A SOLUTION TO REPAIR DAMAGED ROADS EFFECTIVELY INNOVATION IN ROAD INFRASTRUCTURE

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'The journey is only as good as the road travelled on'!

In this day ,nothing seems too far off cause we know theres always a road that leads somewhere.'Road' transport is the most vital and widely used, so it has become a necessity to maintain these.

For centuries now people have been utilising the means to develop different techniques to build roads, the earliest records going back to about 10,000 BC. Successfully so, we have managed to build roads with fantastic connectivity but with time though the conditions of the same,has suffered.Weather it is due to environmental changes , or erosion, or traffic or vehicle damage or human damage, we observe that the maintenance of these roads have taken a dive.

Problems like, cracks on the roads, alignment issues, levelling and most of all 'POTHOLES' during the rainy season, have become a regular phenomenon. It is mandatory to innovate something to control this.

We at 'VAJRA' infra & compounds have developed a solution that takes care of all the challenges one observes in the road maintenance capacity.

The regular bitumen mixes and asphalt are water soluble, time consuming and inconvenient to use, secondly the labour, and hardware required for the same are also inconvenient and expensive and the results are less than satisfactory during monsoons. We have come up with a solution that is not water soluble, is elastomeric in nature containing synthetic adhesive blended with stone metal. Hence can sustain vibrations without developing cracks.it sets quickly and does not require any major machines or labour and top it all, it can withstand any damaging agent and remains undeterred for long.

For 2 years now, with several trials of this solution in the highest rainfall areas, and on the busiest traffic roads, we have a solid database of the positive results of the same to conclude that this solution can prove to be a revolution in the scope of pothole and road maintenance.

We would like the opportunity to introduce VAJRA at WRM 2017 as our effort to better the quality of our roads, that not only gives it strength, but increases the life of the same.Resulting advantages are, safer roads, less traffic congestion , less accidents,optimal usage and less wear and tear to vehicles. It is an instant solution to a long standing problem of the society.

WORLD ROAD MEETING 2017 stands for "safe roads and smart mobility : engines of economic growth." we are here to re-enforce the thought in every sense of the statement.

INTRODUCTION

The present invention relates to road surfacing materials and in particular their use in repairing holes in damaged roads.

Throughout this specification, the word road is intended to include paths, runways, driveways and any other similar hard topped surface.

Many road surfaces are covered with bitumen or concrete to provide a hard surface. Over time these surfaces may be damaged, leading to spalling of the surface, 'pot-holes' and cracking. Traditionally, road surfaces have been repaired by cleaning the damaged area and applying bitumen or concrete to the damaged part to provide a flat load bearing surface again. However there are drawbacks to both these repair methods.

Bitumen based material is prepared off-site where the bitumen is heated to a high temperature and then mixed with aggregate etc. The mixed material is then poured into silicon lined bags and allowed to cool into solid blocks. There are drawbacks with this method of repair. The repaired section is not as strongly adhered to the base material as an undamaged portion of road is. Therefore, it is prone to deteriorate again. Furthermore, the cost of manufacturing the bitumen blocks and subsequently having to heat them on site to a high temperature (around 200° C.) makes it expensive.

Another alternative repair material is concrete. This is usually transported to site in a pre-mixed form which requires it to be used fairly quickly. This makes it inconvenient to use. Concrete repairs suffer from similar problems to bitumen in that the repaired section generally deteriorates faster than the unrepaired sections and thus requiring further repair. Generally when concrete develops pot holes or severe cracking the whole concrete bay is removed to the foundation and replaced with new concrete. The process is expensive and time consuming causing the road to be closed for several days. This can be of great importance when repairing busy motorways or runways where a long period during which the road or runway is unusable and cannot be reopened to traffic is unacceptable.

ID:234 discloses an elastomeric co polymer which forms a film, elastic in nature ,that can withstand vehicular vibrations. Unlike asphalt treated damages, which are rigid and soon become brittle in edges inviting cracks after coming in contact with water.

The substance we propose is:

1. Cold mix.
2. Non water soluble
3. All weather ready mix chemical compound.
4. Can withstand high temperature post application (baking temp 200 to 250 c)

Comprises Of: aggregates of 4-12 mm, 8/10-15/20mm,treated with special grade bitumen, pressure sensitive crafted co polymer with or without bitumen cross linked with chemical additives etc.

PRODUCT SPECIFICATION

Visual—Black colour thick viscous Liquid .

Base- Solvent soluble polymer compound.

Smell- Thinner/solvent type normal temporary smell.

Curing time- fast- 24 hrs.

Setting- Quick setting.

Elastomeric skin forming.

Good surface resistivity

Coverage –approximately 1.5 to 2.5 sq. mts. per ltr./depending upon surface

METHOD

No special preparations required for filling leaking cracks. No prime coats needed.

For leak proofing following simple steps:

Try and remove moisture as much as possible by wiping. the work could brush/sprey/pour to fill the gapes with product liquid compound. Let the base coat dry. Repeat the process at least 3 times .Allow the skin to be formed.

Work could be carried out pre monsoon as well as during monsoon also,

For road works-

Stone Metal mixing percentage - 8%to 10%

Shelf life -6 months for chemical. 3 months for ready to use premix

Recommended procedure for pot hole filling-

a) Clean pot hole off debris/water etc.

b) Apply Tac coat/base coat of product.

c) Fill appropriate combination e.g.60% half inches 40% grit premixed with 6 to 8% of product. 40/45mm stone for deeper holes.

d) Stamp with dhummas or roller.

e) Apply seal coat of product if required.

f) Spray dry grit powder.

g) Stamp or roll or let traffic do the job!

Afore mentioned product has been specially developed to over come for long lasting water proofing during or before or after monsoon water proofing works and for pot hole menace during monsoon. hence the same has been designed to withstand the execution in wet conditions and is capable to withstand instant showers immediately after laying also its elastomeric waterproof film forming capability repels water and elasticity helps bonding to remain together against vibrations once its set unlike brittle nature of conventional bituminous materials.

TEST RESULTS

With extensive trials for the past 2 years in heavy rainfall areas the product has proven to sustain itself.