GENESIS INFRA PROJECT CONSULTANT

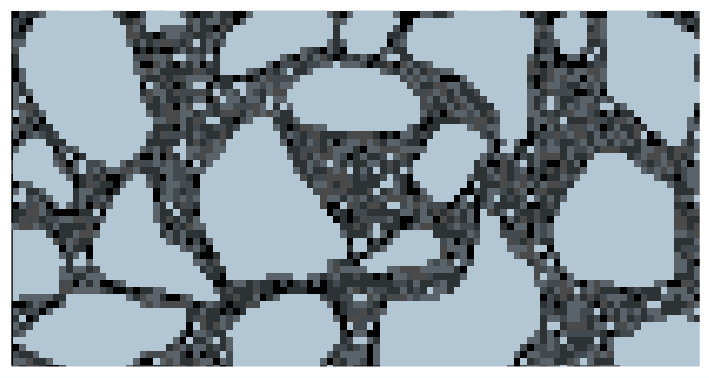
Its All About Excellence & Commitment

ABOUT US

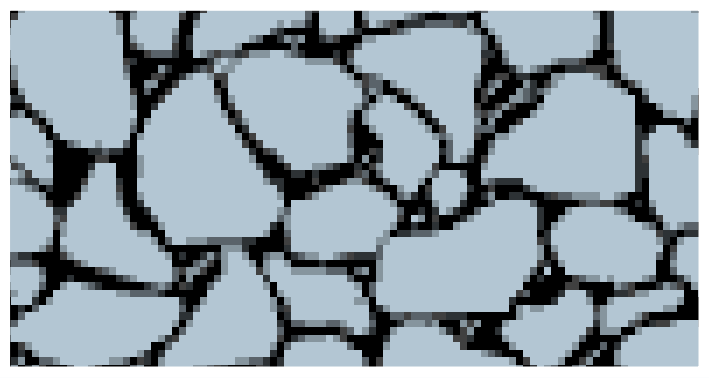
- We are Consultants for innovative sustainable technologies for Road Infrastructure.
- Having experience of successful implementation of SMA (Stone Matrix Asphalt) across India.
- To our credit we have developed indigenous cellulose palletized fibers used in SMA, Certified by CRRI-New Delhi.
- Our Vision is to have Distress free, Sustainable, Safe and comfortable pavements using Indian Products.
- A good road Network facilitates smooth trade and travel.

- Both are extremely important aspects of a growing economy of the country.
- Hence, a good sustainable technology is the need of the hour in India which has a Road Network of over 58 Lakhs kms (2017 as per NHAI Website).
- India s Road Network is second largest following United States.
- In India, increase in traffic & over loading condition require roads with better durability and effectivity that prevent or reduce the distress of AC/BC Roads.
- The development of modern pavement technology is needed to acceleratesignificant improvement of pavement quality of highways, airport runways and urban roads.

PRODUCT



Dense Graded Mix
Bituminous Concrete (BC)



Gap Graded Mix
Stone Matrix Asphalt (SMA)

STONE MATRIX ASPHALT

INTRODUCTION

Stone Matrix Asphalt **(SMA),** Was Developed In Germany In The Mid Of 1960's And It Has Spread Throughout Europe And Across The World In 1980's And 1990's Respectively.

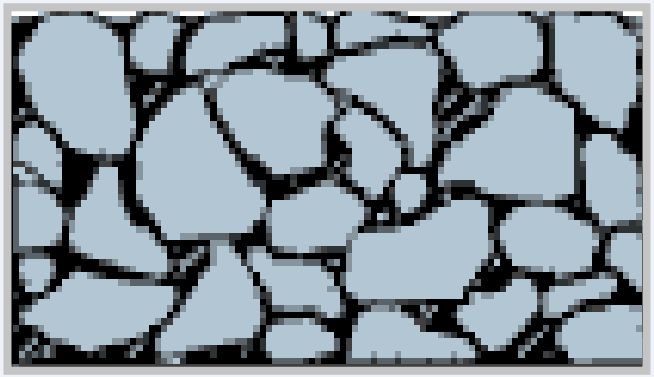
Characterization of SMA

- Gap Graded Mix
- Stone On Stone Contact
- Polymer Modified Asphalt Binder
- Fibers To Prevent Drain Down (Palletized Cellulose Fibers)
- High Filler Content Designed To Lower Void Content High Asphalt Content

