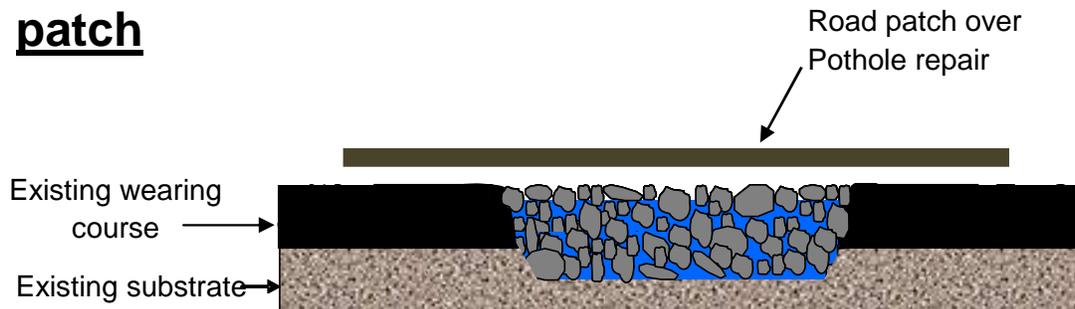


Method statement for labour based construction of:

Pothole Repairs with a factory manufactured road patch



Definition

A pothole is a round shaped hole in the road surfacing normally indicative of inadequate routine maintenance. As potholes constitute a hazard to traffic they should be repaired as soon as is practically possible. Initially, the extent of the pothole is generally limited to the depth of the surfacing. If left unattended, the pothole will normally extend into the basecourse layer. Care must be taken in this case to ensure the repair procedure will address the problem. If dealt with in time, the size of a pothole normally does not exceed 300 mm.

Potholes can occur due to poor material quality, a lack of adequate compaction and the presence of water in the base layer due to subsurface seepage or a pervious surfacing.

Application

Pothole repair is a typical road maintenance operation arising from localized defects or neglect of routine maintenance procedures. The repair should be carried out in such a manner so as not to cause the development of additional distress around the repair.

This method, using a factory manufactured road patch for repairing a pothole on a road surface is effective in holding the surfacing together and preventing any further distress developing around the repaired pothole. The patch also assists in diffusing or absorbing the energy generated by traffic action that may accelerate further pothole development. The road patch will adhere to most surfaces using cationic 65% or cationic 60% emulsion. (Anionic emulsion can also be used.) The layers on which it can be applied include asphalt, spray seals, concrete or granular base course.

Material requirements

Natural gravel : - approved natural gravel with a PI <6 suitable for use as a stabilised base course material. The nominal maximum aggregate size of the gravel should not exceed half (preferably a third) the required depth to be backfilled.

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

Cement: - Fresh Ordinary Portland cement

Road Patch: - a suitable factory manufactured road patch with the applicable aggregate size already applied with a bitumen-rubber binder. Road patches are available in varying aggregate sizes: -4.75mm, 6.7mm, 9.5mm, 13.2mm, 19.0mm and 19.00mm choked with 9.5mm. Such products should be sourced from a reputable supplier. Patches are usually available in 1.0 x 0.75m panels. These panels can be pre-cut into smaller panels as required or butt jointed to accommodate larger areas.

Solvent/water: - used to clean the equipment after use. If an emulsion is used implements can be washed off with water. Solvents will be required if a cutback bitumen prime is used.

Plant and equipment requirements

Item	Number of items
Tape measure	1
Crayons	1 box
Paint	1 tin or a few spray cans
Straight edge	1
Wheel barrows	2
Shovels	2
Hand stamper	1
Bass Broom	2

Block brush	1
Stanley knife or similar	1

Labour requirements

Below is the typical composition of a small maintenance team required to undertake pothole repairs. It is not possible to give an exact production rate given the nature of the work being undertaken as routine maintenance. It will depend on the pothole sizes, how far apart they are spaced, the area in which the potholes occur and the traffic volumes on the road.

