

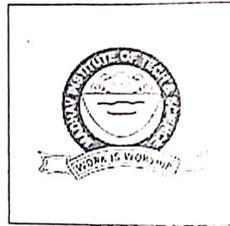
INTERNSHIP REPORT
ON
“RURAL ROAD DEVELOPMENT”

Submitted to-

MADHAV INSTITUTE OF TECHNOLOGY AND SCIENCE GWALIOR
(A govt. Aided Autonomous Institute under RGPV, Bhopal (M.P) Established in 1957)

IN PARTIAL FULFILLMENT FOR REQUIREMENT FOR THE AWARD OF THE DEGREE OF

BACHELOR OF TECHNOLOGY
In
CIVIL ENGINEERING



Submitted By-

Rishikesh Sharma (0901CE193D10)

FACULTY MENTOR-
PROF. RENUKA DIHARSHYAMKAR

Department of Civil Engineering
MITS Gwalior

OFFICE MENTOR-

R K KORI
General Manager
MPRRDA, Morena

—
OFFICE OF THE GENERAL MANAGER
Madhya Pradesh Rural Road Development Authority
Project Implementation Unit Morena (M.P.)

Office Address – Quarter No. 9-10, New Commissionery Colony, A.B. Road Morena (M.P.)
Email – gmpiumorena@gmail.com Phone No. 07532 - 231628

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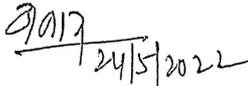
Dated 24-5-22

CERTIFICATE

This is to certify that Mr. Rishikesh Sharma S/o Shri Arun Kumar Sharma (Roll No. 0901CE193D10) student of Madhav Institute Of Technology and Science, Gwalior has successfully completed internship training on road construction & upgradation sanctioned in Pradhan Mantri Gram Sadak Yojana in M.P. Rural Road Development Authority, Project Implementation Unit Morena from 10.01.2022 to 20.05.2022

In His internship He learnt preparation of DPR & all activities involved in road construction such as construction of embankment, sub grade, sub base, base course & Bituminous work & all field & lab test require to maintain quality work.

We wish him all success in his life.

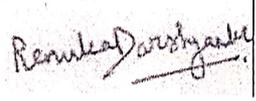

General Manager
MPRRDA, PIU Morena

RECOMMENDATION

It is hereby recommended that the internship report entitled — (Rural Road Development) which is being submitted by Rishikesh sharma completed under the mentorship of Prof. Renuka Dharshyamar may be accepted in the partial fulfillment of the award of the degree of Bachelor of Engineering in Civil Engineering.


HEAD
Civil Engg. Deptt:
MITS, Gwalior
for Head of Department
Civil Engineering
MITS, Gwalior

Faculty Member


Prof. Renuka Dharshyamar
Assistant Professor
Civil Engineering Department
MITS, Gwalior

ACKNOWLEDGEMENT

When it comes to properly acknowledging someone's support and assistance, it may be a challenging undertaking, chiefly when the support offered is so wholehearted and unwavering.

I am eternally grateful to my renowned guide, **Prof. RENUKA DIHARSHYAMKAR**, Professor of Civil Engineering Department, MITS Gwalior.

Also, I would like to thank, Head of Civil Engineering Department, MITS Gwalior, and all other academics and staff members of MITS Gwalior's Civil Engineering Department for their unwavering support throughout the project.

I am really grateful to **Dr. R. K. Pandit**, Director of MITS Gwalior, for establishing an outstanding institutional environment and for giving all facilities and assistance in the preparation of my dissertation.

The environment of Office has been valuable experience for me. It has provided an opportunity to learn at our own pace in discipline of interest. I would like to thank all those who helped me during different stages of completion of this project.

Rishikesh Sharma (0901CE193D10)
DEPARTMENT OF CIVIL ENGINEERING
MITS GWALIOR (M.P.)

Abstract

The PMGSY (Pradhan Mantri Gram Sadak Yojana) was launched by the Government of India to provide connectivity to the rural areas for the import and export of the materials and the moving of people from rural places to urban places it also makes an economic corridor for the people of rural areas as they make some money from the roads. Government of India is endeavoring to set high and uniform technical and management standards and facilitating policy development and planning at State level in order to ensure sustainable management of the rural roads network.