SMA - MIX

- A self-supporting stone skeleton of crushed high quality coarse aggregate SMA-Mix.
- A binder rich mastic mortar.
- Low air voids, which make the mix practically impermeable
- (maximum 4% Air voids).
- An efficient stabilization of the mastic in order to prevent its segregation from the coarse particles.

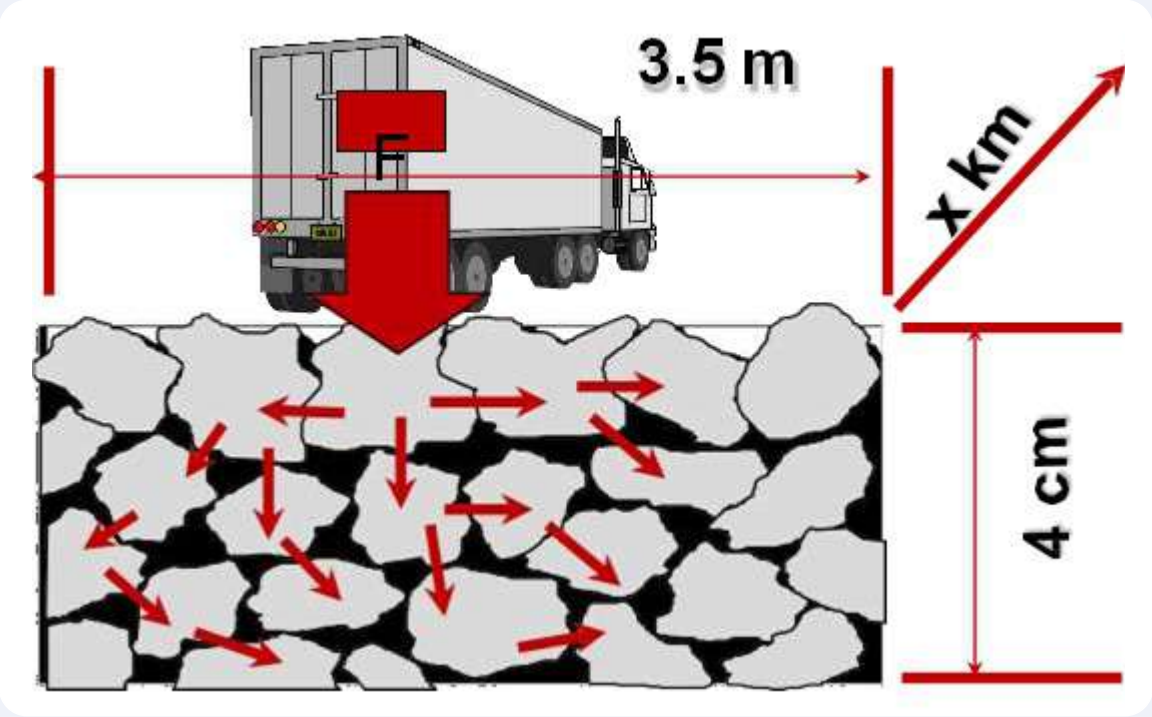
REASON FOR USING SMA



Tough, Stable and Rut-Resistant Mixture that relies on:

Stone-on-Stone Contact to provide Stability and
Binder rich mortar to provide Durability

STABILITY IN STONE MATRIX ASPHALT (SMA)



The Stability In a SMA-Mix Is Obtained Through The Internal Friction In The Self - Suporting Stone Skeleton.

