ARYA COLLEGE OF ENGG&RESEARCH CENTRE,JAIPUR

SUMMER TRAINING PRESENTATION

ON

ROAD WORK

Submitted to:-

Mr. Rajpal Singh

Head of Department

Department of Civil Engineering

Submitted by:-

Vikas Sukhwal

Roll No. : 15EAYCE205

Class : 4th year(7th sem.)

PROJECT DETAIL

S. NO	PROJECT DETAIL	DESCRIPTION
1.	Project Name	Bhilwara to Chittore Mega Highway Construction
2.	Site Location	20 kM Apart From Bhilwara
3.	Project Head	Mr. Brahma Lal Sharma
4.	Area Conveyed by Project	25 KM Mega Highway Bhilwara to Chittore

Contents

INTRODUCTION

- Development of a country depends on the connectivity of various places with adequate road network.
- Roads constitute the most important made of communication in areas where railways have not developed much
- India has one of the largest roads networks in the world (over 3 million km at present).

- For the purpose of management and administration, roads in India are divided into the following five categories:

1. National Highways (NH)
2. State Highways (SH)
3. Major District Roads (MDR)
4. Other District Roads (ODR)
5. Village Roads (VR)

“…it is not wealth that built the roads but, roads that built our wealth”

-John F. Kennedy

Indian road network-current status

National Highways	58,112
State Highways	1,37,119
Major Districts Roads	4,70,000
Village and other roads	26,50,000
Total Road Length	33,15,231 km

NHs are less than 2% of network but carry 40% of total traffic.

Road

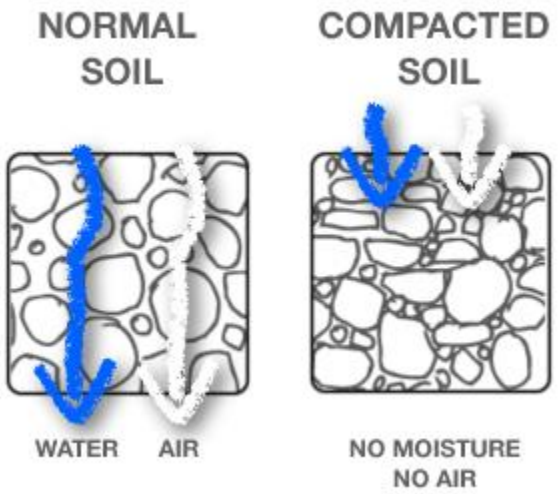
- Roads are defined as routes or paths that begin at one destination and lead to another.

- Road is an open, generally public way for the passage of vehicles, people, and animals.

Earth work

The sub-grade soil is prepared by bringing it to desire grad.

- Soil filling
- Spreading and Levelling
- Compaction



Compaction

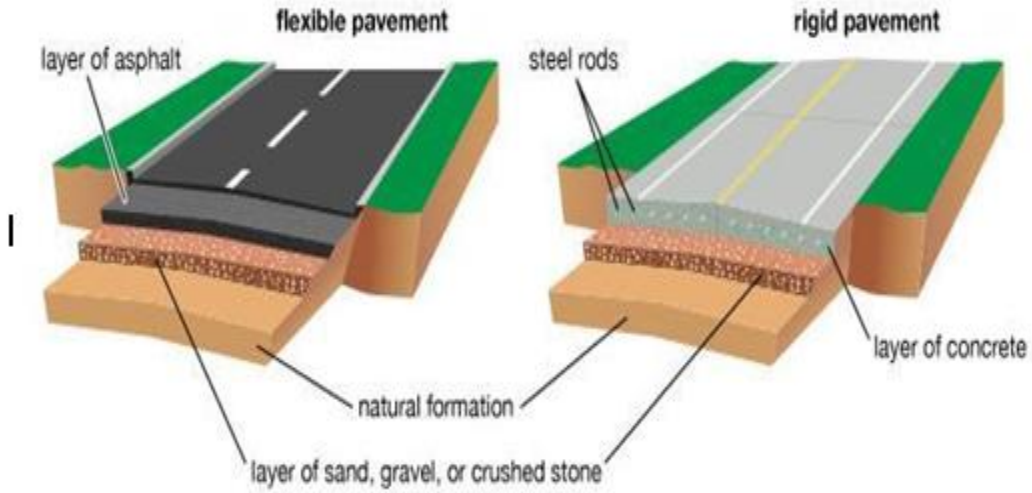
Soil filling

Pavements

- Pavement is finished with a hard smooth surface. It helped make them durable and able to withstand traffic and the environment. They have a life span of between 20-30 years.

