TECHNICAL INFORMATION

Paving of Concrete Blocks

Concrete block paving is a high performance construction and for this reason, all that is required which is necessary to achieve the above should be done with care and caution.
The major parameters considered for a quality and a durable pavement are as follows:

The base , Sub base & Compaction

These are the important structural layers of a block pavement. The materials used for the base construction consists of graded granular material or lean mixed concrete constructed and compacted in layers not exceeding 225mm and if properly constructed will give a very long useful life. For domestic applications, a competent laying contractor will be able to decide on how to build the sub base. But for medium & heavy traffic the specification should be such that they are in accordance with standards specified by The Indian Roads Congress or similar reputed institutions.

The sub base surface has to have reasonable slope and falls. Compaction shall be carried by mechanical vibrating compactors to specified CBR. It is a must to use proper kerbing before beginning to lay paving segments (for kerbings please see detailed instructions in website of BASANT BETONS). Tolerances should not generally go beyond 2cm in the sub base from the desired levels.

It is suggested to refer and consult expert standard codes (Indian Standard/ European Standard /Australian Standard) for heavy duty and for very heavy duty applications. Also it is suggested to refer to the links where you find expert advice from International Institutions who specialize in this. The links can be found in the website of BASANT BETONS.

Laying Course (Sand Bedding)

This is a layer of material on which paving segments are laid. This materials consists of 1 to 5mm natural sand. Thickness of laying course would be between 25 to 50mm. In certain areas like around the Manholes it is suggested to use a lean cement mortar (one part of cement to ten parts of sand) instead of plain sand.

It is very important to have this laying course properly screeded because an uneven course can result in rutting, surface deformation and channelization.

Also note that if stone grit is used as laying course material as an inevitable option, only when it is impossible to procure sand, following instructions must be followed without negligence and without fail.

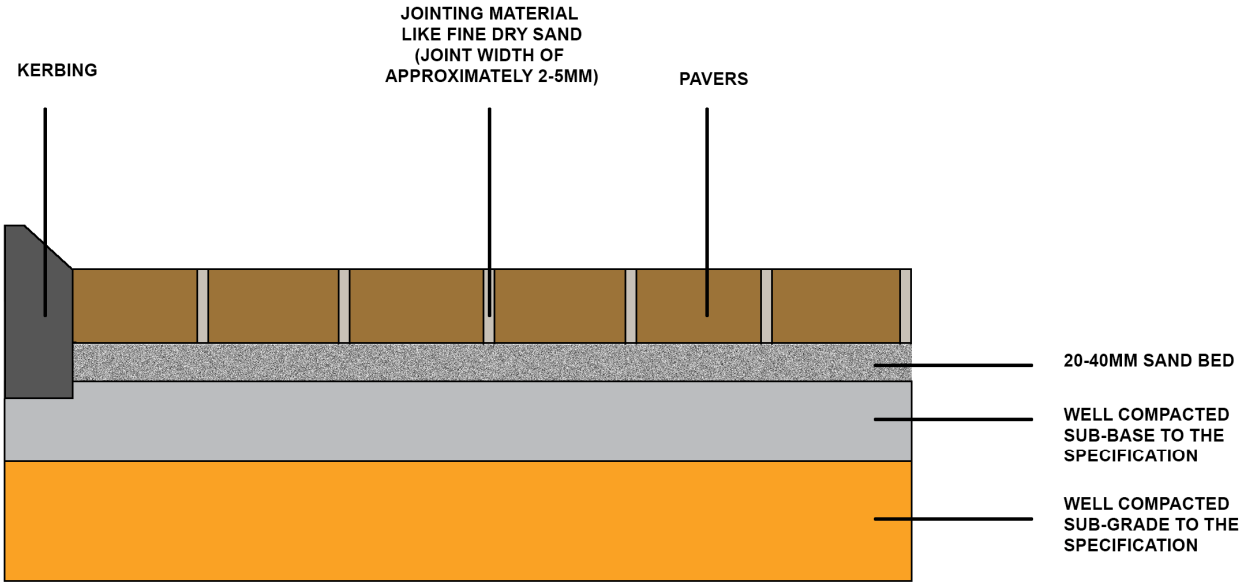
1. Fine particles in the stone grit should be removed before using the same as otherwise the stone grit which has fines tend to become rock like layer and does not provide “cushioning” as in the case of sand.
2. Where stone grit is used for bedding, fine sand should not be used in joints of paving blocks as this may settle down into the bedding layer resulting in failure and collapse of pavement. In such case, coarse sand should be used in the joints. Ensure that this coarse sand remains in the joints and if need be a refill should be considered. Success of the pavement depends on this sand in the joints as this is the one which holds the blocks together allowing vehicular loads and forces to distribute in large area of blocks.

