



Bituchem Group

'FortSeal' Carriageway Preservation System



Case study – Greenwich Council -2010

The Problem

In 2009 Highway Managers from Greenwich Council identified potential deterioration and the possible development of potholes in the surfaces of some of their residential streets. Some carriageways had not needed treating since the application of Johnston's Hot Chip Carpet in the mid eighties, but were showing signs of chipping loss, fretting, oxidation and general ravelling of the surfaces. Other carriageway surfaces were 'tired' single course Slurry Seal sites that were showing early signs of debonding from the substrate.

A need was identified to source a cost effective and environmentally acceptable Surface Treatment that would seal and Preserve the existing surfaces to arrest the oxidation and weathering process and to 'lock down' the chipping loss that was occurring. The Treatment needed to be easily applied to the existing surface and should require very

little pre-patching prior to application. The sites concerned were in a variety of locations where residents were often vociferous with their opinions on resurfacing of the roads outside their properties, so there was some political sensitivity needed when considering the appropriate treatment process.

The Solution

Recently Bituchem had brought the "Fortseal" Carriageway Preservation System to the market, which has its origins in the USA as 'Fogseal' which is a recognised Preservation System in regular use.

A decision was taken to undertake a trial of Fortseal on a varied selection of sites to evaluate its potential performance as part of the Asset Management Plan .

The principal was to seal and waterproof the existing surfaces therefore arresting the weathering and oxidation process. This would Preserve the carriageways and minimise the onset of potholing and subsequent disintegration.

The FortSeal Carriageway Preservation System is simple and consists of spraying a specially formulated polymer- modified bitumen emulsion on to a road surface. Applied from a conventional Spray Tanker at a very low rate of spread (about 0.5 litres per m²), Fortseal takes about 1 hour to cure/break (depending on weather conditions) after which the site can be then be re-opened to traffic: White/Yellow road markings can be replaced on the same day. The System has the added benefit of resulting in a black road surface after application which aesthetically improves the appearance of the site instantly.



Over a period of time, the action of traffic on the Fortseal System exposes the microtexture of the aggregate restoring it to the original colour and texture, with the Fortseal remaining in the macrotexture of the surface acting as a Preservative and retarding the weathering process.

The Operation

Five sites were chosen with different surface characteristics consisting of old Hot Chip, Slurry Seal and heavily patched asphalt.

The application was undertaken in September 2010 under Road Closures organised by Greenwich Council with Traffic Management and additional support from J B Riney Ltd the current Greenwich Term Maintenance Contractor. The services of a Vehicle Removal

Company were also enlisted to ensure that no parked vehicles impeded the laying of the Fortseal Process.

The application was carried out efficiently with minimal disruption to residents and the sections were open to traffic within two hours. The Road Markings were replaced on the same day.

During the contract the weather was dry but overcast with no rain forecasted. The sites were treated over a period of three days.



The sites were monitored closely over the winter period. The winter of 2010 was particularly severe with heavy snowfalls and prolonged sub-zero temperatures. Several of the sites treated were 'rat runs' including a bus route for a 'single decker' and thus were gritted heavily and consistently which tested the Fortseal under extreme conditions.

The Result

The sites were re-inspected in January and March 2011 and it was found that no deterioration had occurred on any of the sites. No potholes had appeared and the carriageways were sealed. The Fortseal had remained in the macrotexture of the surface and the microtexture of the aggregate has been re-exposed, preserving the integrity of the surfaces as planned.

Client's View and Comment

Mike Rennolds Greenwich Council Highways Manager stated...

- ✓ ""Process has limitations but *it does what it says on the tin*".
- ✓ "To seal and prevent further deterioration to oxidised/worn carriageway surfaces at minimal cost and minimal disruption to traffic and residents".
- ✓ "Works most effectively on a rugous textured surfaces particularly older surface dressings".
- ✓ After application, "traffic use and action of tyres will expose existing aggregate and so retaining skid resistance but with FortSeal remaining in the voids of the surface matrix to seal and prevent further deterioration".



Conclusion

As a result of the successful trial in 2010, a Contract was awarded and carried out in 2011. A total of 20000 m2 was treated over eight sites at an average cost of £1.60 per m2 including Traffic Management and replacement of Road Markings.

This represented a good investment for Greenwich Council, demonstrating that application of the Fortseal Carriageway Preservation System:

- a) is cost effective**
- b) seals the existing surface**
- c) significantly reduces the risk of pothole development.**

**Bitumen Group
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