According to the currently figures made available by the State Govt. under a survey to identify Core Network as a part of the Pradhan Mantri Gram Sadak Yojana programme, about 1.67 lakh unconnected habitation is eligible for coverage under the programme. This involves construction of about 3.71 lakh km of roads for New Connectivity and 3.68 lakh km under development.

CONTENT

S. NO.	TOPIC
1.	Chapter 1: Introduction
2.	Chapter 2: Types of Pavement
3.	Chapter 3: Excavations
4.	Chapter 4: Granular Sub-base
5.	Chapter 5: Wet Mix Macadam
6.	Chapter 6: Bituminous concrete
7.	Chapter 7: Tack coat
8.	Chapter 8: Prime coat
9.	Chapter 9: All Tests of Rural Roads
10.	Reference

CHAPTER 01

INTRODUCTION

- ✓ Madhya Pradesh Rural Road Department Authority comes under state government of Madhya Pradesh to implement of Pradhan Mantri Gram Sadak Yojna (PMGSY) it has been created a chief executive officer from the IAS cadre head the authority.
- ✓ There are 100 PIU's Project Implements Units for 15 Districts to coordinate the work execution by the contractors and supervised by the consultancies.
- ✓ This PIUs are comes under the post of General Manager who have the rank of executive engineer the authority head general bodies which comes under the respectable chief minister. These bodies lay down the guidelines and executive their works according to the programme.

Introduction of Students

During this programme of internship we have learnt many things about the road construction in rural areas of Madhya Pradesh and the progression of work of road and the related data as provided in the site checking temperature and quality of material with lab technician and engineer provide many task during time period.

We have also learnt so many things like what the test are to be done during the road construction, how to handle the local people on the site, how the materials are to be layed down on the site, how to make DPR, how to read DPR, Drawing of sites and to many things.

In rural areas and developing countries roads have very important role in the economy of the country without roads people cannot import and export materials like they cannot export their crop, mining likes and earth work soil and other goods. Children of the area cannot go to school and the road also us in emergencies like medical emergencies. Roads are something that are advantage of and not often thought of but for those that have experience of living in areas which has limited facilities and the infrastructure of that area are very limited they will never forget.

TYPES OF PAVEMENT

Unpaved Road-

Unpaved roads are the roads which are under maintained and cause rutting in wash roadings and even some time of these season the road can be used most counties and entities leverage a gravel base but their maintenance has not proper and the materials like gravel graded on the roads are not that much satisfactory.



Fig.1-Unpaved Road

Paved Road-

In any country there are so many rural areas which have paved roads are a thing of luxury and can not be obtained or not even maintained in the areas required paved roads the roads become filled with cracks, holes, potholes etc. and the citizens will be dealing with the very poor condition of the road because the budget of the area is very limited. Paved roads are very expensive anywhere at the world but even more expensive in the areas because of the cost of equipment and the materials and the condition of the area.

