POTHOLE REPAIR MANUAL

A quick reference general guide on road repairs, using NCA superior quality road repair materials

NCA National Cold Asphalt
In order for us to understand how to repair a road, it is necessary to have a basic understanding of how a road is built, and what the different components are. The diagram below illustrates a typical cross section through a road, in other words if you had to cut through the road with a very big saw, this is what you would see.

1. This is the road surface (sometimes called the “tar”) and is the “black stuff” that we ride on. Due to the effects of sun, wind and rain, this surface can dry out and then start forming cracks or potholes. This can mostly be prevented if we fog spray the road or re-surface it before it becomes too dry, but this is hardly ever done in time and this is why you will be fixing holes!

2. This is the foundation layer or the very bottom part of the road. It is also sometimes called the road bed. This layer is compacted by machines and is usually about 125 to 150 mm thick.

3. This is the sub base and is built from local selected material or material imported from a commercial quarry or crusher. This material is sometimes called G4, or G5 material, and is normally about 150 mm thick.

4. Most urban roads have a concrete kerb with a concrete channel on either side of the road surface, and this could be a semi mountable kerb.

5. This the road “shoulder, and can be either gravel, concrete asphalt.

6. A concrete kerb with this shape is called a mountable kerb.

7. Most roads have a “cross fall” or “camber”, and this is just a slope on the surface to ensure that water does not pond on the road.
Once you have identified the types of repairs that you are going to carry out, you are going to move onto the road to execute these repairs. What is of significant importance is that you always work under safe conditions. If you do not have any standard road signs, then at the very least you should use orange road cones to demarcate your work area so that you are safe from traffic. If road cones are also not available, then use 200 litre drums, which can be painted white and around which you can wrap red and white hazard tape to make them visible.

**FIRST THINGS FIRST!! SAFETY ON THE ROAD**

- Always first demarcate the work area!
- Utilise road signs! Use flagmen to warn motorists!
- Always ensure that the road is fully open after dark!

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National Cold Asphalt
This guide is non-technical and rather a practical step by step guide on how to use commercially available NCA road repair materials to carry out repairs and maintenance on roads.

There are certain guidelines that one must follow to achieve the best and most economical results for different types of repairs, and this manual will describe these in a clear and concise way, but always adhere to the two rules below.

**RULE NUMBER 1!**

*Never ever use concrete to repair a “tar” road!!*

It is extremely important that you obey this rule. Concrete is the worst repair material that you could ever use to repair a road, because it has completely different characteristics to the road materials.

Concrete poured into a pothole will sit there like a plug, and very soon after you have put it in the hole, new holes will form around it (see the photo below). You will be much better off by putting gravel or even soil into the hole rather than by using concrete! The reason for this is that concrete is a “stiff” or “rigid’ material with no flexibility, which results in a different reaction onto the road surface by the vehicle tyre. It will also not bind or “stick” to the road layers or the surrounding bitumen “tar” surface, and will gradually become loose.

A further negative aspect of using concrete is that you are complicating the work of those who come after you to do permanent repairs or resurfacing, because all the concrete that you placed will have to be removed in any case!

**RULE NUMBER 2!**

*Rather use gravel or soil to repair a pothole if proper materials are not at hand, even if it means repeating the process after rain, but preferably use nca materials to do a proper repair the first time round.*
There are generally three types of repairs that can be done as part of routine maintenance of roads, and these are summarised in sketch below. This manual only deals with pothole repairs.

If there are cracks that are starting to appear, or if the “tar” surface is showing signs of stripping, you must immediately react. If you act now, you will prevent potholes from forming at a later stage, and you will save money by doing preventative maintenance, rather than later.

Surface failures can also be repaired using National Cold Asphalt products.

If the “tar” surface has stripped completely and a deep pothole (more than 40 mm) has formed, you will carry out the type of repair described in this manual. Because this type of repair becomes quite expensive, all efforts should be made to prevent this from being necessary.

Identify the type of repair to be done
If you have identified the repairs to be of this type (see pictures below), then you could use a combination of NCA Medium Grade Asphalt and NCA Pre Fill Material or NCA LT40 to carry out the repairs.

**STEP 1:**
Use a pick axe or ordinary pick to chop out a square or rectangular area that covers the repair area. Ensure that the depth is even and that any potentially loose material is properly loosened with the pick.

**STEP 2:**
Use a shovel and a hard broom to remove all loose material and dust from the repair area. If the hole is deeper than around 50 mm then a combination of NCA Pre Fill and NCA Medium Grade can be used to fill it. No tack coat (diluted emulsion) is required for these materials. As an alternative NCA LT 40 can be used, however for this application the cleaned pothole repair area must be well treated with a tack coat. (Even application of diluted emulsion). Good practice is to ensure that deep repairs are done in layers of not thicker that around 40 mm at a time, while compaction can be carried out using a pedestrian roller, rammer or even a hand stamper. Compaction tools can be slightly wetted with water to prevent material from sticking.
**METHODOLOGY FOR THE REPAIRS**

**STEP 3:**

If the repair is deeper than 40 mm, firstly empty NCA pre-mix in the hole leaving approx 30 mm below the surface. Compact the pre-fill material and then add the NCA Medium Grade pothole repair material. The material should be approx 10 to 15 mm proud of the surrounding area.

**STEP 4:**

Use a pedestrian roller, rammer or hand stamper to compact the asphalt down to the level of the surrounding road. Occasionally dip the stamper in a bucket of water to prevent the material from sticking. If more material is required to level the patch, simply add and compact, and likewise if it is too much, simply scrape off.

*Note: When NCA materials are used, the road can be opened to traffic immediately after compaction.*
DOING IT RIGHT THE FIRST TIME!

NCA MATERIALS FOR RELIABLE PERMANENT SOLUTIONS!

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