

CONCRETE SETTS AND PAVIORS

Concrete setts and paviors are a late 20th Century product. They are widely available in a range of colours and sizes and are cheaper than natural stone to buy but do not last as long. Whole life cost should therefore be a consideration in choosing the type of sett.

The concrete block pavior is a useful floor material in non-sensitive areas (for example, suburban car parks or industrial areas). However, the material lacks any local distinctiveness particularly when laid in a herringbone pattern and is generally unacceptable in historic areas, villages and the countryside.



Large areas of rectangular block paviors should be avoided in historic areas

Special consideration should be given to the wearing characteristics as pigmented concrete fades over time and the blocks will tend to change and weather to the colour of the aggregate used. This can cause problems when using secondhand products and with later reinstatements not matching. The skid resistance of a concrete block will also relate directly to the type of aggregate. Some setts are tumbled to give a weathered look.



Concrete paviors may be convenient to use but in many instances they will not enhance the street scene



Care should be taken with reinstatements

Concrete products have the advantage of being factory manufactured ensuring consistency in size and strength. They are also quite cheap and easy to lay. Some products are designed to produce a more natural appearance by using different size blocks and random course widths with staggers.

Some concrete setts attempt to replicate the appearance of natural stone, and can be laid to reflect traditional laying patterns. Others are specifically produced to have a different, more modern effect.



Concrete setts can be appropriate in both rural and urban areas





Concrete setts used at a road junction in the centre of the Saxmundham Conservation Area



Careful detailing is important when using concrete setts



Concrete setts designed to replicate cropped granite cubes

Technical Information

1. Frost resistant material will be required for all bedding materials within 300mm of the finished surface on sand and gravel subgrades; 350mm on clay; and 400mm on chalk.
2. If using recycled setts, careful selection of setts is required prior to laying to give uniform colours, coursing and joints.
3. All mortar staining shall be cleaned from setts on completion to give a clean finish.
4. Sett paving shall be fully cured before trafficking.

Bedding and joint filling

5. As an alternative to sand crushed and ground glass can be used for bedding and joint filling if it has the same characteristics as that of the specified sand.

Laying

6. Rigid laying systems shall only be used where the pavement is designed to carry greater than a million standard axles.
7. A membrane to restrict migration of sand shall be required where a flexible laying technique is used over an existing cracked surface such as a road.
8. Cement or hydraulic binder shall not be used in any materials for the laying courses or joint filling in flexible systems.

CLAY PAVIORS AND FLOOR BRICKS

Historically, floor bricks (or 'pammets') were a local resource and provided a cheap and versatile material for surfaces where a simple, pedestrian friendly finish was needed. Clays of varying colours from white through to red were extracted in the County but sources of the clay which was used to make 'Suffolk White' bricks have now been exhausted.

Bricks were used on forecourts to shops and houses and in courtyards and alleyways. Where a more durable surface was needed, blue Staffordshire clay stable bricks were used rather than the softer local bricks.

In the Lowestoft area 'gas blocks', a by-product of the gas industry, were often used in alleyways and footways.

Secondhand white floor bricks can be found in reclamation yards but they are expensive and a finite resource so they should be used sparingly. Care should be taken to ensure only whole bricks in good condition are purchased and that they are frost resistant to avoid spalling.



Above: Second hand white floor bricks used in Bungay



Above and right: Examples of blue clay floor bricks

There is a wide variety of new clay paviors available nationally. However, as very few closely resemble local bricks, it is important to carefully source them. A local manufacturer is more likely to have the clay type and a colour that will prove environmentally more acceptable. Hard engineering bricks are rarely suitable in sensitive areas of the County.

Laying paviors may not be such a skilled job as stone setts or cobbles but nevertheless care should be taken with laying pattern, cutting, edge detailing and the mix and finish of any mortar used for pointing.

Traditionally bricks were laid in rows using stretcher or half lap bond. In pedestrian areas they were laid butt jointed. Where surfaces were designed to accommodate traffic, bricks were sometimes laid with the joints pointed with mortar. In trafficked areas it is essential that the bricks are laid on a suitable sub-base.

Technical Information

1. Clay Paviors can be specified for trafficked areas as long as an appropriate skid resistance can be achieved.
2. Second hand floor bricks can only be laid in pedestrianised areas or across vehicle accesses.
3. Frost resistant material will be required for all bedding materials within 300mm of the finished surface on sand and gravel subgrades, 350mm on clay, and 400 mm on chalk.
4. If using second hand floor bricks careful selection is required prior to laying to give uniform colours, coursing and joints.



