> Traffic, climatic and longitudinal gradient (<6%) constraints on use relating to rate of gravel loss.

GENERAL GUIDANCE

Gravel may **not** be appropriate for use as a surfacing material in any one of the following situations, principally due to high or unsustainable rates of gravel loss:-

- Gravel quality is poor (loss rates will be higher for poor quality material that does not comply with specifications)
- Good compaction & thickness cannot be assured (performance will be less than expected)
- Haul distances are long (cost increases with haul distances – Whole Life Cost analysis suggested if haul > 10km)
- Rainfall is very high (excessive surface material losses if annual rainfall > 2,000mm)
- There are dry season dust problems (gravel loss, safety, health and public/agriculture nuisance)
- Traffic levels are high (Whole Life Cost analysis suggested if traffic > 100 motor vehicles per day)
- There are Longitudinal Gradients (recommended maximum gradient 6%, or 4% if annual rainfall >1,500mm)
- Adequate maintenance cannot be provided (regular maintenance, especially expensive periodic, is essential)
- Sub-grade (foundation) is weak or soaked, or there is a flood or overtopping risk
- Gravel deposits are limited or environmentally sensitive.