Wooden Brick Roads

Excerpts from the newsletter of GLIAS (Greater London Industrial Archaeology Society)

"I can assure John Ramsden that he is correct in his recall of wooden roads.[1]These were previously mentioned some time ago.[2] Shortly after reading those I was loaned a book on this subject (See excerpt, right)

The book had an advertisement by The Improved Wood Pavement Co, Ld. in which there is an alphabetic list of 80 of London's main thoroughfares with their creosoted Deal roads.

These start with Aldgate, Aldwych, Bayswater Road, Bishopsgate, Blackfriars Bridge approach, Brixton Road, Bond Street, and Borough High Street. Below the list it adds 'And hundreds of other thoroughfares in London, Birmingham and the leading provincial towns'.

1. GLIAS Newsletter April 2006
2. GLIAS Newsletters 81 and 82.

Wood blocks. For a number of years, wood pavements have been laid in many towns and with very satisfactory results, being particularly quiet, and of good wearing surface. The life is now 10 years, though these roads often have a much longer life in practice. On removal from the road, the blocks may be re-squared and used again.

Wood block roads have been laid on as steep a grade as 1 in 12, but the limiting grade is usually given as about 1 in 27. Cross fall should be about 1 in 36.

The blocks are laid on a concrete foundation, carefully screeded to a correct surface; the top of the concrete should not be trowelled, as float coats or grout on the surface tend to crack off under heavy traffic. The size of block varies, that usually employed being 8in or 9in long, 4in or 5in deep, and 3in wide. They should of course be laid with the grain vertical, so as not to splinter off under wear. There should always be a marked difference in depth and width, to avoid any block being wrongly laid. Both hard and soft woods have been used, but the latter are more popular, hard woods being somewhat unyielding, and tending to become loose through contraction in dry weather; they are also more liable to shakes and cracks.

The soft woods are more resilient, quieter in use, and have a tendency to 'broom' under traffic; they wear less slippery than hard woods and grit can be rolled in. Hard woods are laid to best advantage at seaside towns, where the hygroscopic nature of the atmosphere provides sufficient moisture to prevent extreme contraction and shrinkage. Jarrah and Karri are the hard woods chiefly used. Creosoted Deal is the soft wood mostly employed.

To avoid trouble through swelling, due to the absorption of water, soft wood blocks should be thoroughly impregnated with creosote. The creosote should have a specific gravity of 1.03 to 1.08 at 25 degrees Centigrade. The higher the specific gravity, the more the proportion of anthracite constituents, which, unlike the lighter oils, are insoluble and non-volatile.

The high specific gravity oils, however, do not penetrate as well as light oils. Creosote is also frequently mixed with tar. Whilst this increases the waterproofing qualities, it also retards penetration. Soft wood blocks should contain at least 10lbs. of creosote per cu. ft., but not more than about 15lbs. should be used, as more causes 'bleeding'. Another cause of 'bleeding' is insufficient provision for expansion, causing creosote to be squeezed out.

Blocks are usually laid direct on the concrete foundation, being dipped as placed in a mixture of about 20 to 30 gallons of creosote to 1 ton of pitch.... After blocks are truly laid they are flushed with a bituminous or Portland cement grout (and may be sprinkled with fine sand or gravel). Grouting must be carefully done to prevent water getting under blocks, as this may lift them.

Owing to expansion and contraction in wood block paving, an expansion space should be provided next to the kerb, and this may be filled with puddled clay or a bituminous mixture.

'The Elements of Roadmaking', JW Green, engineer and surveyor to the City of Durham, published in 1924.

“The late Bet Parker checked on the firm in Kelly's Directories held at the Guildhall Library. They were first mentioned in 1873 (the advert says established 1872) and finally in 1965, though by that time only as paving contractors. Bet noted that an 1842 Directory (the earliest directory on open shelves) shows three wood paviors in London — though of course these might have done purely domestic work.

