

MADHAV INSTITUTE OF TECHNOLOGY AND SCIENCE GWALIOR

(A govt. Aided Autonomous Institute under RGPV, Bhopal (M.P) Established in 1957)



INTERNSHIP REPORT ON “RURAL ROAD CONSTRUCTION”

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

BACHELOR of TECHNOLOGY
In
CIVIL ENGINEERING

2018-2022

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क्रमांक: 667 / म.प्र.ग्रा.स.वि.प्रा / स्था. / 2022

ग्वालियर, दिनांक 24/05/2022

TRAINING/ INTERNSHIP CERTIFICATE

प्रमाणित किया जाता है कि, Shri Gaurav Sagar, Enrollment No. 0901CE181040, B.Tech (Civil Engineering), MITS Gwalior द्वारा दिनांक 19.01.2022 से दिनांक 19.05.2022 तक " ग्रामीण मार्गों के निर्माण " की ट्रेनिंग, श्री जे.पी. अरजरिया सहायक प्रबंधक के अधीनस्थ रहकर सफलतापूर्वक पूर्ण की गई है। training/internship अवधि में इनका कार्य एवं व्यवहार उत्तम पाया गया है।

मैं इनके उज्ज्वल भविष्य की कामना करता हूँ।


महाप्रबंधक

म.प्र.ग्रामीण सड़क विकास प्राधिकरण
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RECOMMENDATION

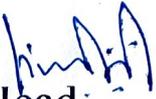
It is here by recommended that the internship report entitled - "Rural Road Construction " which is being submitted by Gaurav Sagar Completed Under the guidance of Prof. A.K. Dwivedi may be accepted in the partial fulfillment of the award of the degree of Bachelor of Technology in Civil Engineering.



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ACKNOWLEDGEMENT

The success and end result of this internship requires a lot of guidance and endorsement from many people and I am fortunate to get all of these throughout my entire internship project.

I was able to accomplish this project only with such assistance and supervision and therefore, I will never forget to thank them.

I am eternally grateful to my renowned guide, **Prof. A.K. Dwivedi** Assistant Professor of Civil Engineering Department, MITS Gwalior.

Also, I would like to thank **Dr. M.K. Trivedi**, 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. I also acknowledge with gratitude to our supporting **Mr. VIKRAM RAJPUT SIR** for providing the facilities needed for the accomplishment of this internship..

I am also thankful to Staff of M.P.R.R.D.A GWALIOR for their corporation with me in facilities the infrastructure and lab facility during my work.

I am extremely great full to my department staff members and friends who helped me in successful completion of this internship.



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ABSTRACT

Road plays a great role in day to day life Rural Road construction is very essential for transportation in villages . We had studied about various types of construction materials and different types of lab tests were performed on the types of material and their strength were found out using various methods. Different Samples were brought from different villages roads and they were tested in labs for checking their stability and if they will sustain the load or fail.

The village named PAWAYA were road construction was already going on. We had designed 3KM long road of cement concrete. The Grade of concrete is used in RCC road is M25 and grade of concrete used in PCC Road was M30. The road is designed for village and is capable of fulfilment of the requirements of the villages .

ABSTRACT (In hindi)

सड़क दैनिक जीवन में एक बड़ी भूमिका निभाती है ग्रामीण सड़क निर्माण गांवों में परिवहन के लिए बहुत आवश्यक है। हमने विभिन्न प्रकार की निर्माण सामग्री के बारे में अध्ययन किया था और सामग्री के प्रकार पर विभिन्न प्रकार के प्रयोगशाला परीक्षण किए गए थे और विभिन्न विधियों का उपयोग करके उनकी ताकत का पता लगाया गया था। अलग-अलग गांवों की सड़कों से अलग-अलग नमूने लिए गए और उनकी स्थिरता की जांच के लिए प्रयोगशालाओं में उनका परीक्षण किया गया और क्या वे लोड को बनाए रखेंगे या असफल होंगे। PAWAYA नाम के गांव में पहले से ही सड़क निर्माण चल रहा था। हमने सीमेंट कंक्रीट की 3KM लंबी सड़क डिजाइन की थी। प्रयुक्त कंक्रीट का ग्रेड M25 RCC , PCC, M30 है। सड़क गांव के लिए बनाई गई है और गांवों की जरूरतों को पूरा करने में सक्षम है।