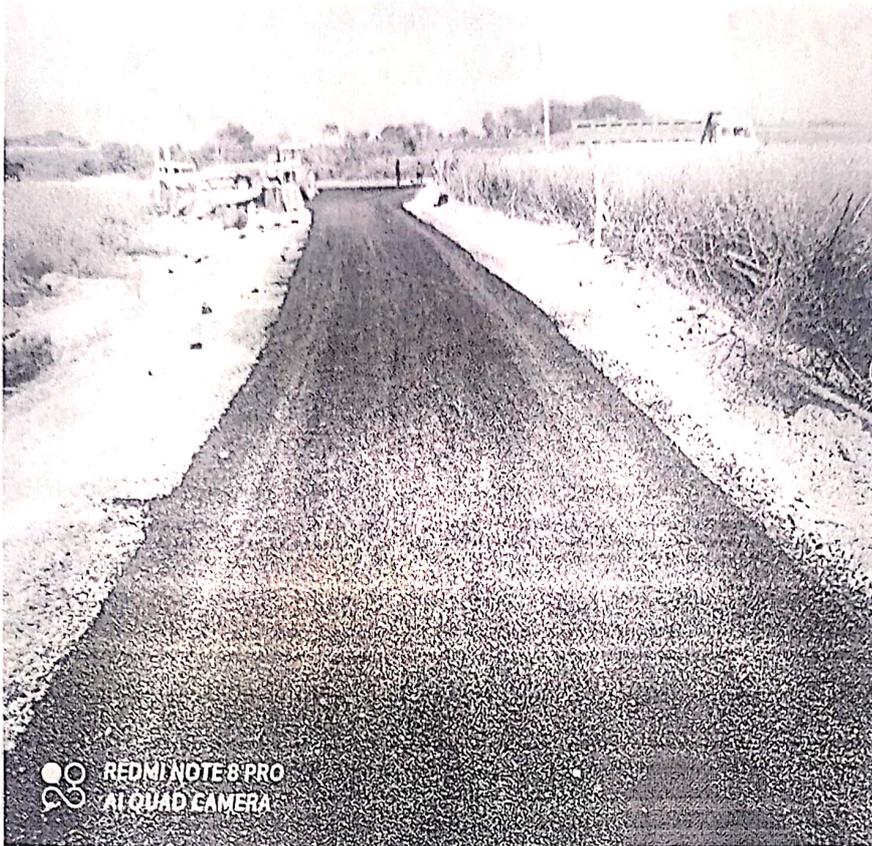


Fig.2-Paved Road

In most paved road intensive the paved road base is very expensive part of the road construction. First, the road has to be excavated and hold to other location and all material for base to hold in to the construction site in most cases the type 2 aggregate are used. The type 2 aggregate provide a very nice smooth stable base of asphalt. The asphalt provides strengths and wearing surface of the traffic.

EXCAVATIONS

Excavation is a process in construction of roads removing of soil,raw and the materials which are making us difficult to construct of the road this material are excavated or clean with the help of machines and the related tools like JCB excavators and the tools for starting another work of road like filing.



Fig.3-Excavation

GRANULAR SUB-BASE

GSB is the intermediate layer in between subgrade and WMM.

GSB is the layer in the construction of road it can be said as foundation just above the compacted soil layer. It can also be said as sub-grade of the road.

Many times when the road passes through an area where there are chances of water trying to cross the road from its foundation or where the road foundation is liable to be submerged in water. It is mandatory to have a layer of special material in foundation. Which prevents the natural ground water to reach the upper layers of road.

GSB is the very difficult material which prevents us from capillary water rising on the top of the road layer as a particle size of road is planted in such a way that the capillary action stops and cannot go to GSB.



Fig.4-GSB

Properties of GSB -

It has a property of strength to act as good base for the foundation of road where no settlement can happen even on load come on traffic.

GSB should have distribution of particles like gradation even after full it achieves its compaction tightly paved there are sufficient void between the particle and water to allow the water to pass to the capillary rise.

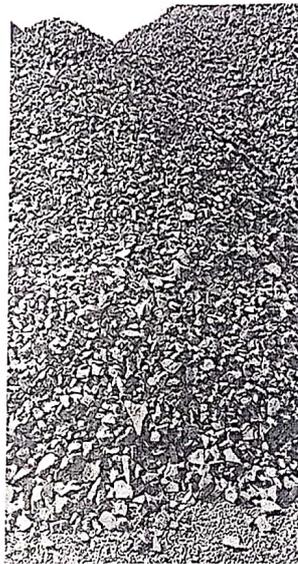


Fig. 5

CHAPTER-5

WETMIX MACADAM

Wet Mix Macadam (WMM) is the next layer after GSB on the construction of the road it is generally used as the base layer on the flexible pavement. WMM provides a uniform smooth, strong, support to the deformation and distresses. WMM consists of clean crushed, graded aggregate premixed with the other material and water.

Method of Wet Mix Macadam in the construction of road.

