

Method statement for labour based construction of:

Crack sealing – fabricated road patch

Definition

This method entails the covering of surface cracks with a factory fabricated road repair product consisting of a paper on which a bitumen-rubber binder holds bitumen-precoated aggregates of various sizes. The repair will seal off the crack against the ingress of water and serve as a means of tying the surfacing together and prevent any further loss of fines through the cracks as a result of the action of traffic.

Application

Road pavement distress in the form of cracking is largely due to traffic loading, age of a specific layer, weather conditions and material types used in road layers. If left unattended, especially through the wet season, cracks will accelerate the deterioration of the road condition, often leading to potholing and complete failure. Consequently the repair of cracks in the road surface needs to be attended to as a matter of urgency.

This method for covering active cracks on a road surface is effective if the cracks are closely spaced and localised.

This application can be done as a preventative maintenance procedure on its own or as a treatment prior the application of a suitable wearing course.

A fabricated road patch will adhere to most surfaces e.g. asphalt, chip seals and concrete using 65% or 60% cationic or anionic bitumen emulsion as an adhesion agent.

Material requirements

Bitumen emulsion: - either cationic or anionic emulsion (60 or 65%) sourced from a reputable supplier.

Crayons: - for marking out the cracks to be treated.

Paint: - for marking out larger areas that require covering with the road patch. Spray cans can also be used.

Road patch: - Factory fabricated road patches are available with various stone chip nominal sizes e.g. 4.75mm, 6.7mm, 9.5mm, 13.2mm, 19.0mm and 19.00mm choked with 9.5mm. . Generally road patches are available in 1.0 x 0.75m panels which can be cut into smaller panels as required. Panels can be butt jointed to accommodate larger areas. Such products are to be sourced from a reputable supplier.

Solvent/water: - used to clean the equipment after use. If an emulsion is used the equipment can be washed with water. Solvents such as mineral turpentine or paraffin will be required if the emulsion has broken.

Plant and equipment requirements

Item	Number of items
Wheel barrows	2
Soft bristle brushes	2
Block brushes	2
Bass brooms	2
Straight edge	1
Stanley knife or similar	2

Labour requirements

Below is the typical composition of a maintenance team necessary to lay 300 – 400 m² of fabricated road patch per day.

Activity	Number of workers
Supervisor	1
General assistants	8

Traffic control personnel and signage will need to be added to these numbers for a complete team complement. The amount of flagmen, stop/go boards and cones or delineators will be determined by the extent of the area to be repaired.

Construction

Site Preparation

The area to be repaired should be inspected together with the client or his agent and all the cracks that require sealing should be marked using the paint and the soft bristle brush, canyons or spray cans of paint.

The marked-out area should extend at least 100 mm beyond the cracked zone onto sound surfacing with no secondary cracking within this 100 mm boundary zone.

Sealing of cracks with Road Patch

Ideally, the road surface temperature should be 10 °C and rising before sealing commences. If the road temperature is below 10 °C, the bottom face of the road patch should also be coated with emulsion.

The selection of the patch aggregate size may be based either on a need to match the surface texture of the road or to maximise performance whereby the larger aggregate size associated with a higher binder content would deal more effectively with severe cracks.

With the paper side uppermost, the road patch panels are cut to size through the paper using a sharp knife. By bending it backwards over the aggregate the material will separate on the cut line.

After the marked-out area has been swept clean the emulsion is applied evenly at a rate of 0.75 l/m². Once the emulsion has broken i.e. its colour having turned from brown to black, but while it is still tacky, the road patch is applied to the surface being sealed.

The panel, with the aggregate side up, is then placed in position over the emulsion coated area. Panels should not overlap if the area to be covered is larger than a single panel. In such cases the panels should butt up against each other to cover the entire area to be treated.

A light application of emulsion should be applied to the edges of the panels to ensure they are fully sealed off against water ingress and that the panels edges are securely bonded. These edges should be covered with coarse sand or -4.75 mm dust to absorb any excess emulsion and prevent any pickup from vehicle tyres.

No specialised equipment other than an on-site vehicle is required for rolling the patches. During inclement weather or in an intersection which is exposed to heavy turning traffic action the number of passes should be increased.

To prevent wastage all off-cuts should be retained for later use. All road patch panels and cut-offs should be stored flat in a cool place

Traffic control

Traffic should be diverted around the area that is being repaired using the correct signage. The road can be opened to traffic as soon as the panels have been placed and the emulsion applied to the edges and joints have been covered with coarse sand or crusher dust.

Packing up and cleaning of equipment

The signage can be moved to the next repair area once the emulsion has set and the process is repeated.

The tools can be cleaned with water if the emulsion has not broken and turned black. If the emulsion has broken the equipment will need to be cleaned with mineral turpentine or paraffin. All equipment should be thoroughly cleaned and free of cleaning agent prior to further applications of emulsion.

Quality control

There should be no deleterious material e.g. oil and other contaminants near the cracks that will adversely affect the adhesion and performance of the road patch.

The emulsion should not be allowed to drip onto the road surface between cracks being sealed thereby contaminating the road surface.

The emulsion should be well mixed and its application rate should be correct to ensure a strong bond between the patch and the existing road surface. A correct application is similar to a coat of paint with no pools or puddles. On coarse or absorptive surfaces the application rate of the emulsion may be increased to ensure adhesion of the road patch to such a surface

The cracks being treated should be inspected for moisture. Excessive moisture in the cracks can adversely affect the adhesion of the road patch to the surface.

On site, panels should not be placed on the road surface with the aggregate side down for extended periods, particularly at elevated temperatures.

Storage instructions of the fabricated patches should be followed both on and off site.