MIX DESIGN

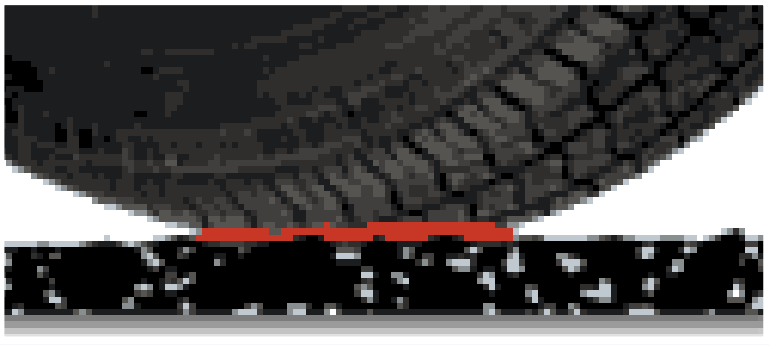
Mix Design Requirement for SMA AS Per IRC SP:79:2008 & MORTH Specification Section 515 (2013)

Bitumen: 5.8 – 6.5 %

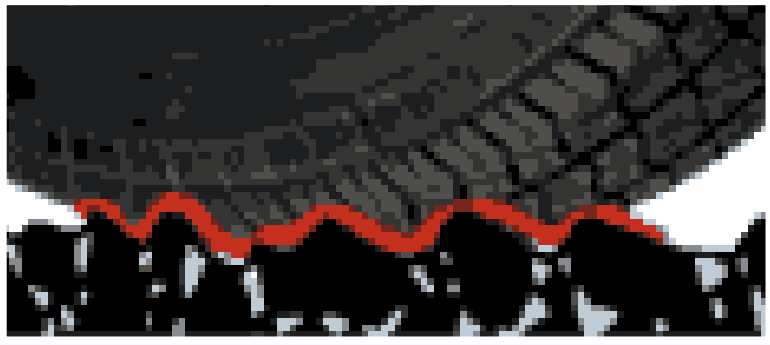
Air Voids: 3 – 4 % Palletized Cellulose Fibres: 0.3 %

Drain down: 0.3 % Maximum

VERY GOOD SKID RESISTANCE



GRIP WITH BC



SMA WITH VERY GOOD GRIP

DEVELOPMENT OF STONE MATRIX ASPHALT (SMA) IN 1968

COMPOSITION

75 Wt. % Stones

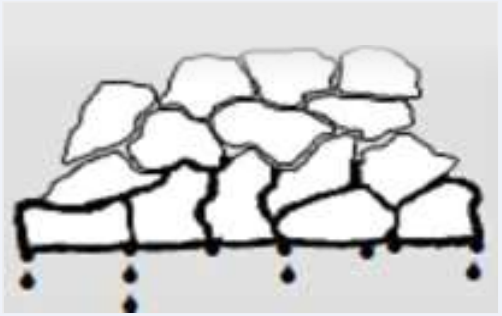
15 Wt. % Sand (Bag house filler) 10 Wt.%

Filler (Hydrated Lime)

6.2 % Bitumen by total weight Mixing

Temperature 170°Celsius

Without Stabilizing Additive



Binder Drain Off

By Use of "Cellulose Fibres" as Stabilizing Additive

No Binder Drain Off

SMA OFFERS

- High Resistance Against Rutting
- High Temperature, Heavy Traffic
- High Flexibility - No Cracking (Cold Temperature)
- High wearing resistance
- High adhesive capacity between the stone granules and the Bitumen
- A mix with no tendency to separate
- Lower traffic noise

COST COMPARISON BETWEEN SMA & BC

Although SMA paving is Costlier by 20 % to 30% as compared to the conventional BC/AC, The maintenance cost is very less, as a SMA pavement does not require Maintenance for at least 10 years.