List of Abbreviations

MDD.....	Maximum Dry Density
OMC.....	Optimum Dry Density
CBR.....	California Bearing Ratio
CC.....	Cement Concrete
BCT.....	Bitumen Content Test
IS.....	Indian Standard
SCT.....	Slump Cone Test
PCC.....	Plan Cement Concrete
RCC.....	Roller Compacted Road

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'INTRODUCTION'

1.1 General

Road plays a great role in day to day life. Rural Road construction is very essential for transportation in villages. We had studied about various types of construction materials and different types of lab tests were performed on the types of material and their strength were found out using various methods. Different Samples were brought from different villages roads and they were tested in labs for checking their stability and if they will sustain the load or fail. Looking at the INDIAN road network, That total expenditure in the ministry of roads transportation or highway for 2022-2023 is estimating at RS. 1,99,108 crores. This is the 52 % higher than the revised estimates for 2021-2022 allocated RS. 108,230 crore.

It is further seen that the roads are very necessary for our day to day life of human livings and it should be available in every part of our country from even small streets to express ways.

OBJECTIVE

Under MPRRDA(GWALIOR), we construct rural roads. As per IRC village road are construct under rigid pavement(cc road) because the water level in soil or moisture is high in village roads. cThe purpose of a transportation system is to serve the consumer via imparting accessibility to land areas and mobility among favored origin/destination (o/d) points. therefore, rural transportation development plans should support and be compatible with the sports of other sectors associated with rural development, which includes the rural, water deliver, irrigation, electrification, fitness, family-making plans, schooling and agro-based business sectors. As a subsector of the transportation zone, rural transportation basically conforms to universal transportation sectoral desires which take into consideration sectoral interdependencies.

MDD OR OMC

OBJECTIVE OF MDD:-

In most dry density we can discover water content at which the soil attains most. So we are able to removed number of voids.

OBJECTIVE OF OMC:-

In optimum moisture content we can findd how a great deal the water content material present within the soil. by means of the oven dry methhod.

APPARATUS REQUIRED:-



FIG. 1:-PROCTOR MOULD

Metal mould (volume = 1000cm^3 for 100mm diameter mould and volume = 2250cm^3 for 150mm diameter mould (as per IS: 10074-1982).



FIG. 1.2:- RAMMER

(Weight:- 2.8kg) or (Weight:- 4.9kg).



FIG. 1.3:- WEIGHT BALANCE.



FIG. 1.4:- SIEVES



FIG. 1.5:- OVEN

Thermostatically controlled to maintain temperature between 1050 to 1100C.



FIG. 1.6:- AIR TIGHT CONTAINER

Taking sample to determine content of water in sample.

Process:-

- 1) Take a consultant part of air-dried soil large enough to offer approximately 5 kg of fabric passing 20mm IS sieve.
- 2) .in our case we are including four% of water and increasing by means of 2-2% of water



FIG. 1.7 MIXING WATER WITH SOIL

- 3) Weight the mildew with the baseplate attached in close one gm and record the weight as W_1 . attach the mildew to the extension collar Compact the moist earth into the mildew

in 5 layers of roughly equal masses and every layer receiving twenty five blows from a height of 450mm on the soil with a forty nine kg rammer.

- 4) The blows should be evenly dispersed throughout the surface of each layer.
- 5) The operator must keep the rammer's tube clean and clear of soil so that it may continue to fall freely.
- 6) Remove the extension collar and carefully stage the pinnacle of mould using straightedge when the compaction operation has reached its pinnacle brilliance.
- 7) Weigh the mould with the compacted earth to the nearest 1 gramme and write W₂ down.

