

Repairs going down a brand new road?

Surveyor explains how Newham LBC used the pioneering 'in-situ' approach to fix a damaged road, and what benefits the technique have already offered the authority

The first road to be repaired in London in the last 20 years with the in-situ recycling process, of rejuvenating and strengthening the existing damaged road materials, has provided considerable cost, time and environmental savings for Newham LBC. The council's highways department saved around £80,000, four weeks of disruption and over 9t of carbon dioxide emissions by using in-situ repairs to Dersingham Avenue.

Repairing the damaged road, using conventional reconstruction techniques, would have cost around £320,000 and taken about seven weeks. By adopting the in-situ recycling process Newham was able to considerably minimise disruption for residents by eliminating about 90 movements of 20t wagons, needed for conventional reconstruction, and complete the carriageway repairs in just three weeks at a total cost of around £240,000.

The council's highways department, together with its consulting engineer Jacobs, decided on in-situ recycling after considering other options as it proved to be a faster, cheaper and a more environmentally beneficial option. Dersingham Avenue is a one way residential road on a major bus route with heavy parking on both sides. The traffic running along the central strip of the carriageway use the same wheel lines, which has led to severe deformation, rutting and potholing.

Jacobs carried out a detailed site inspection with ground penetrating ra-

dar and core testing of the 650m long carriageway. It also produced the design philosophy of in-situ recycling just the central, heavily trafficked strip of the road and inlaying the less trafficked edges, together with pavement design, including materials and thickness. In-situ recycling can be much faster, cheaper, much less disruptive to traffic and far more environmentally acceptable with a carbon footprint considerably less than normal reconstruction methods. Also the system does not generally require the disposal of surplus material or the importation of large quantities of new materials, unlike conventional repair techniques.

Newham's term maintenance contractor F M Conway carried out all the necessary preparatory works prior to a start on the in-situ repair part of the project. The in-situ repair was subcontracted to the specialist road recycling and stabilisation contractor Stabilised Pavements. The company rejuvenated just under 3,800m² of the road using the in-situ recycling process and provided a 20-year design life of 2.5M standard axles. Although it treated a couple of very short sections to the full width of the 6.6m road, the bulk of the in-situ recycling focused just on a central 3.8m wide strip along the full length of the road.

Stabilised Pavements used its 500kW Wirtgen WR2500 Recycler with a multi-tooth rotating drum cutter. The machine can rotovate a road to full

depth while simultaneously delivering accurately metered quantities of water, bitumen emulsion or foamed bitumen into the mixture to strengthen and rejuvenate damage pavements in compliance with clients' specifications. But on Dersingham Avenue Stabilised Pavements used a blend of ordinary Portland cement with pulverised fuel ash.

The process was started by pulverising the damaged road pavement to the required depth of 250mm. This was followed by reshaping with a motor grader and lightly compacted with a Hamm HD90 double drum vibratory roller back to the finished level. Blended OPC/PFA was then accurately applied in a thin blanket across the surface by a special lorry mounted spreader, at a ratio of 8% by volume of the material's dry density. This was then mixed in a single pass operation with the Wirtgen at the designated depth. At the same time water was injected into the mixture, from nozzles in the crown of the WR2500's rotovating drum chamber, to achieve the required material moisture content.

During the process the independent materials testing laboratory Bureau Veritas took samples to test and verify the design recipe. The rejuvenated and strengthened road base material was then reprofiled and levelled with the grader, prior to several passes of the Hamm roller to finally compact the strengthened road base to 95% of refusal density.

Once the required level and compaction was achieved the in-situ repaired section of the carriageway was sprayed with a sealing tack coat and gritted as a temporary running surface. 'This is the first time in the last 20 years or so that in-situ recycling has been used to repair a damaged road in London,' says Stabilised Pavements director Gerry Howe. 'And I was also involved with the last in-situ repair. The process is much, faster, cheaper, less disruptive to traffic than conventional repairs and also has a much lower carbon footprint. On this job we have saved about 9t of carbon dioxide emissions, so it is also far more environmentally acceptable.'

F M Conway then followed on overlaying the full 6.6m width of Dersingham Avenue with a 60mm thick asphalt binder course followed by a 30mm surface course for a full and final return to traffic. 'Newham opted for in-situ recycling because it was a lot faster and much cheaper than conventional reconstruction,' says F M Conway senior contracts manager Paul Padfield.

'The overall project only took three weeks, with the in-situ repair taking just four days. I have used the in-situ recycling technique before and Newham was impressed with the operation. I am not aware of any other similar schemes programmed at the moment, but if the right job came along I will push to use the in-situ recycling technique again.'