In the preparation of WMM (Wet Mix Macadam) is a base provision of lateral consignment of aggregate which is a proper arrangement for lateral consignment of wet mix in laying. Laying materials on the subgrade along the its layer. There are three basic processes in the preparation of WMM. Spreading of the mix, compaction of WMM and the sequence of WMM methods should be followed as described.

Laying of Wet Mix Macadam-

After mixing immediately spread properly evenly on the GSB layer.

This material should not be dumped in heaps and also not partly stretch the first layer of the WMM will be laid by grader and the second layer spread by WMM paver. There should be minimum paving of 4.5 mtr. to 9 mtr. width. There should not be segregation of material not allowed. The material of the WMM should be in uniform size with no quantity of fine material.

Compaction of Wet Mix Macadam -

After the mix macadam laying on the side there should be proper thickness of grade and camber the compaction should be carried out with suitable roller to the full depth.



Fig. 6

BITUMINOUS CONCRETE

Bituminous concrete is a material which used for paving of roads and driveways and also in parking lots. Bituminous concrete is made from blend of stones and many other forms of aggregate materials which is joined together with the help of a binding agent. This binding agent is called Bitumin and Bitumin is a byproduct of petroleum refining. It is a thickly, sticky, texture, like when tar a dense solid surface is formed after its dry. It is also known as asphalt in many parts of the world despite its name Bitumin material is also quite different than the standard concrete which contain 0% cement. Most cement concrete surfaces are white, gray other than Bitumin concrete is of black appearance.



Fig. 7-Bitumin Concrete

TACKCOAT

Tack coat is a thin layer of asphalt. Tack coat is a binding material which is used for making bonding between old and new asphalt layers. Tack coat is sticky in nature and also very important for forming a strong and secure bond between two proper layers. Tack coat is a spray in road according to the MORTH (Ministry of Road Transportation Highway) Specification. Tack coat is also known as bitumen. The waste materials which we use for tack coat are emulsions because they have diluting property. The emulsions are applied by using a spray coating system. Before this emulsion is applied, it should be diluted with water and must pass a compatibility test.

1. A very small quantity of emulsion is prepared.
2. Water is added according to the guideline.
3. This emulsion must be mixed with a spatula.
4. The emulsion should be poured through a sieve $150\mu m$.