The primary reason for increase in cost of SMA is the higher content of Bitumen. And as we use higher content of bitumen the mix has tendency to bleed. So, to arrest the bleeding of Excess bitumen,Palletized cellulose fibers are used.

SMA is considered as a perpetual pavement as the design life of the pavement is considered to be around 20 years. With Zero maintenance for 10 years and minimum maintenance for next 10 years.

There are pavements witnessed designed on SMA on National Highways In Europe Where no maintenance was required for 20 years.

(The Specification need to be adhered strictly as SMA is highly quality conscious mix, proper implementation is required under strict supervision from Mix design to Paving and Compaction)

S O P

STANDARD OPERATING PROCEDURE TO BE FOLLOWED FOR SUCCESSFUL IMPLEMENTATION OF STONE MATRIX ASPHALT TECHNOLOGY (AS PER IRC SP 79 2008 AND MORTH SPECIFICATION SECTION

MEASURES TO BE TAKEN AT PLANT

- **Hot Mix Plant should be calibrated as per IRC 90 2010.**
- **Maintain stockpiles separately – No mixing of aggregates.**
- **Monitor gradation of incoming aggregates.**
- **Coarse aggregates to be added first-raise temperature to 170 c, mix for 6-7 seconds.**
  Add Cellulose Fiber pallets directly afterwards, together with filler (lime 100 % passing 600).
- **Mix for 5-6seconds.**
- **For Batch Mix Plant - Mineral filler & fiber feed system, to be calibrated for plant for Production & maintain interlock system.**
- **For Drum Mix Plant – Fiber will be dosed through conveyor belt with the mineral filler and aggregates.**
- **Bitumen to be added immediately after addition of filler & Cellulose Fiber pallets.**
- **Bitumen mixing should be for 7-8 seconds.**
- **Wet mixing should be for about 25 seconds.**
- **Maintain temperature of 160-170 C, taking care bitumen not to be overheated.**

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Infra Project Consultant

MEASURES TO BE TAKEN WHILE TRANSPORTING THE MIX:

- Start with a clean truck.
- Use water based liquid soap for truck cleaning.
- Drain excess release agents – truck bed should be dry. Mix to be transported between150-160°C.
- Cover the mix during transportation.

MEASURES TO BE TAKEN WHILE PAVING THE MIX AT SITE:

- Receipt of hot mix directly on the paver. Maintain continuous paver operation.
- Avoid manual paving.
- Adopt number of trucks to transport to site, ensuring paver runs continuously without a break, so that the paver plate does not cool.

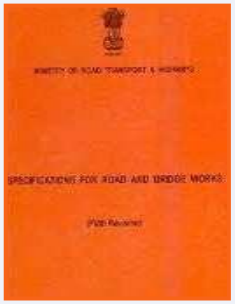
MEASURES TO BE TAKEN FOR COMPACTION:

- Do not use rubber tyre rollers for compaction of SMA Use only vibratory roller for the first pass
- For the balance passes, use 8-10MT static rollers
- Roller should be right behind the paver-minimum distance. There should be three Compacts and six passes each direction. Compaction should run in direction of paver.
- Favorable temperature of starting compaction, between 130-160 C & should be about 110°C, at the end of compaction.
- Compaction not allowed for temperature below 100 C Hydrated Lime should be sprayed post compaction.

SURFACE MUST COOL TO 55-60 C and 4 HOURS CURING BEFORE ALLOWING ANY TRAFFIC

STONE MATRIX ASPHALT (SMA) DEVELOPMENT IN INDIA

Tentative Specifications For Stone Matrix Asphalt (IRC:SP:79-2008)



M.O.R.T.H Specifications For Roads & Bridge Works 5th Revision, Section 515 – Year 2013

Guidelines For the design of Flexible Pavements(Fourth Revision) IRC 37: 2018. Recommends SMA for Traffic above 50MSA. Ref :- page 28 & 29. serial No.9.1

SMA - PROJECTSIN INDIA

- Various National Highway Projects in the state of Gujarat, Rajasthan, UP, Karnataka Etc.
- Projects in the State of Maharashtra under PWD Maharashtra Project Under Thane Municipal Corporation
- Largest SMA Project under Bharatmala Pariyojana Delhi Vadodara Expressway.
- National Highway Authority of India has made it mandatory to construct expressways on Stone Matrix Asphalt Technology.

