

# PROJECT OVERVIEW

- **NAME OF WORK** : Renewable of road
- **AGREEMENT NO** : 692 CG/2 (3054 release/renew/14/15) CD  
**PWD** : Mainpuri road construction 2014-15
- **NAME OF CONTRACTOR** : Yadav Construction Pvt Ltd , Mainpuri.
- **ROAD STASTICS** : 05 km long bitumen road
- **ESTIMATED COST** : 36, 70,000/
- **DATE OF START** : 15-05-2014

# REQUIRED MATERIAL & MATERIAL SPECIFICATION

## AGGREGATE :

- ❖ In WBM 53mm to 22.4mm @ 0.91cum/10m<sup>2</sup> for compacted thickness of 75 mm.
- ❖ Crushed stone chipping ,13.2mm to 5.6 for premix carpet.
- ❖ Crushed stone chipping ,6.7mm size 100% passing 11.2mm sieve & retained on 2.36 mm sieve applied @ 0.09cum/10m<sup>2</sup>.

# AGGREGATE



# REQUIRED MATERIAL & MATERIAL SPECIFICATION

## BITUMEN :

- ❖ Bitumen emulsion (SS-1) @ 0.85kg/m<sup>2</sup> for low porosity of prime coat.
- ❖ Bitumen (V G -10) @ 0.275kg/m<sup>2</sup> for tack coat.
- ❖ Bitumen (S-90) @ 14.60 kg/10m<sup>2</sup> crushed stone chipping , 13.2 mm to 5.6 mm for premix carpet.
- ❖ Bitumen (S-90) @ 6.50kg/10m<sup>2</sup> for seal coat.

# REQUIRED MATERIAL & MATERIAL SPECIFICATION

## **WATER :**

- ❖ 144.0 kl water for WBM.
- ❖ 3.00 kl water for prime coat.
- ❖ 6.00 kl capacity water tank per hour For WBM & prime coat.

# REQUIRED MACHINES

- Three wheel 80-100kn static roller @ 8cum/hour for WBM , premix carpet & seal coat.
- Hydraulic broom @ 1250m<sup>2</sup>/hour for prime coat & tack coat.
- Air compressor 210cfm for prime coat & tack coat.
- Bitumen boiler oil fired 1000 liter capacity & also fitted with spray set for seal coat.

# TEST FOR BITUMINOUS PAVEMENT

## SUBGRADE SOIL TEST:

- Shear test : Test the strength properties of soil.
- Bearing test : Bearing test are loading tests carried out on subgrade soils in situ with a load bearing area.
- Penetration test : The size of the loaded area relatively much smaller & ratio of the penetration of size of loaded area is greater than the ratios in bearing tests.

# TEST FOR ROAD AGGREGATE

- **Crushing test** : The aggregate crushing value provides a relative measure of resistance to crushing under gradually applied compressive load.
- **Abrasion test**: los angels abrasion test.
- **Impact test**: Test the toughness of aggregate or the resistance of aggregate to fracture under repeated impacts.



# TEST ON BITUMEN

- **Penetration test** : Test the hardness or softness of bitumen by measuring the depth in tenths of a mm to which a standard loaded needle will penetrate vertically in 5 seconds.
- **Ductility test** : Test the property of bitumen. The test is believed to measure the adhesive property of bitumen & its ability to stretch.
- **Flash point** : The flash point of a material is the lowest temperature at which the vapor of a substance momentarily takes fire in the form of a flash under specified condition of test.
- **Fire point** : The fire point is the lowest temperature at which the material gets ignited & burns under specified condition of test.

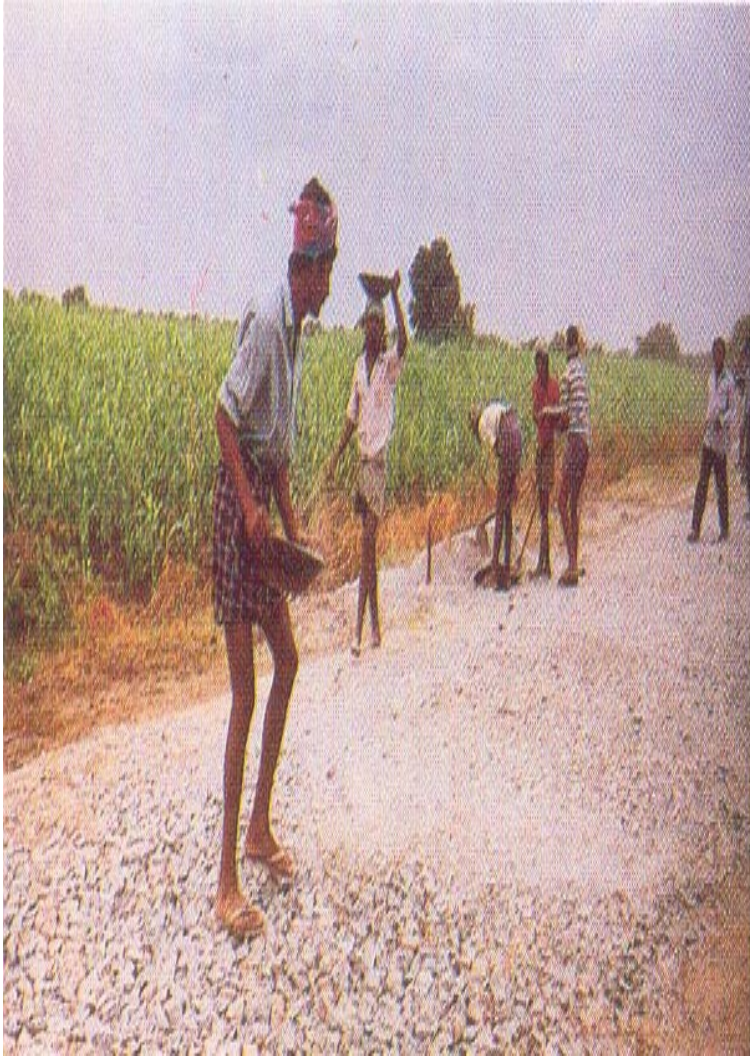
# WBM (WATER BOUND MACADAM)

- The pavement base course made of broken aggregate mechanically interlocked by rolling & the voids filled with screening & binding material.
- WBM may be used as a sub-base , base course or surfacing course.