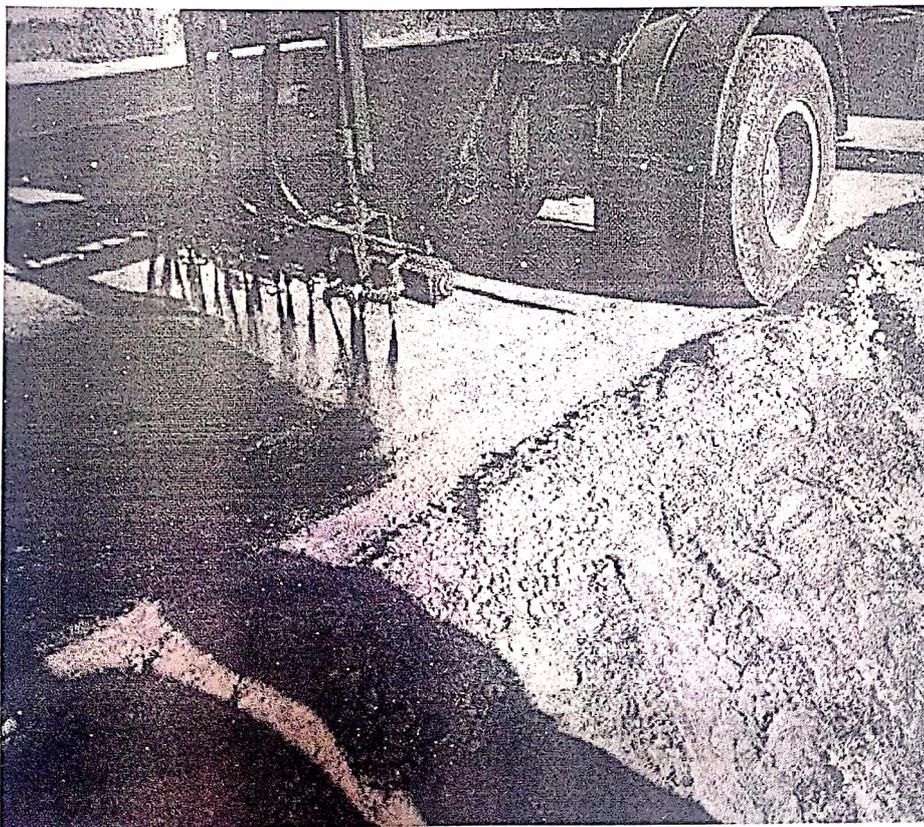
Fig.8 -Tack Coat

PRIMECOAT

Primecoat is a single coat of low viscosity liquid bituminous material. The main role of this coat is to make a bonding between DBM and WMM layer. Prime coat is used 24 hours before DBM. A prime coat is the application of a suitable bituminous binder applied to a non bituminous granular base as a treatment before the application of a bituminous surfacing.

Purpose-

- The purpose of coat is to coat and bond loose material on the surface of the road course to harden and toughen.
- It also serves the purpose of blocking capillary action in the courses so water main rises up to the asphalt layers.



CHAPTER 8

PRIME COAT

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Purpose-

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- It also serve the purpose of blocking capillary action in the course so water main arise upto the asphalt layers.



Fig. 9 - Prime Coat

ALL TESTS OF THE RURAL ROADS

Field Dry Density-

Sand replacement method is also known as Sand Cone Method. The apparatus used in this field density test consists of a sand pouring cylinder, with pouring cone at its base. There is a shutter between the cylinder and the cone. The cylinder is first calibrated to determine unit wet of sand. The sand cone test is a cost effective alternative to nuclear gauge test used to determine if density of the soil at the place of construction needs the properties of a project if corrective measurement need to be taken before the construction we take it.



Fig. 10

Bitumen Extraction Test-

It is used to determine the percentage of bitumen content present in the asphaltic pavement by cold solvent extraction. The properties of flexible pavement such as durability, compatibility and resistance from defects bleeding, ravelling and aging of flexible pavements are majority dependent on the percentage of bitumen used with the aggregate to lay the pavement.