5. All mortar staining shall be cleaned from paviors and floorbricks on completion to give a clean finish.
6. Pavior and floorbrick paving shall be fully cured before trafficking.

Bedding and joint filling

7. Bedding and joint filling of new clay paviors should be to the manufacturers recommendations and specifications.
8. For second hand floor bricks bedding should consist of a full bed of semi-dry mortar 1:1:6 (cement:lime:sand) of 30mm nominal thickness.
9. For second hand floor bricks joint widths should 3–4mm and filled with dry 1:1/2:4 mix brushed in.

Laying

10. A membrane to restrict migration of sand shall be required where a flexible laying technique is used over an existing cracked surface such as a road.
11. Cement or hydraulic binder shall not be used in any materials for the laying courses or joint filling in flexible systems.



Examples of the use of new clay paviors

INSITU CONCRETE

In situ concrete is not often used for roads in the County, although it has been used in the past for the construction of some sections of bypasses and urban roads.

Its use for carriageway works is not considered appropriate as its appearance can be somewhat utilitarian, it is susceptible to cracking and patch repairs are often difficult to achieve satisfactorily. The pattern and treatment of expansion joints can also prove unsightly.

Poured concrete using local aggregates is however a traditional material for footways in some towns and villages, especially in east Suffolk. It was used as an alternative to locally made pre-cast slabs and both, therefore, can contribute positively to the local identity of the area.

In Ipswich vehicle accesses across footways were often constructed in concrete and were scored in a diamond pattern.

Concrete has been used on a number of occasions for enhancement schemes, often in conjunction with granite setts where 'low-key' improvements are proposed such as footway build-outs and in lanes and alleys where traffic is restricted.



Newly laid exposed aggregate in situ concrete footway in Woodbridge

In sensitive areas the finish on the concrete is very important. A trowelled or tamped surface, especially where each bay is finished with a 'frame' round the edge, is not traditional and therefore unacceptable



Concrete vehicular crossovers like this are common in Ipswich



In situ concrete and pink granite setts were traditionally used in Aldeburgh and were specified for the resurfacing of Town Steps

An exposed aggregate finish is preferable as it recreates an attractive weathered appearance and the colour of the stone breaks up the otherwise monotonous appearance of the concrete. The colour of the sand used will also be a factor and often a trial area will need to be laid in order to ensure the required appearance is achieved.

There are various ways of exposing the aggregate: by the use of a retardant; washing or brushing the surface. However the most successful solution is achieved by scabbling the surface. Again a demonstration area will often be necessary prior to the whole scheme being given the go ahead.

In some instances stones have been pressed into the top of freshly poured concrete to give an immediate effect but this has the disadvantage of stones working loose over time due to wear and tear and frost damage.



The size of the bays in relation to the proportions of the footways and the pattern of the expansion joints should be an important consideration



The finish on this concrete was achieved with the use of a 'scabbling' machine

When designing an area of insitu concrete careful attention should be paid to the pattern and detail of expansion joints so that the scheme has a satisfactory appearance. Bay sizes should relate to the proportions of the footway but should have enough expansion joints to avoid future cracking and spalling. If reinstatement is necessary then consideration should be given to replacing whole bays rather than patching.

Traditionally, a timber board was used as permanent shuttering and formed the expansion joint. Mastic and similar products can appear particularly unsightly and will be unacceptable in both sensitive urban and rural locations.

Propriety imprinted insitu concrete systems which attempt to imitate materials such as granite setts are normally not acceptable as they are difficult to maintain and visually unconvincing.



Timber board to form expansion joints is preferable to the use of mastic



A tamped surface with a 'frame' around the edge is not an acceptable finish in historic areas

Technical Information

1. The minimum thickness of the slab should normally be 150mm
2. Unreinforced slabs shall have a maximum distance between crack inducers of 4m
3. Reinforced slabs shall have a maximum length between crack inducers of 12m and a maximum width of 3m.
4. Joints should be constructed with lower triangular crack inducers.

Exposed aggregate surfaces

5. If an exposed aggregate is required then a suitable cement set retarder can be sprayed onto the surface of the fresh concrete immediately after it has been levelled and finished.

6. Retarded mortar shall be removed by wet or dry brushing once the concrete has reached a maturity of 16 hours or a period determined by trial.
7. The surface shall be protected after application of the retarder
8. One hour after exposure of the aggregate is completed by brushing the surface shall be dampened with water. A curing compound shall then be sprayed on the concrete.
9. A demonstration area shall be constructed prior to start of works to agree the construction methods and surface finish.
10. For more detail requirements see Appendix D.