# WBM (WATER BOUND MACADAM)

- The thickness of each compacted layer of WBM ranges from 10.0 cm to 7.5 cm depending on the size of the aggregates used.
- The number of layers & total thickness of WBM construction depends on the design details of the pavement.

# WATER BOUND MACADAM



# METHOD OF BITUMINOUS PAVEMENT CONSTRUCTION

- Interface treatment (prime coat & tack coat).
- Surface dressing (seal coat).
- Grouted construction of road.
- Premix construction of road.

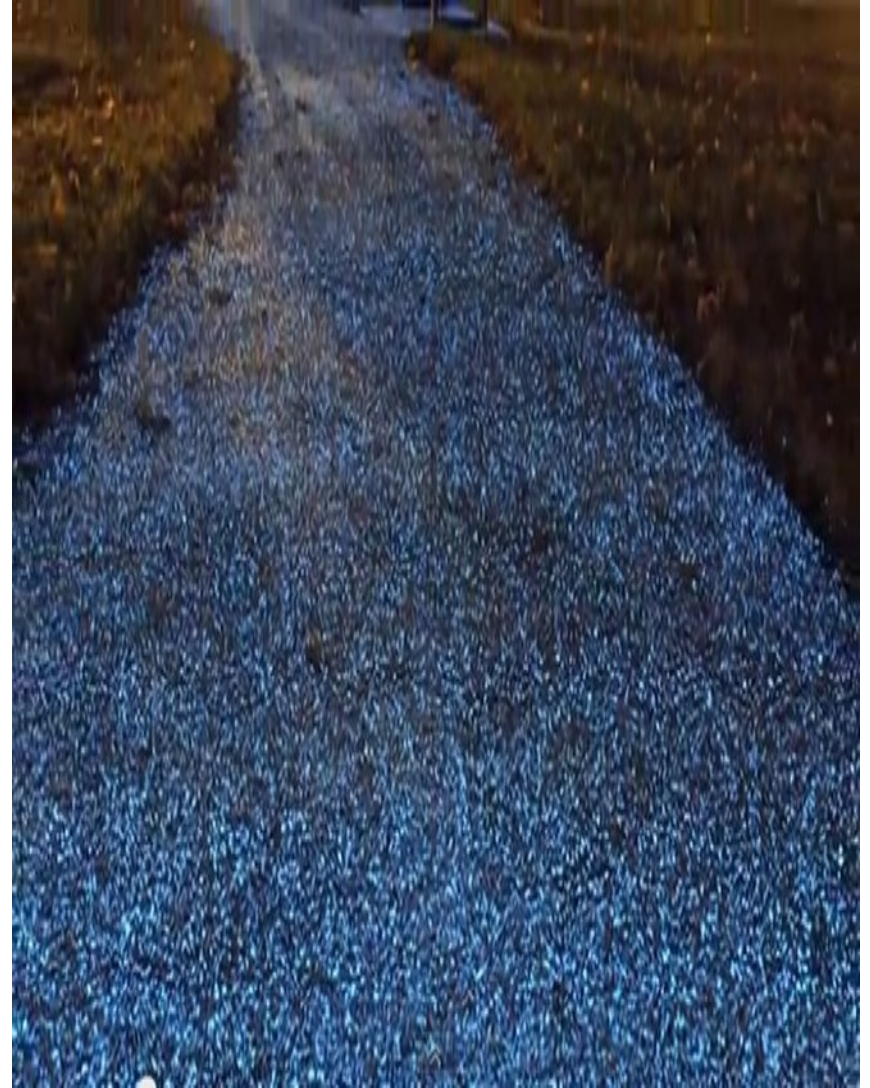
# INTERFACE TREATMENT

- The surface of the existing pavement layer is to be cleaned to remove dust & dirt & thin layer of bitumen binder is to be sprayed before the construction of any type of bituminous layer of this surface.
- The interface treatment may either be a prime coat or a tack coat .

# PRIME COAT

- Bituminous prime coat is the first application of low viscosity liquid bituminous material over an existing porous pavement surface like the WBM base course.
- The main object of priming is to plug in the voids of the porous surface & to bond the loose mineral particles on the existing surface using a binder of low viscosity which can penetrate into the voids.

# PRIME COAT





# TACK COAT

- Bituminous tack coat is the application of bituminous material over an existing pavement surface which is relatively impervious like an existing bituminous surface like the WBM which has been already treated by a prime coat.

# TACK COAT



# SURFACE DRESSING

- Bituminous surface dressing is provided over an existing pavement to serve as thin wearing coat.
- The single coat surface dressing consists of a single application of bituminous binder material followed by spreading of aggregate cover & rolling.

# PREMIX CARPET



# SEAL COAT

- To seal the surfacing against the ingress of water.
- To develop skid resistance texture.
- To enliven an existing dry or weathered bituminous surface.

# SEAL COAT



# FINAL ROAD

