

**SECTION 88 - MACADAM**

2007. A properly laid macadam surface will also form an excellent base under a sealing and wearing course. Macadam consists of coarse crushed or broken stone, or screened gravel of gauge about 40 to 75 mm maximum, the voids in which are filled with material ranging in size from 6 mm to dust. Above 6 mm gauge, the material is referred to as road metal; 6 mm gauge down to dust is termed screenings. Screenings from a rock crusher are ideal for filling the voids.

2008. Material.-Stone should be hard and tough, and be broken into angular, but not flaky, fragments. Screenings ( $\frac{1}{4}$  in to dust) form the best binding material, but sand or sandy loam with a low clay content can also be used.

2009. Grading. -A suitable grading is:-

$2\frac{1}{2}$ in to $1\frac{1}{4}$ in . . . .	50 per cent
$1\frac{1}{4}$ in to dust . . . .	50 per cent

This approximate grading can be obtained “as run” from a jaw crusher, by adjustment of the jaw setting.

2010. Quantities: -See Para 386, and Table 20.3 and 20.4

**Constructional methods**

2011. Hasty construction: -

- a. Shape the formation and remove unsuitable material. Camber should be 1 in 24. Well compacted shoulders are essential, to prevent stone spreading sideways when rolled.
- b. Tip the stone in a windrow along the edge of the formation.
- c. Spread in layers of uniform thickness, preferably by grader. Tippers, with the tailgate partly opened and secured, can spread direct on firm sub grades, but they must back over previously spread material, and keep off the sub grade.

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d. Compact with a smooth wheel roller (up to 8 tons), working from edges to crown.

e. Compaction by traffic only aided by balding or dragging, will form a road for light traffic if stone of smaller size is used (95 per cent passing 1-inch BS sieve and not more than 15 per cent passing No. 7 sieve). In this case build up in layers about 1 inch thick, to a maximum compacted thickness of 3 inches.

### 2012. Single course construction:

a. After preparing the formation (see Para 464 (a)), spread and roll an insulating sub-base of screenings or gravel if available.

b. Spread the macadam either by plant, by spreader box or with shovels and stone forks, using pegs, blocks, or form boards and a template to control shape and thickness. Maximum thickness, when compacted, is 4 inches.

c. Roll the stone and shoulders dry, preferably with an 8 or 10-ton roller, working from edges to center, until each stone is so wedged that it can be moved only with difficulty. 5 or 6 passes of the roller are normally sufficient: over-rolling breaks the stone.

d. Spread the binding material so as just to cover the macadam. This is best done by hand with a sweeping motion of the shovel, form piles of screenings placed along the edges of the road.

e. Lightly water the surface and brush and roll it. As material disappears into the interstices blind the surface with additional screenings, continue this process until a fine slurry is seen being pushed in front of the roller without perceptible movement of the surface; this indicates that no more can be absorbed. Any depressions that appear during rolling must at once be made good with fresh stone.

2013. Multi-course construction. If the total thickness required exceeds 4 inches, macadam must be spread and compacted in two or more courses. The bottom courses are rolled dry: sprinkling must not be allowed. On good sub grades binding material is needed only in the top course should also be filled, to prevent soil working up into the base. With these modifications proceed as in Para 465. Where the total thickness of base required exceeds 4 inches, the macadam is laid as described in the previous paragraph with the following modifications:

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- a. On good subgrades such as gravel or sand, only the top course has binding material (screenings and water).
- b. On soft subgrades, such as damp silt or clay, where no sub-base is provided, the voids in the bottom course must be filled with screenings to prevent the soft soil working up into the stone.
- c. Water is used only on the top course: the other courses are rolled dry.