ACHIEVEMENTS

LETTER ISSUED BY
THE MUNICIPAL CORPORATION OF THE CITY OF THANE

Shil –Diva Road Project

ठाणे महानगरपालिका

THE MUNICIPAL CORPORATION OF THE CITY OF THANE

Date

TO WHOMSOEVER IT MAY CONCERN

This is to Certify that M.S. Genesis Human Resource Media Consultants Pvt. Ltd. was engaged as the project Consultants for strengthening of Diva- Shill Road in Mumbra Ward Committee Area,Thane,in the state Of Maharashtra.

In this Project Bitumen coated Cellulose Fibers were used through a German technology called stone Matrix Asphalt and Which was Procured through Genesis Consultants. As per the Prevailing conditions of the road, these fibers were used in two layers, DBM and wearing coat. We appreciate the efforts put in by M/S. Genesis Human Resource & media Consultants Pvt. Ltd. Who were Consistently available in providing Comprehensive Guidance to M/S. Sahyadri Construction and their team to Complete this project successfully.

We are very satisfied with the Performance of stone matrix Asphalt (SMA) layers and its Product bitumen Coated Cellulose fiber procured through Genesis Consultants.

This Certificate has been issued on request from M/S. Genesis Human Resource & Media Consultants Pvt.Ltd.

EXECUTIVE ENGINEER
(Thane Municipal Corporation, Thane)

Cadbury Junction to Pokran Road

ठाणे महानगरपालिका

THE MUNICIPAL CORPORATION OF THE CITY OF THANE

Date

To Whomsoever It May Concern

This is to certify that M/s Genesis Infra Project Consultants was engaged as Project Consultants for Stone Matrix Asphalt on Service Road From Cadbury Junction to Pokran Road No.2 in Thane Municipal Corporation Area in State of Maharashtra.

In this project Bitumen Coated Cellulose Fibres were used which were procured Through Genesis Infra Project Consultants As per prevailing conditions these fibres were used in two layers DBM SMA and surface course SMA.

We appreciate the efforts put in by M/s Genesis Infra Project Consultants, who were consistently available in providing Comprehensive Guidance to M/s Bitcon India Infrastructure Developers Pvt Ltd and their team to complete this Project Successfully.

We are satisfied with performance of Stone Matrix Asphalt layers and it's Product Bitumen Coated Cellulose Fibres Procured From Genesis Infra Project Consultants

Remark :- This Certificate is issued on request of Consultant M/s M/s Genesis Infra Project Consulta

City Engineer
Thane Municipal Corporation, Thane

MEDIA

1ST SMA PROJECT UNDER PWD MAHARSHTRA ARTICLE IN HINDUSTAN TIMES 25TH MARCH 2017.

पालघरमध्ये यशस्वी प्रयोग...

रस्तेबांधणीसाठी जर्मन तंत्रज्ञान!

पाईन वृक्षाचे फायबर सेल्युलोज मिश्रण करून रस्ता बनवण्याचा राज्यातील पहिलाच प्रयोग पालघरमध्ये यशस्वी झाला...