Please refer to proper codes and standards for finding out the most suitable laying course material.

Laying of Blocks

Blocks shall be laid to the specified pattern with joint width of approximately 2-5mm with the assistance of a string tied across for maintaining line and level. Block should be laid hand-tight. Should always avoided to use cut pieces smaller than 1/3rd size. While laying alignment with the string has to be checked but however a complete perfection in maintaining straight line is not possible due to tolerances in product dimensions.

Colour variations cannot be avoided in the manufacturing process and therefore it is always advisable to mix and use the pavers from different bundles to provide the naturality in appearance. Alternatively, pavers with different shades used in separate areas such that colour variation is not clashing.



Filling of joints

Once the pavers are laid, dry, coarse and clean sand should be used to fill the paver joints. The sand can be brushed or broomed into the joints. A vibrating compactor will help fill the paver joints. Repetitive runs of this vibrator would help to complete the job efficiently. It should be noted here that the jointing sand provides a very powerful "LOCK" and make the pavers in large area as one unit. It is stressed here that sand in the joints is a very important element in functioning of the whole paving and due importance must be given without any negligence. After several months after pavement is completed it is recommended that sand is refilled to ensure its efficient functioning. A consultation with the links provided in the BASANT BETONS website will be a big help.

A Block paving is in a position to handle heavy loads due to the friction provided by sand in the joints of blocks and it is this friction which distributes vehicular loads horizontally across the surface of pavements.

Cleaning & Maintenance

1. A regular brushing with water and if necessary along with soap (ordinary less concentrated soap) may be good enough for periodical maintenance.
   However a very dirty pavement is easily cleaned up by washing away the dirt by a power hose. Water jets are available in the market (Bosch, Black & Decker) for a small price and be kept permanently for use when required. If required an ordinary less concentrated soap may be used. When this process is followed, pavement generally looks quite fresh and nice. Care should be taken to prevent use of excessive pressure while operating the hose to avoid erosion and damage to surface of the pavers. While performing this process, if sand is removed from the joints, replacement and refilling of the sand in the joints is a must for the pavement to be efficient in terms of sustaining vehicular loads.
   When cleaned as above, the colours on the surface which are subdued due to dirt get enhanced and clear.

2. Tyre Marks can also be generally removed by following the cleaning process with a soap solution and water as explained above ref 1. In this case a concentrated detergent soap solution may be used.

3. Efflorescence (white chalky substance) can appear at times depending on conditions due to weathering. Also it disappears in due course. This is unavoidable. However it can be substantially reduced by washing away with a lean hydrochloric acid solution – 1 acid to 20 portions of water. Care should be taken to thoroughly rinse the pavement to remove the traces of acid as this acid can cause corrosion and damage to paver surface.

   Efflorescence can also be masked by using certain harmless substances like "Touch wood", by Asian Paints or similar chemical which is actually an acrylic polymer. A coat of this polymer can substantially mask the efflorescence and provides sheen while enhancing the colour of the paver surface. This is a very economical coating which should be done only after completion of paving and after the site is clear from all the debris and dirt due to construction. Also it is a must to clean the paver surface thoroughly before applying this coat as otherwise the dirt will permanently appear below the coated surface.

   Before coating application is done, it is a must to ensure that there is adequate sand in the joints. If sand is lost due to rain, traffic etc., re-sanding is a must to fill the joints to prevent tilting of pavers under traffic which cause spalling.