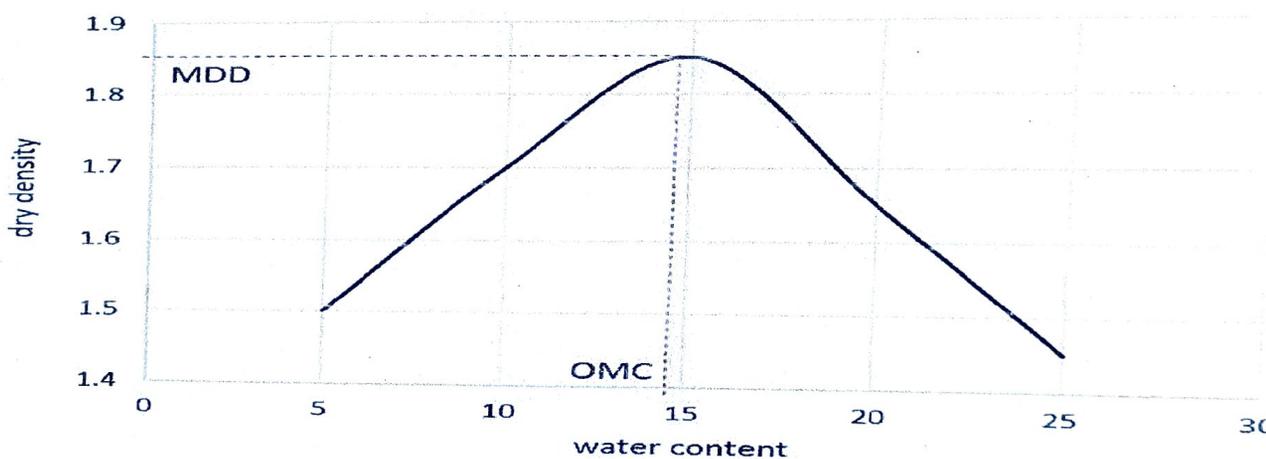


FIG. 1.8 COMPACTION OF SOIL

8) Remove the compacted dirt from the mold, set it on the mixing tray. find out how much water is in a representative sample of the material

'M' stands for water activity. Damage the remaining soil and repeat Steps (iii) to (v) above, adding a two percent increase of water to the soil each time.

9) Using the procedures above, we'll create an acceptable graph for maximum moisture content.



10) After the finishing touch of mdd. we are weight the all five empty air box. The fill the box through above soil. And put in at oven for 24hours at a 105 degree TEMPERATURE.

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MDD-OMC TEST
 (AS PER IS - 2720 PART-VII & VIII)

Name of Road :-
 Date of Testing :- 22.02.2022
 Weight of sample taken :- 6000 gm.
 Location :-
 Name of Block:- Bhitawar
 Contractor Name:-
 Package No:-
 Type of Material:- Select Soil material

Sr. No.	PARTICULARS	UNIT	1	2	3	4	5	6	7	8
1	Wt. Mould + Compacted soil	Gms.	15938	16048	16246	16391	16656	16520		
2	Wt. Mould	Gms.	11631	11631	11631	11631	11631	11631		
3	Wt. Compacted soil(1-2)	Gms.	4307	4417	4615	4760	5025	4889		
4	Volume of Mould	CC	2250	2250	2250	2250	2250	2250		
5	Wet Density (3/4)	gm/cc	1.914	1.963	2.051	2.115	2.233	2.172		
6	Container No.	Nos	1	2	3	4	5	6		
7	Wt. of Container	Gms.	14.90	15.30	15.30	15.50	15.10	15.50		
8	Wt. Container + Wet Soil	Gms.	65.30	61.80	59.10	63.60	63.90	63.90		
9	Wt. Container + Dry Soil	Gms.								
10	Wt. Water (8-9)	Gms.								
11	Wt. Dry (9-7)	Gms.								
12	Moisture Content(10/11x100=w)	%								
13	Dry Density (5/1+w)/100	Gm/cc								

MDD OMC gm/cc %

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FIG. 1.9 MDD- OMC TEST REPORT

BITUMEN CONTENT TEST

AIM OF THE TEST:-

Using a cold solvent extraction method, determine the amount of binder (bitumen) in asphalt blend.