नीरज राऊत : सकाळ वृत्तसेवा

पालघर, ता. २१ : रस्त्यांवरील खड्डे ही कायम डोकेदुखी ठरत आली आहे. पालघरमध्ये मात्र खड्ड्यांवर जर्मन तंत्रज्ञानाने वालीम उपाय शोधून काढण्यात आला आहे. डांबराच्या रेडिमिक्समध्ये पाईन वृक्षाचे फायबर सेल्युलोज मिश्रण करून रस्ता बनवण्याचा प्रयोग पालघरमध्ये यशस्वी झाला आहे. 'स्टोण्ड मॅट्रिक्स अस्फाल्ट' तंत्र वापरून ७०० मीटरचा रस्ता बनवण्यात आला आहे. या तंत्रज्ञानाने तयार केलेले रस्ते १० वर्षे सुस्थितीत राहतील, असा दावा तंत्रज्ञान पुरवणाऱ्या कंपनीने केला आहे.

पालघरच्या शिवाजी चौक ते रेल्वे उड्डाणपुलाच्या भागातील ७०० मीटरचा रस्ता 'स्टोण्ड मॅट्रिक्स अस्फाल्ट' पद्धतीने बनवला आहे. मे. शिवसाई कन्स्ट्रक्शन'ने हे काम पूर्ण केले. पाइन वृक्ष फायबर सेल्युलोज जर्मनीहून आणले आहे. खडी आणि डांबर यांचे हॉटमिक्स बनवताना ठरावीक वजनाच्या प्रमाणात त्यात सेल्युलोज मिसळले गेले. त्याचे मिश्रण रस्त्यावर अंथरले गेले. पाण्याच्या संपर्कात सहजपणे प्रभावित न होता सेल्युलोज पदार्थ रस्त्यावर रोलिंग केल्यानंतर डांबर खडीमध्ये घट्ट बसतो. पृष्ठभागावर चुन्यासारख्या पदार्थाचे आवरण दिले जाते. त्यात पाण्याचा शिरकाव होत नसल्याने रस्ते बराच काळ टिकू शकतात. जर्मनीकडील रस्ते बनवण्याच्या तंत्रज्ञानाला भारतीय रस्ते कॉंग्रेस या संस्थेने प्रमाणित केले आहे. रस्त्यांच्या डांबरीकरणाच्या तुलनेत सेल्युलोजयुक्त रस्त्यांना ३० टक्के अधिक खर्च येत असला तरी अशा प्रकारे बनविलेल्या रस्त्यांचे आयुष्य तिप्पट असल्याचा दावा कंपनीने केला आहे.

"नव्या तंत्रज्ञानाद्वारे तयार केलेल्या सेल्युलोजयुक्त रस्त्याचा राज्यातील पहिलाच प्रयोग आहे. आयात होणाऱ्या पाईन वूड सेल्युलोजला स्वदेशी पर्यायासाठी संशोधन सुरू आहे.
- राहुल वानखेडकर (कार्यकारी अभियंता, बांधकाम विभाग)

'स्टोण्ड मॅट्रिक्स अस्फाल्ट' तंत्राने तयार होत असलेले मिश्रण.

In a first in the state, PWD makes Palghar road using pinewood

Ram Parmar
▪ htmetro@hindustantimes.com

PALGHAR: For the first time in Maharashtra, the public works department (PWD) in Palghar district constructed a road entirely out of pinewood pulp cellulose, as part of a pilot project.

Officials said an Andheri firm had approached the PWD in 2008, seeking to construct a road with waste pinewood pulp cellulose, mixed with bitumen and stones. The construction was carried out using a technology known as stone matrix asphalt (SMA), which was approved by the Indian Road Congress, the apex body of highway engineers.

A small patch of the World Bank-funded Palghar-Mahim highway was chosen for the trial.

"We told the PWD that we would provide them with a state-of-the-art technology to construct the road. The officials were sceptical at first, but after we gave them a presentation, they gave us the go-ahead. We decided to construct the road on a small part of the highway as heavy traffic passes through that area," said Porus Bhatt, director, Genesis Infra Project Consultants.