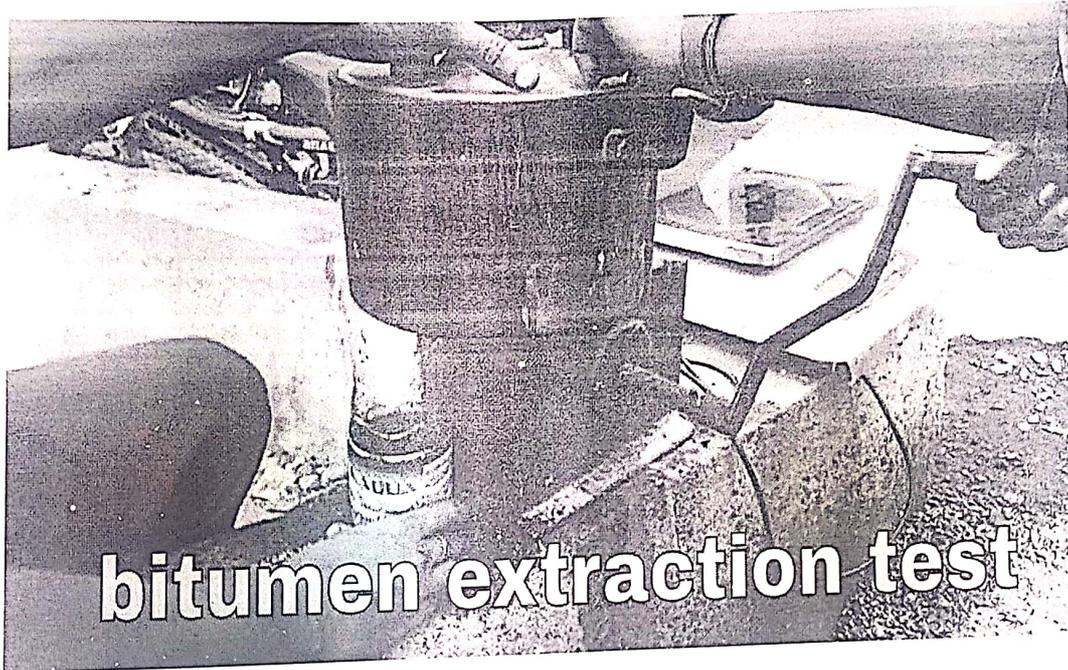
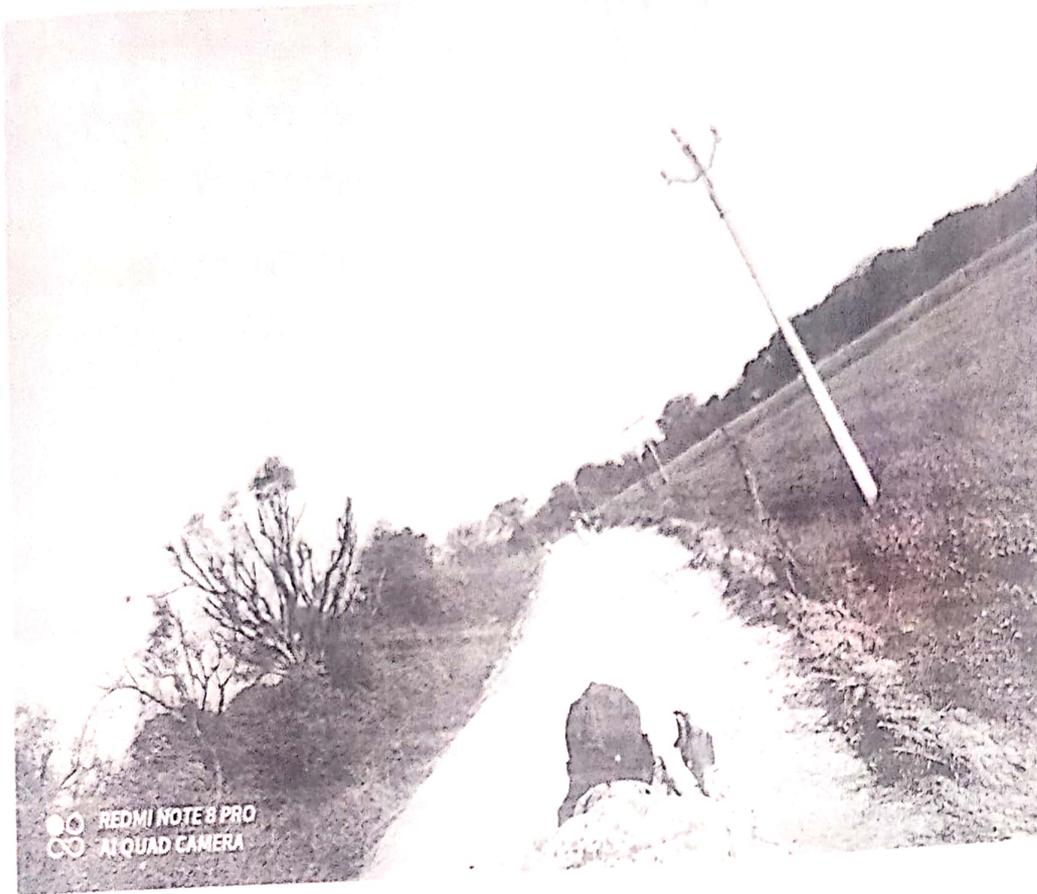


Fig.11

SITE VISIT PHOTOS









REFERENCES

1. MPRRDStaff
2. www.wikipedia.com
3. www.quora.com
4. www.google.com



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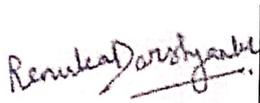
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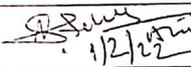
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Industry/Organization	M.P.R.D. Agency		Date/Duration	01/01/2022-01/15/22	
Criterion	Poor	Average	Good	Very Good	Excellent
Punctuality/Timely completion of assigned work		✓		✓	
Learning capacity/Knowledge up gradation			✓		
Performance/Quality of work			✓		
Behaviour/Discipline/Team work			✓		
Sincerity/Hard work				✓	
Comment on nature of work done/Area/Topic	Survey of road work, check hole slope, super-elevation & camber of road etc.				
OVERALL GRADE (Any one)	POOR/AVERAGE/GOOD/VERY GOOD/EXCELLENT				
Name of Industry Mentor	Ajay Pratap Singh Tamra Assistant manager				
Signature of Industry Mentor	- Rishabh 16/11/2022				

