



Quality Marking Services Limited

www.qmarkings.co.uk



QMS
HyperGrip™

Case Study High Friction Surface Treatment

May 2016

About

Quality Marking Services Limited (QMS) is a Road Marking and Specialist Surfacing Company that has been delivering High Friction Surface Treatments to the Highways industry since 2003.

Over the years, rising material costs and the demand to complete the works with reduced disruption to the road user resulted in the development of our own high performance material. With the help of our supply chain partners and following various trials, we developed our own, cold applied BBA HAPAS Type 1 certified solution, **QMS HyperGrip™**, that would not only deliver added value, but would also provide a streamlined and expedited approach to High Friction Surface Treatments for existing and future clients.

Historically, one of the largest cost implications to the installation of High Friction Surfacing has been the installation process itself. Traditional systems have a lengthy curing process which restricts the completed site from being opened to traffic quickly and are delayed from being installed onto new bituminous substrates. This means some sites can be left without High Friction Surface Treatment for up to 28 days, increasing risk of skid related incidents to the road user.

When developing **QMS HyperGrip™** it was imperative to achieve a finished product that could not only be swiftly applied to new bituminous substrates but one that would cure quickly and deliver the high performance demanded from a BBA HAPAS Type 1 system.

DID YOU KNOW?

The first evaluation trials of High Friction Surface Treatment in the UK were carried out in 1967 and demonstrated a 50% reduction in skid related incidents.



APPROVED INSTALLER 3649
High Friction Surface Installer



Executive Summary / Overview

This case study explores the installation of **QMS HyperGrip™** High Friction Surface Treatment under a contract which was put in place to deliver highway capital investment schemes throughout the county of Devon. The project was implemented to enhance the highway asset of the county by utilising proprietary systems and materials to provide overall best value for the road user.

Quality Marking Services Limited (QMS) acted as sub-contractor on the project for specific works relating to High Friction Surface Treatment and Road Marking.

Introduction

In May 2015, QMS secured a tender to assist the principal contractor for the works in delivering a highly demanding programme of carriageway resurfacing, high friction surface treatment and road marking works throughout the county of Devon on behalf of their client.

The contract called for each scheme to be completed without unnecessary delay to the road user. A close collaboration between the principal contractor and their supply chain delivery partner would be paramount to ensure that the required works were delivered on time and to budget.

Having delivered previous schemes on behalf of the principal contractor, QMS was selected as the preferred sub-contractor and engaged to deliver QMS HyperGrip™ BBA HAPAS Type 1 system, across all of the High Friction Surfacing schemes detailed within the project framework.

The Material

QMS HyperGrip™ is a two component Methyl Methacrylate BBA HAPAS Type 1 High Friction Surfacing system.

The design of the material is such that it can be installed onto new bituminous surfaces after 12 hours, this allows the temperature of the new surface to have stabilised prior to carrying out the installation. Utilising a Calcined Bauxite Aggregate, which is broadcast onto the film of wet resin, the system reaches full cure within one hour following installation. When cured, QMS HyperGrip™ provides a durable, odour-free, aesthetically sensitive solution for High Friction Surface Treatment with minimal wastage and disruption to the road user.

 **MAXIMUM 1 HOUR CURE TIME**

 **INSTALLATION TO NEW BITUMINOUS SUBSTRATES AFTER JUST 12 HOURS**

 **YEAR ROUND INSTALLATION**

DID YOU KNOW?

High Friction Surface Treatment is an established proven process for saving lives by delivering the highest level of skid resistance onto any road surface.

Pre Assessment / Additional Considerations

The contract consisted of 69 individual sites across Devon that had been highlighted for improvement and each location was visited by QMS for assessment.

To ensure the High Friction Surface Treatments would exceed the two year guarantee period, adhesion testing was undertaken on the existing substrate at each site where new surfacing was not specified. This confirmed the adhesion of the QMS HyperGrip™ system and provided additional peace of mind for both client and contractor.

The adhesion test was carried out using an *Elcometer Pull-off Adhesion Tester*, designed specifically to measure the bond strength of applied coatings by determining the force required to pull an area of coating away from the base material.

The test is measured in Newton/millimetre² (N/mm²) at 6 different points along the substrate of a given site and a mean average is taken from the data gathered.

- Where the mean average for a site was below 0.5N/mm², the existing substrate was considered to be beyond its serviceable life and the carriage was marked for resurfacing using a bituminous substrate prior to being treated with QMS HyperGrip™. [FIG A] see over.
- Where the mean average was greater than 0.5N/mm², the underlying substrate was considered to be of sound and stable condition and QMS HyperGrip™ was programmed for installation [FIG B] see over.