APPARATUS REQUIRED:-



FIG.2.1:BITUMEN
EXTRACTOR

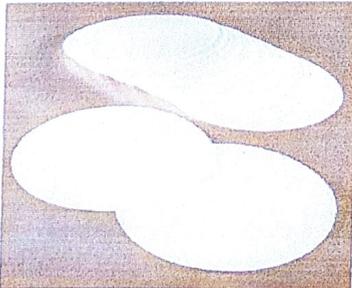


FIG. 2.2:- FILTER PAPER



FIG. 2.3:- 1L PETROL

PROCEDURE OF TEST:-

- Measure 500 grammes of the representtative sammple and place it in the extractiion apparatus' bowl (W1).
- Fill the sample with fuel until it is completely immersed.
- Dryen and weight the clear out papers before placing it onto the sample bowl in the extraction device (B).
- Clampp the bowl's duvet securely.
- Place a beakker beneath the drainage pipe to collect the liquid.
- The solvent has been given enough time (no more than an hour) to compress the pattern before entering the centrifugge.
- Start the centriffuge cautiously and gradually increase the speed to the maximum.
- Continue at the same speed until the solvent stops flowing from the drainpipe.
- Spin the centrifuge until all of the bitumen and benzene is gone.

- Turn off the machine, remove the duvet, and pour 200ml of petrol over the cloth in the extraction bowl; the extraction is completed using the same method as before.
- Repeat steps one through three until the extraction is clear and no longer darker than a light straw hue.
- collect the material from the extraction device's bowl, together with the filter paper, and dry it to a stable weight in the oven at 1050 C to 1100 C, then cool to room temperature.
- Weigh the substance (W2) and the filter out paper (D) separately to a precision of 0.01 grammes each.

CALCULATION:-

The formula to calculate the percentage of binder content is given by-

$$= \frac{W1 - (W2 + W3)}{W1} \times 100$$

RESULT:-

The average percent of Binder content material inside the given Bitumen blend = _____%

CBR TEST

OBJECT:-

California bearing ratio check is a penetration tests for determining the sub-grade electricity of roadss .

The results of such tests are combined with empiricel curve to calculate the tpavement thickness and its component layers.

This is the most often used approach for flexible pavement design.

The practise sheet outlines the laboratorey procedure for determining the C.B.R. of undisturbed and remoulded/compacted soil specimens, both wet and unsoaked.

APPARATUS REQUIRED:-

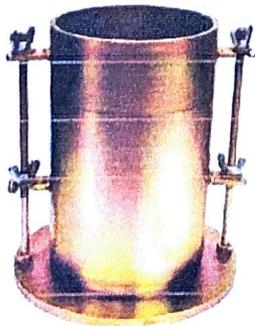


FIG. 3.1:- CBR MOULD.



FIG. 3.2:- RAMMER.



FIG. 3.3:- CBR TEST MACHINE.

STANDARD LOAD VALUES AT PENETRATION:-

PENETRATION PLUNGER	OF	STANDARD LOAD
2.5		1370KG
5.0		2055KG

PROCEDURE:-

Test Specimen Preparation:

1) Compaction is used in the laboratory to make remoulded specimens.

The fabric used to remould the specimen must pass through a 20mm filter.

Allowance for oversize material is made by substituting an equal piece of cloth that passes a 20mm i.e. SIEVE but is kept on a 4.75mm sieve.

2). For a remoulding, the dry density will be the field density or the cost of the greatest dry density predicted by the compaction test. The most efficient moist content material will be used for compaction. most efficient moist content material will be

used for compaction.



3). A soil consultant sample weighing around four.fivekg or more, for suitable graine soil sand 5.5kg oremore for granulr soil must taken and well mixed with water.

Compacted soild for mdd on the highest moisture content, a sufficient amount of water must be injected such that the water content material of the soil sample matches the highest moistureecontent determined.

4). Restore the mildew to the extensionecollar and base plate.

At the top of the space disc, place the filteing paper.

5). Apply Lubricatings Oil/grease to the mold's inside surface.

In the combination earth, compact it.

6). Remove the extension collar and cut the compacted dirt in a straight line at the level of the-mold's apex.

Any holes created on the surface of the compacted soil as a result of the coarse material being removed should be mended with a smaller size cloth.

Remove the perforated base plate, Spacer disc, and cleared paper, then weigh the mould and compacted soil samples.

Invert the mould and compacted soil, then attach the perforated base plate to the mould with the compacted soil touching the filter paper.