Receiving Date	xxxx	Name of Faculty Mentor	xxx	Sign	xxx
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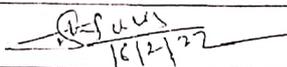
Name of student	Rishikesh Sharma		Department	Civil [CMSTS]	
Industry/Organization	M.P.R.R. D. A. Maers		Date/Duration	15/01/2022 to 31/1/22	
Criterion	Poor	Average	Good	Very Good	Excellent
Punctuality/Timely completion of assigned work		✓			
Learning capacity/Knowledge up gradation			✓		
Performance/Quality of work			✓		
Behaviour/Discipline/Team work			✓		
Sincerity/Hard work				✓	
Comment on nature of work done/Area/Topic	Super elevation, Booth work sample collection check DPR Reading				
OVERALL GRADE (Any one)	✓ POOR/AVERAGE/GOOD/VERY GOOD/EXCELLENT				
Name of Industry Mentor	A. S. Tomar Assistant manager				
Signature of Industry Mentor	 1/2/22				

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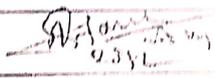
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Industry Organization	M.P.R.R.DA Meera					Date	15/02/2022
Criterion	Poor	Average	Good	Very Good	Excellent		
Punctuality/Timely completion of assigned work				✓			
Learning capacity, Knowledge up gradation			✓				
Performance/Quality of work			✓				
Behaviour/Discipline/Team work			✓				
Sincerity/Hard work				✓			
Comment on nature of work done/Area/Topic	<p>Auto Level of roads, earth work</p> <p>Survey of Road by Auto level instrument, & earth work began completion</p>						
OVERALL GRADE (Any one)	POOR/AVERAGE/GOOD/VERY GOOD/EXCELLENT						
Name of Industry Mentor	Ajay. P. S. Kumar IAS						
Signature of Industry Mentor	 16/2/22						

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Renuka Dasgupta

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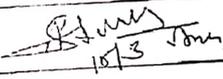
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Industry Organization	M.P.R.R.D. Morang		Date/Duration	10/05/2020 - 15/07/2022	
Criterion	Poor	Average	Good	Very Good	Excellent
Punctuality: Timely completion of assigned work			✓		
Learning capacity: Knowledge up gradation			✓		
Performance: Quality of work				✓	
Behaviour: Discipline Team work			✓		
Sincerity: Hard work				✓	
Comment on nature of work done Area/Topic	→ Conclude Report min observation ↳ Construction Machine knowledge, Panen, can be done etc				
OVERALL GRADE (Any one)	POOR/AVERAGE/GOOD/VERY GOOD/EXCELLENT				
Name of Industry Mentor	A. P. S. Tomar (P/M)				
Signature of Industry Mentor					

Receiving Date	xxx	Name of Faculty Mentor	xxx	Sign
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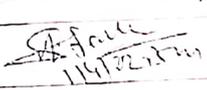
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Industry/Organization	M.P.R.R.D.A Morha	Date/Duration	1/02/2022 - 14/02/22		
Criterion	Poor	Average	Good	Very Good	Excellent
Punctuality/Timely completion of assigned work			✓		
Learning capacity/Knowledge up gradation			✓		
Performance/Quality of work			✓		
Behaviour/Discipline/Team work				✓	
Sincerity/Hard work			✓		
Comment on nature of work done/Area/Topic	Estimate of Roads, Billing of Roads works, & measurement taken.				
OVERALL GRADE (Any one)	<u>POOR/AVERAGE/GOOD/VERY GOOD/EXCELLENT</u>				
Name of Industry Mentor	A.P.S. Tomar A/M				
Signature of Industry Mentor					