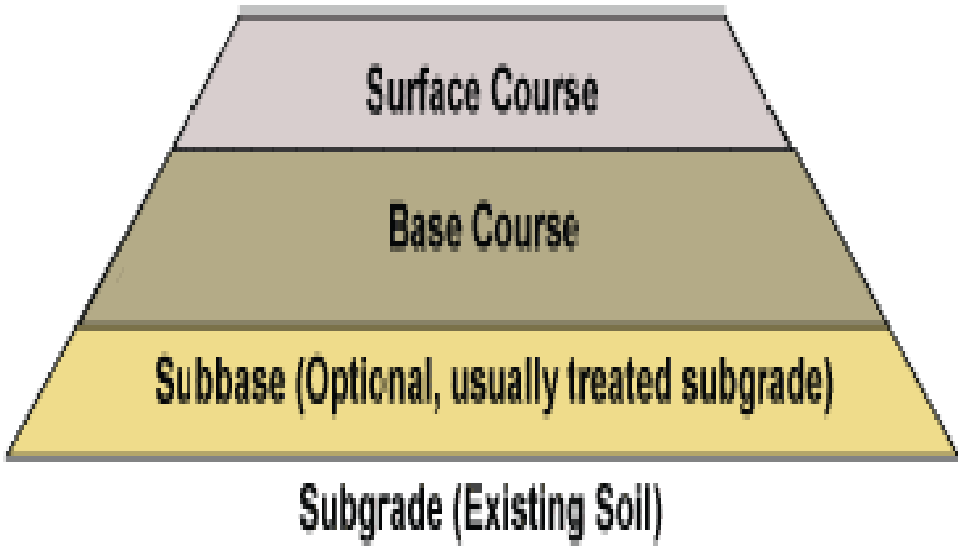
- Types of pavements:

1. Flexible Pavement
2. Rigid Pavement



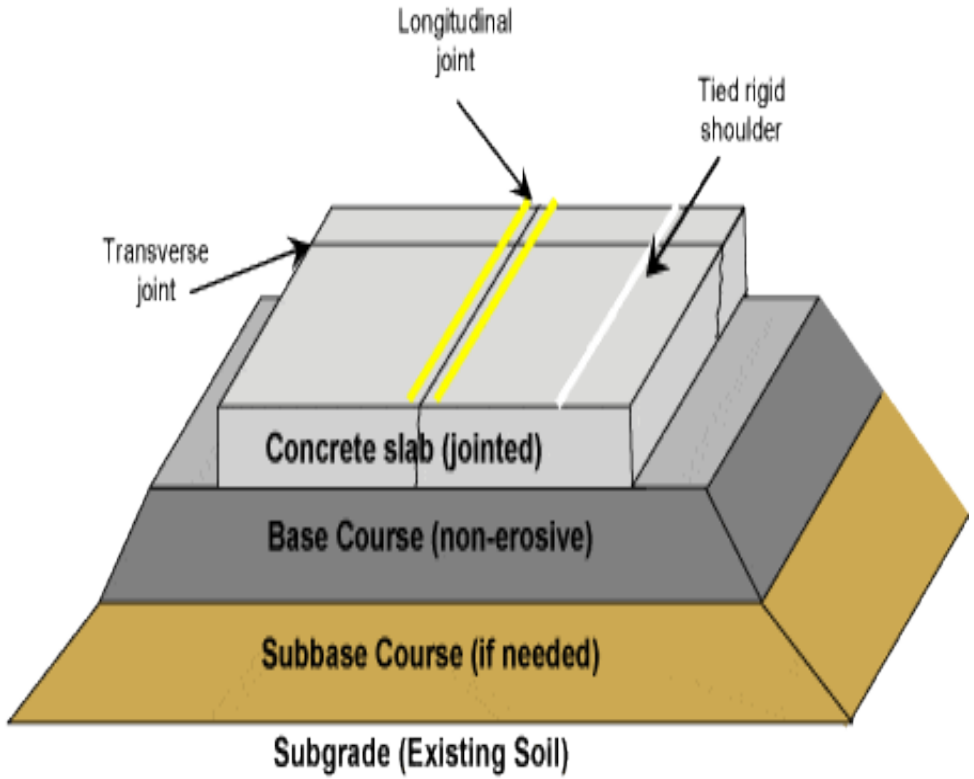
Flexible pavement

- Flexible pavements are those which are surfaced with bituminous or asphalt materials. It's flexible since the total pavement structure bends or deflects due to the traffic loads. Generally this type of pavement requires some sort of maintenance or restoration every 10 to 15 years.