Activity	Number of workers
Supervisor	1
General labour	6

Additional labour will be required for traffic control. A minimum of 2 flag men will be required with signage to assist in this operation. Stop/go signage and large cones or delineators will be required to demarcate the working area and make it safe for the operation to be undertaken.

Construction

Traffic control

The road will need to be barricaded off in the correct manner to allow for the work to be undertaken in a safe manner, especially where the work is undertaken under traffic. The signage can be moved immediately to the next pothole location once the pothole has been repaired. This operation needs to be coordinated by the supervisor to ensure an efficient and safe operation.

Site Preparation

All loose material should be swept from the area being treated. Using the straight edge and crayon or paint the area to be covered with the road patch should be marked out allowing for at least 100 mm of sound surfacing all around the pothole to be covered. The marked area should be in the shape of a square or rectangle parallel to the road edge.

Pothole preparation and backfilling

The pothole should be swept clean of all loose material with all remaining material being sound and firm.

Acceptable good quality gravel with a PI < 6 can be used to backfill the pothole. To ensure a stable supporting layer, it is to be stabilized with 1.5% cement by mass. This is to be further treated with a 1:4 dilution of emulsion to assist in waterproofing the repair as well as assisting with compaction. The gravel, cement and emulsion should be thoroughly mixed in a wheel barrow at above optimum moisture content. The amount of water to be added should take into account the water that is already contained in the emulsion.

The stabilised gravel is placed into the pothole and compacted with the hand stamper and finished level with the surrounding surfacing.

Note: Alternatively hot or cold mix asphalt can be used to fill the pothole. This will also be compacted level with the existing surfacing.

Covering the repaired pothole with a Road Patch

Ideally, the road surface temperature should be 10 °C and rising. If the road temperature is below 10 °C, the back of the road patch should also be treated with emulsion.

The area to be covered with the road patch should be swept clean. Evenly apply the emulsion to the area as marked out on the road surface at a rate of 0.75 l/m². Once the emulsion has broken i.e. it has turned from brown to black and is still “tacky”, the road patch is applied.

With the paper side uppermost, the road patch is cut to size with a sharp knife through the paper, bent backwards over the aggregate when it will separate on the cut line. The patch panels, aggregate side up, are placed into position over the emulsion coated area. The panels should not overlap if the area is larger than a single panel. For multiple panels, the panels should butt up against each other until the entire area is covered. A light application of emulsion is then applied to the edges of the patch to ensure they are fully sealed off from water ingress and that the panels' edges are securely bonded. The emulsion applied at the 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 is required for rolling the patches - an on-site vehicle will suffice. The number of passes should be increased in inclement weather or in an intersection which is exposed to heavy turning traffic action.

All panel off-cuts can be retained for later use. All panels as well as the off-cuts should be stored flat in a cool place

The pothole can be opened to traffic immediately after the sealant has set.

Cleaning up

All the tools should be cleaned after each patch repair to prevent any build up of emulsion and asphalt of the spades and rakes. The block brush should be kept in water during the repair operations and thoroughly rinsed and cleaned at the end of each day.

Quality control

There should be no deleterious materials e.g. oil and other contaminants on the road surface that will affect the performance of the sealant.

The emulsion should not drip between patches leaving residual splatter on the roads surface.

The emulsion should be well mixed and its application rate correct i.e. similar to a coat of paint with no pools or puddles. This precaution will ensure a strong bond between the patch and the existing road surface.

On a spray seal, as with brick paving, the emulsion application rate may have to be increased due to the roughness of the surfacing and/or its absorbent nature.

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

The storage instructions accompanying the road patch should be followed both on- and off-site.

The relevant aggregate size is selected either to match the surrounding seal or to maximise performance. Larger aggregate sizes would be selected where severe conditions warrant a higher binder content.

As with all repairs to roads under traffic, it is vitally important that road users are aware of the roadworks through proper signage and traffic accommodation