7). Cover the specimen with filter paper and place a perforated plate over the compacted soil specimen within the mould. placed annular weights to provide a surcharge of the same weight as the foundation material and pavement, to the nearest 2.5 kilogramme

8). Soak the mould assembly and weights in a tank of water for 96 hours.

Install the expansion measuring instrument on the mould's edge and submit the results of the initial dial gauge investigation.

Keep track of your readings every day as you get closer to the reading time.

Throughout the length of the tank, a constant water level will be maintained.

9). At the end of the soaking period, note the dial gauge's final analysis and remove the mould from the water tank.

10. Remove the perforated plate as well as the pinnacle filter paper.

File the burden after weighing the saturated soil pattern.



PROCESS:-

1. Place the mould meeting with the test specimen on the lower plate of the penetration testing instrument.

To avoid upheaval of dirt into the hollow of the surchargee weighted, a two and five kilogram angular weigh will be installed on surface of soil before seating the plunger to penetrate, followed by the rest of the surchargee weighted.

2). Place the penetration piston in the middle of specimens by least feasible load not more than four kilogrammes, to ensure total contact with the sample.

three).

Set the deformations and weighting gauges to 0.

Apply pressure to the piston until the penetration rate reaches 1.25 millimeter/minute.

4) Record the load data at zero penetrations.

5. zero, 1. five, 2.0, 2.5, 4.0, 5.0, 7. five, ten, and twelve millimetres

5) Detach the mold from the equipments of loading by boosting the plunger.

Determine the moisture content of roughly 20-50 gm from top of 30 millimeter of soil.

CALCULATION:-

If the first section of the curve is concave upwards, make the necessary corrections by drawing a tangent to the curve at the optimal slope factor and shifting the foundation.

Find the ideal load reading for each penetration and report it.

$C.B.R = PT \text{ DIVIDED BY } PS \text{ (} PT/PS \text{) \%}$.

Test for C.B.R. (IS: 2720 – Part 16)

Name of Road
 Sample Location
 Source of Material
 Capacity of Proving Ring 30 KN KN
 Package No.
 Date of Costing
 Date of Testing
 Value of one divn 5.56 kg

Time of penetration @ 1.25 mm/Min.	Penetration in mm	Proving ring Reading		Load Intensity (kg/cm ²) (A) x One divn. Value area of Plunger		Corrected Load Intensity (kg/cm ²)		Standard Load Intensity (kg/cm ²) (D)	Unsoaked / Soaked C.B.R. (%) C x 100 / D		Average C.B.R. (%)	
		(A)		(B)		(C)			Std.	(E)		
		I	II	I	II	I	II			I		II
0-0	0.0	0		0		0						
0-24	0.5	12		71.52		3.64						
0-48	1.0	25		140.0		7.59						
1-12	1.5	33		196.68		10.07						
1-36	2.0	40		238.40		12.15						
2-0	2.5	45		268.20		13.66	70		19.56%			
2-24	3.0	50		298.0		15.18						
3-12	4.0	55		327.80		16.68						
4-0	5.0	63		375.48		19.13	105		18.22%			
6-0	7.5	75		447.00		22.77						
8-0	10.0	87		518.52		26.49						
10-0	12.5											

Av. C.B.R. at 2.5 mm penetration : ... 19.56 (%)
 Av. C.B.R. at 5.0 mm penetration : ... 18.22 (%)

Layer	Value	Permissible Limit	Whether Confirms to the press cribbed limits (Yes/No)
H/S	19.56	> 12.00	Yes

Tested by Team Leader Checked by

Back Calculation -
 2.5 MM - $19.56 / 70 \times 19.625 \% \cdot 5.36 \% \cdot 100 = 45$
 5 - MM - $18.22 / 105 \times 19.625 \% \cdot 5.36 \% \cdot 100 = 37$

SLUMP CONE TEST

AIM:-

Workability Concrete has a far broader and deeper meaning than the equivalent term consistency, which is sometimes used interchangeably with workability.

Consistency is time span for describing the degree of fluidity or movement.

The following characteristics aid concrete in having a higher lubricating effects in order to minimise internal frictions and aid smooth compaction:

(a) Material with a high water content (b) mixture

Proportions (c) aggregate size (d) aggregate shape (e) aggregate floor

Aggregate texture (f) Combination grading (g)

Admixtures are used.