Rigid pavement

- A rigid pavement structure is composed of a hydraulic cement concrete surface course and concealed base and sub base courses. The surface course is the rigid layer and provides the majority of strength.
- While, in case of rigid pavements most of the load carries by slab itself and slight load goes to the underlying strata.



Road types :

1. Earth road and gavel road
2. Water bound macadam (WBM)
3. Bituminous or blacktop road
4. Cement concrete road

Earth road

WBM road

Bituminous road

Cement concrete road

Roadway Construction

- Carriageway
- Pavement
- Kerb
- Shoulder
- Sidewalks / Footpath

Carriageway

Kerb

Shoulder

Sidewalks/Footpaths

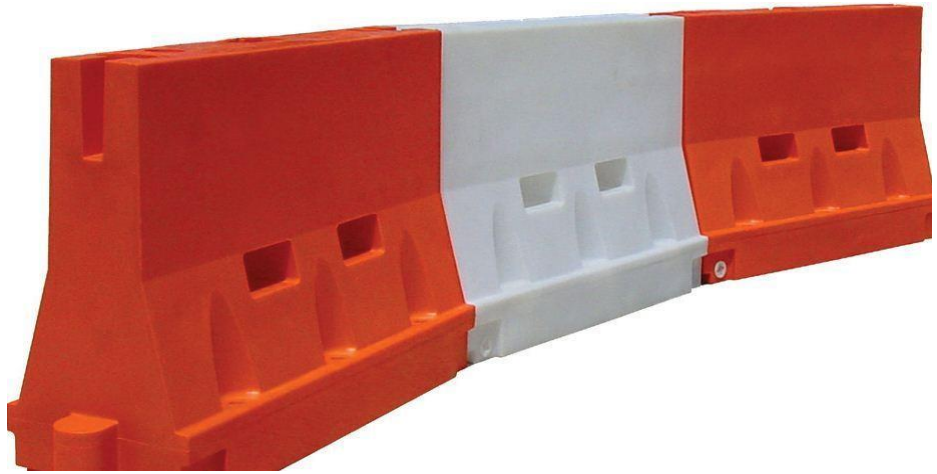
Equipment:

- Compacting material (vibratory roller)
- Dozer and scraper
- Power shover, shovels
- Concrete mixer
- Watering devices
- Mild steel sections and blocks
- Barricading
- Signage board

Vibratory Roller

Shovels

Concrete Mixer



Barricade

BITUMEN ROAD CONSTRUCTION PROCEDURE

1. Preparation of the existing base course layer

The existing surface is prepared by removing the pot holes or rust if any. The irregularities are filled in with premix chippings at least a week before laying surface course.

2. Application of Tack Coat

It is desirable to lay AC layer over a bituminous base or binder course. A tack coat of bitumen is applied at 6.0 to 7.5 kg per 10 sq.m area, this quantity may be increased to 7.5 to 10 kg for non-bituminous base.

3. Preparation and placing of Premix

The premix is prepared in a hot mix plant of a required capacity with the desired quality control. The bitumen may be heated upto 150 – 177 deg C and the aggregate temperature should not differ by over 14 deg C from the binder temperature. The hot mixed material is collected from the mixture by the transporters, carried to the location is spread by a mechanical paver at a temperature of 121 to 163 deg C. the camber and the thickness of the layer are accurately verified.

4. Rolling

A mix after it is placed on the base course is thoroughly compacted by rolling at a speed not more than 5km per hour.

The initial or break down rolling is done by 8 to 12 tonnes roller and the intermediate rolling is done with a fixed wheel pneumatic roller of 15 to 30 tonnes having a tyre pressure of 7kg per sq.cm. the wheels of the roller are kept damp with water. The final rolling or finishing is done by 8 to 10 tonne tandem roller.

5. Quality control of bituminous concrete construction

The routine checks are carried out at site to ensure the quality of the resulting pavement mixture and the pavement surface.

Conclusion

Fundamentals of road construction consists of following topics:

- Construction management overview
- Preliminary investigations
- Setting out
- Earthworks
- Pavements
- Drainage
- Roadsides

THANKING YOU

Any query….???