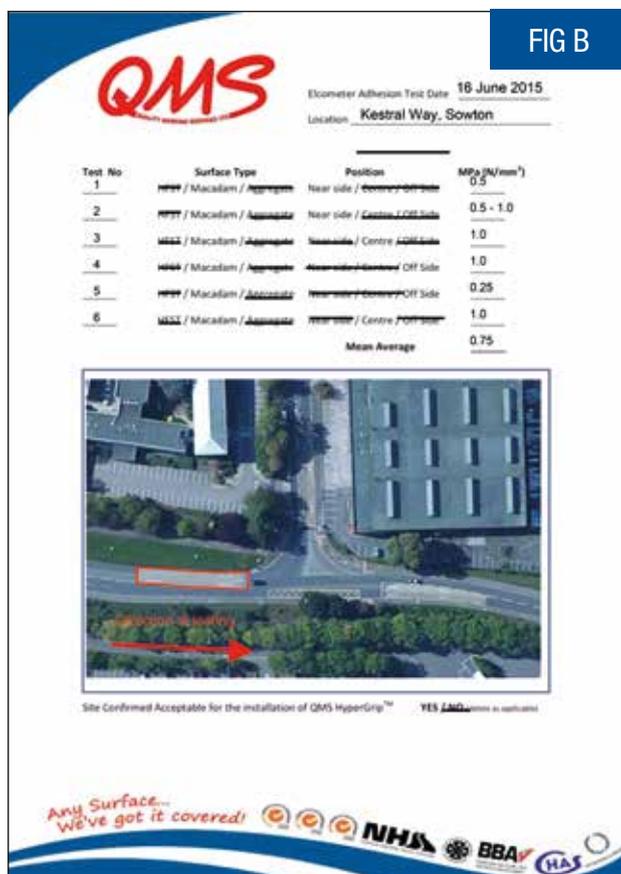


The images below demonstrate the adhesion test recordings for a sound substrate and one requiring replacement.

The Programme

Following the assessment process, the cost for the project was agreed which included all necessary Traffic Management, Advanced Signage, Road Space Notification, Surface Preparation, Adhesion Testing, Carriageway Re-surfacing, QMS HyperGrip™ and finally Road Markings and Road Studs.

By working closely with the contracts division of the Principal Contractor, QMS developed a programme which immediately followed the surfacing crews. This enabled the works to be completed during the same road space allocation and delivered in a well organised and collaborative manner.



"It was a huge programme to deliver; by working closely with the contracting division of our client, we programmed our High Friction and Road Marking teams to work closely together and delivered the programme as planned."

Andy Smith
QMS Contracts Manager

An additional project requirement was to ensure the application of High Friction Surface Treatments to the manhole covers on each site. QMS proposed the use of Premark Preformed Thermoplastic as the most appropriate solution to improve the traction on manhole covers.

Having identified a solution to the treatment of manhole covers, QMS presented the **PREMARK® Anti-Skid** material option to the principal contractor and their client for consideration for use across the schemes in conjunction with the installation of **QMS HyperGrip™**.

Preformed High Friction Surface Treatments provides a cost effective and sustainable solution to the problem of improving the skid resistance to drain covers. In comparison to other methods, preformed High Friction Surfacing Treatments are significantly cheaper to install, the installation process typically takes less than 30 minutes which minimises disruption to traffic and reduces associated traffic management costs and the flexible preformed material can easily be cut to size meaning that excess can be retained for use elsewhere.



The Installation Process

The QMS HyperGrip™ scratchcoat curing.



The QMS HyperGrip™ system for the contract required a scratchcoat void filler to be installed prior to the installation of the surface course. This was to ensure that the surface voids within the new bituminous substrates did not compromise the aesthetic appearance and the functionality of the finished system. The scratchcoat void filler material is applied to the surface via a flat bladed squeegee and allowed to cure.

The surface course is applied using a serrated squeegee ensuring that a consistent amount of material is delivered to secure the aggregate within the matrix during the curing period.



The QMS HyperGrip™ surface course and aggregate



Full cure of the QMS HyperGrip™ system is achieved within one hour, allowing the site to be fully swept of loose aggregate before opening to the public.

Following the completion of the QMS HyperGrip™ system, all Road Markings within the site constraints were replaced in accordance with BSEN 1436:2007 to the retro-reflectivity requirements of R2 (100mcd/m²/lux) and the skid-resistance requirements of S3 (SRT 55). This ensured minimum disruption to the road user and provided the client with a completed project without the need to return to site on many occasions with different resources.

Any surface... We've got it covered!



QMS installed 18,000m² of QMS HyperGrip™ across the 69 sites highlighted for works within the project and treated a total of 66 manhole covers with the **PREMARK® Anti-Skid** material. The works were a combination of day and night working to minimise disruption to the road user and maximise operative safety and saw the work completed in 97 shifts.

DID YOU KNOW?

An average of 340,000m² of Cold Applied High Friction Surface Treatments are installed across the UK each year.

“To be awarded this contract, the first of its kind was a tremendous achievement for the QMS team and we were delighted to be given the opportunity to deliver such a prestigious project within our local region.”

Greg Clark
QMS Managing Director



NEW FOR 2016
Purpose built QMS HyperGrip™ truck with capacity to deliver 1,000m² through electronically controlled delivery.



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