

THE SUPPLY of Moist Roadbase Materials

WHAT ARE ROADBASES?

Roadbases are quarry materials which are used in the construction of road pavements. They are made up of a combination of coarse and fine crushed materials which, when placed and compacted at the correct moisture, form a rigid layer.

WHY SUPPLY ROADBASE MATERIALS MOIST?

By adding water at the quarry, the moisture penetrates throughout the roadbase material producing a cohesive product when in transit to a site. This reduces the risk of the roadbase material segregating, ie the finer material separating from the coarse particles.

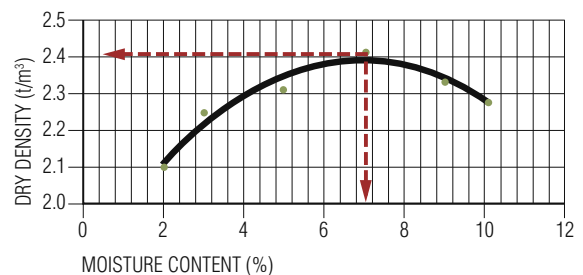
ROADBASE DENSITY/MOISTURE RELATIONSHIP

It is the interaction of the coarse and fine particles which determines how efficiently the roadbase materials bind together after placement and compaction.

Roadbase materials bind together by a combination of aggregate interlock and the plasticity of the fine materials. This binding behaviour is crucial to the roadbase performance and this occurs more readily at what is called the Optimum Moisture Content (OMC) of the roadbase material.

The OMC for a roadbase is the quantity of moisture within the material which, under the application of a standard compactive effort, provides the maximum dry density that the material can achieve.

Roadbase Dry Density – Standard Compaction



NOTE

In this example: Max Dry Density (MDD) = 2.4 t/m³
at 7% Optimum Moisture Content (OMC)



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ROADBASE PLACEMENT

Roadbase materials are usually delivered at 1% to 2% below OMC of the material.

Supplying roadbase material at this moisture content allows small moisture adjustment to be made by the placing contractor on site. This helps the placer to meet most specification requirements of compaction, whether standard compaction, modified compaction, or as required for suitable use in domestic construction.

This also reduces the need for use of a water cart and purchasing of water, to wet-up the materials prior to compacting, minimising on-site reworking of the material. In addition, potential roadbase breakdown due to overworking and to variable moisture content is minimised.

If the moisture content of a roadbase material is excessive, the roadbase may 'heave' during placement (roll like a wave under the roller), and, despite numerous passes, the required insitu density may not be achieved.

The placement and compaction of roadbase materials should therefore be avoided, where possible, when heavy rain is expected during or immediately after placement.

WHO IS RESPONSIBLE FOR THE MOISTURE CONTENT IN ROADBASE MATERIALS?

The customer

The person taking receipt of the roadbase material is responsible for the final moisture content at the time of placement. The preparation of the ground and material layers beneath the roadbase, correct roadbase layer thickness, choice of roadbase compactive equipment and achievement of insitu density are also the customer's responsibility.

During hot and dry extended periods of placement, the roadbase should not be allowed to dry out as achievement of insitu compaction may also be compromised.

Site conditions that may influence the product's final moisture content must be taken into account, eg water ponding where the product is to be placed and spread, or lack of moisture on the area of placement which will result in moisture being 'sucked' from the product.

When ordering, the customer should ascertain the supplier's moisture targets. If these targets are not suitable for the particular application, then different targets should be agreed.

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The supplier

The quarry supplier producing and delivering the roadbase material should provide, to site, a material as close as possible to the moisture targets. The supplier should notify the customer if products are well outside these targets (excessively wet or dry).

The successful use of roadbase materials in pavement construction is achieved only by clear and concise communication and interaction between the customer and the supplier. The roadbase specification should be realistic, the material itself should have the potential to meet all of the specified requirements and the on-site handling, placement and compaction should be adequate to provide insitu performance.

By supplying a moist roadbase material, the supplier and the customer can have some assurances of a consistent, useable product.

This partnership is vital to a successful roadbase pavement project.

FURTHER INFORMATION

Further information on good concreting practices can be downloaded from the Cement Concrete and Aggregates Australia website at www.ccaa.com.au.

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