Receiving Date	xxxx	Name of Faculty Mentor	xxx	Sign	xxx
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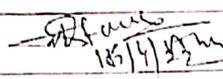
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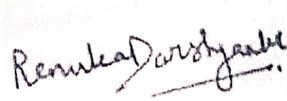
Name of student	Rishikesh Sharma	Department	Civil (MIS)		
Industry/Organization	M.P.R.R.D.A. Morang	Date/Duration	16/03/2022 to 31/5/22		
Criterion	Poor	Average	Good	Very Good	Excellent
Punctuality/Timely completion of assigned work			✓		
Learning capacity/Knowledge up gradation			✓		
Performance/Quality of work			✓		
Behaviour/Discipline/Team work			✓		
Sincerity/Hard work			✓		
Comment on nature of work done/Area/Topic	→ Filling of Measurement Book, holding Local People at site.				
OVERALL GRADE (Any one)	POOR/AVERAGE/GOOD/VERY GOOD/EXCELLENT				
Name of Industry Mentor	A.P.S. Zaman A/M				
Signature of Industry Mentor	 14/02/2022				
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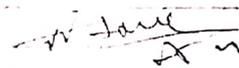
Industry/Organization	M.P.R.R.D.A. Modra		Department	Civil (MIRA)	
Criterion	Poor	Average	Good	Very Good	Excellent
Punctuality/Timely completion of assigned work		✓			
Learning capacity/Knowledge up gradation			✓		
Performance/Quality of work			✓		
Behaviour/Discipline/Team work			✓		
Sincerity/Hard work				✓	
Comment on nature of work done/Area/Topic	↳ Testing of Roady work (compaction) (density) e.t.c				
OVERALL GRADE (Any one)	POOR/AVERAGE/GOOD/VERY GOOD/EXCELLENT				
<u>Name of Industry Mentor</u>	A. S. Tomar ASM				
<u>Signature of Industry Mentor</u>					

Receiving Date	xxxx	Name of Faculty Mentor	xxx	Sign	xxx
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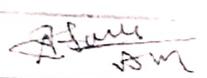
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Name of student	Rishikesh Sharma		Department	CIVIL [MIT5]		
Industry/Organization	M.P.R.R.D. A. Moring		Date	16/04/2022 to 30/04/2022		
Criterion	Poor	Average	Good	Very Good	Excellent	
Functionality/Timely completion of assigned work			✓			
Learning capacity/Knowledge up gradation			✓			
Performance/Quality of work	~			✓		
Behaviour/Discipline/Team work			✓			
Sincerity/Hard work				✓		
Comment on nature of work done/Area/Topic	↳ Measurement of Roads ↳ Section of Roads ↳ design criteria of Roads ↳ Maintenance of Roads.					
OVERALL GRADE (Any one)	POOR/AVERAGE/GOOD/VERY GOOD/EXCELLENT					
Name of Industry Mentor	A.P.S. Kumar					
Signature of Industry Mentor						

Receiving Date	xxxx	Name of Faculty Mentor	x	Si gn	x
			x		x
			x		x

Renuka Doshi

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Industry/Organization	M.P.R.R.D.A. Haveria		Date	1/05/2022 to 10/05/2022	
Criterion	Poor	Average	Good	Very Good	Excellent
Punctuality/Timely completion of assigned work					
Learning Capacity/Knowledge up gradation					
Performance/Quality of work					
Behaviour/ Discipline/ Team work					
Sincerity/Hard work					
Comment on nature of work done/Area/Topic	All the Materials Information used in Road construction and use of Plastic in Roads.				
OVERALL GRADE (Any one)	POOR/AVERAGE/GOOD/VERY GOOD/EXCELLENT				
Name of Industry Mentor	A. P. S. Temur Asst. Manager M.P.R.R.D.A.				
Signature of Industry Mentor					

Receiving Date	xxxx	Name of Faculty Mentor	x	Si	x
			x	gn	x
			x		x

Renuka Daryankar