SMA technology is used in Europe, Russia, China, Germany, Brazil and Sri Lanka. Also, a few It requires either waste pinewood or bamboo pulp cellulose, which is taken from the bark of the trees, said Bhatt. He added that the roads in Mumbai and other metropolises are constructed using inferior quality stones and bitumen, which results in pot-holes surfacing on the streets.

▪ The PWD constructs the road at Palghar-Mahim highway using the new technique. HT

"There is no question of pot-holes surfacing when SMA technology is used. We use big stones, bitumen and a mixture of pulp and hydrated lime, which acts as a binder. This prevents the road from 'bleeding' for at least five years. Roads bleed when bitumen leaks through the stones due to poor construction techniques, pressure from vehicles or adverse weather conditions," he said.

Bhatt added that a rise in underground water levels also results in potholes. He however, added that the new roads are able to circumvent this problem. "We mix the pulp fiber with the bitumen, creating a strong bond. The result is that the road resembles a tarmac or a runway," said Bhatt.

OFFICIALSPEAK

"As the pinewood cellulose was imported from Europe, we are trying to find how we can get pulp. This will reduce the cost. We are considering introducing this technology in other parts of Palghar too," said Rahul Vasaikar, executive engineer, PWD, Palghar.

RESULT

STONE MATRIX ASPHALT (SMA)
AHMEDABAD MUNICIPAL CORPORATION

PARIMAL UNDER PASS
DURING MONSOON

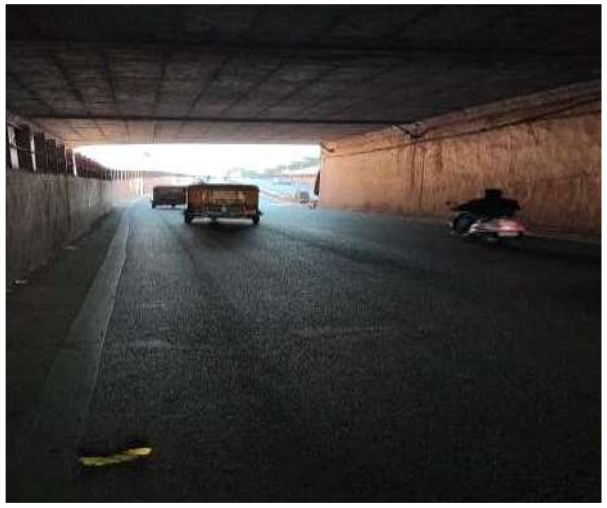
First Project of SMA over laying on Cement Concrete road in Ahmedabad municipal corporation
At :- Parimal Under Pass is submerged under water by 2 meters during rainy season.

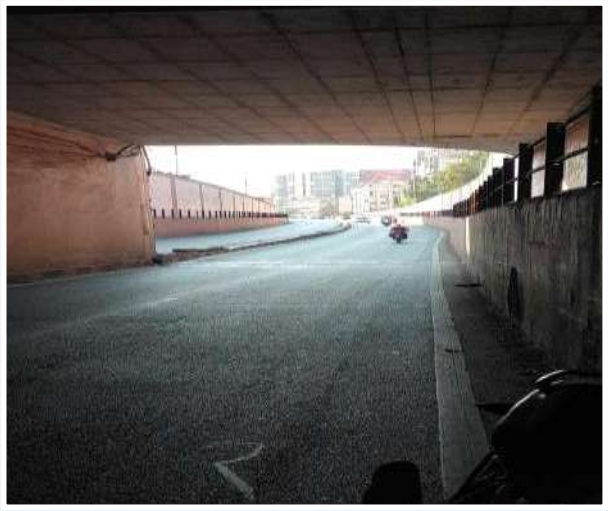
RESULT

Parimal Underpass - Ahmedabad

(Completed 7 Monsoon & 6 Years)

NOT EVEN A SINGLE POTHOLE SURFACE LOOKS LIKE CARPET





Road Condition on 20th March 2021

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THANK YOU!