Incidentally, older manhole covers within roadways often have wooden blocks set within the iron framework. David Thomas

Tarred Wooden blocks for roads were made in their millions in a factory on the Greenwich Peninsula. This had been originally Bethell's tar works and — in the ownership of his heirs — the Imperial Wood Paving Company. It was one of the many applications for wood soaked tar which resulted from the process which Bethell perfected. I have such a block at home — it is a more complicated structure than a mere block.”

Mary Mills

In 1848 Bethell patented a way of 'preserving animal and vegetable substances from decay'. There was a great need to find a way of preserving wood from rot and the Earl of Dundonald had suggested the usefulness of coal tar for this in the 1780s. Other inventors had used other preservatives and other methods; Bethell was to take some elements of each to achieve his object.

One particular need was for a cheap way of preserving wooden ships. The eventual success of Bethell's process was to lead to the world wide use of wood for such things as railway sleepers and telegraph poles. At Greenwich the works eventually specialised in the manufacture of tar soaked wood block paving.

The process which Bethell developed involved an apparatus first designed in Paris. The dried timber was put on iron bogey frames, run into a strong iron cylinder, and the air pumped out. The preservative solution was then forced in. Although a number of preservatives were specified coal tar was the cheapest and easier to obtain. It was also far safer to use than some of the other recommendations — Kyan's sublimate was poisonous and particularly dangerous. Bethell seems to have either sold his patent to others or licensed them to use it.

Bethell himself set up in business with a tar distillery in Battersea in 1845. He soon expanded with a chemical works at Bow Common, and another near Blackwall Point on a site leased from Morden College. His first approach to Morden College had been as early as 1839 when he asked for the use of a piece of rough ground. He gave his address as Mecklenberg Square — built by the Greenwich Hospital Estates surveyor, Joseph Kaye. His Greenwich works was soon underway and coal tar was purchased in bulk from the Imperial Gas Company works at St. Pancras and Haggerston.

The Greenwich works remained in operation for many years. After Bethell's death in the 1870s his wife Louisa retained ownership — although she lived in Bath while professional managers ran the company from an address in King William Street, City of London. In the 1880s the works was transferred to the Improved Wood Pavement Company in which the Bethell family remained involved.

From Greenwich Marsh: The 300 Years Before the Dome, Mary Mills, 1999.

“Regarding the request for more information about 'wooden brick roads', this was a form of road surfacing, known as wood block, used for heavily trafficked roads in towns and cities early in 20th century.

The blocks were laid on a firm base, typically concrete, with the end grain uppermost. They were very slippery when wet and for this reason were given a non-skid surface dressing consisting of abrasive particles embedded in tar or bitumen. As the blocks could absorb up to 50% of water by weight it was difficult to get the surface dressing to adhere to the blocks and it was a common site to find large areas stripped from the blocks.

After the Second World War the blocks were removed and replaced with asphalt. During the early post-war fuel shortages they were in great demand to burn on open fires which was the main method of heating houses.

I have often wondered if they were specified by road surveyors who were sympathetic to horses who must have found the alternative hard wearing surface of granite sets very unforgiving to their joints and dangerously slippery for their iron shoes.”

John Buekett

Surviving wooden blocks revealed during road maintenance work on Myddleton Road, N22 in Autumn 2012 Copyright Caroline Simpson

“Being brought up in London I was warned about wood block roads, particularly when wet and I have painful memories. I still bear a scar from one evening in about 1954 when on my way to an evening class in the Borough High Street area on my Vespa motor scooter during light rain. With no warning suddenly there was a minor eruption in front of me which I had no hope of avoiding and I crashed in the middle of a busy traffic junction. I arrived late for my class and in a bloody mess!”

Ian Frost

Articles formatted and published by Harringay Online using material originally excerpted From Greater London Industrial Archaeology Society Newsletter: http://www.glias.org.uk/news/224news.html#E

Content originally highlighted by Caroline Simpson on Bowes and Bounds Connected.