Droop testing is the most widely used method of determining concrete consistency, and it may be performed in a laboratory or on the job site.

In addition to the slump value, it denotes a particular property.

Proper droop occurs when concrete slumps arbitrarily.

Shear hunch is what happens when one-half of a cone slips down.

The droop fee is calculated as the difference in height between the mould height and the average value of the sinking in the case of a shear hunch. t'

Required Instruments:-

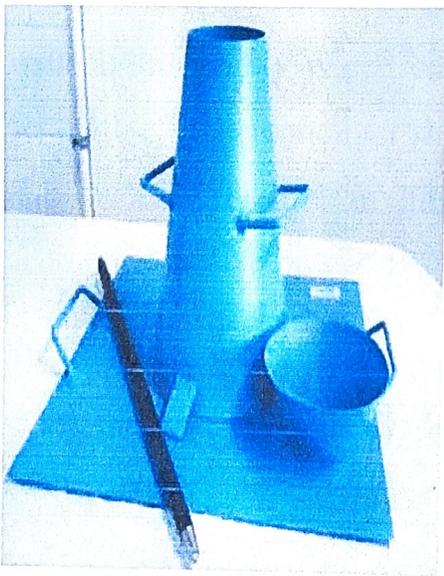


FIGURE. 4.1:- SLUMPCONE

The stoop Cone apparatus for engaging in the droop check essentially consists of a steel mold within the shape of a frustum of a cone having the internal dimensions as : backside diameter : 20 cm, pinnacle diameter : 10 cm, peak : 30 cm and the thickness of the metallic sheet for the mildew need to not be thinner than 1.6 mm. The droop Con equipment long by Tampered (sixteen mm(milim) in dia. , 600 mm(milim) lengthe.

Procedure:-

1. The pattern mixed concrete will be acquired if this examination is done in the field.

If the concrete contains a mixture with a maximum length more than 38 mm, it will be moist-sieved through a one-and-a-half-inch screen to remove mixture particles larger than 38 mm.

2. Before beginning the examination, the interior surface of the mould will be thoroughly wiped clean and free of excess moisture and any set concrete. The container should be securely kept in position while it is being filled on a clean, horizontal, stiff, and non-absorbent surface, accompanied with a well levelled iron plate.

three. The mildew will be jammed into four layers, each about one-quarter of the mold's height. Every layer will be tamped with twenty-five strokes of the tamping rod's rounded end.

4) The strokes must be evenly dispersed over the mold's cross-phase, and the second and succeeding layers must penetrate into the underlying layer. For the duration of its depth, the bottom layer will be tamped. Following the rodding of the pinnacle layer, the concrete will be knocked off level using a trowel or tamping rod to ensure that the mildew is perfectly stuffed.

5. Using screeding and the rolling action of the tamping rod, strike off the surface of the concrete after the top layer has been rodded.

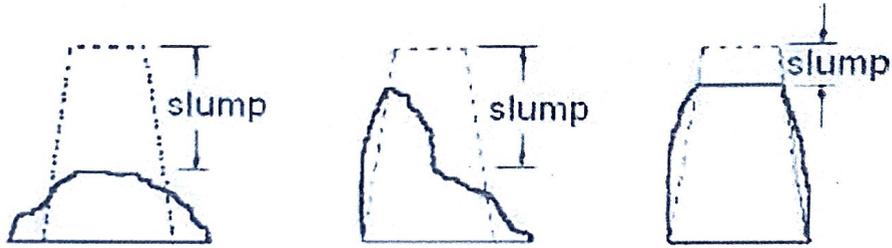
6. Wipe away any mortar that may have spilled out between the mould and the bottom plate. The mould will be removed from the concrete as soon as possible by gently and precisely lifting it in a vertical course. This helps the concrete to settle, allowing the hunch to be measured quickly.

7. The foregoing processes will be performed in a vibration-free and shock-free environment within two minutes after sampling.

RECORD AND OBSERVATIONS:-

WORKABILTY	COMPACTION FACTOR	SLUMP(in cm)
VERY LOW	0.78	0-25
LOW	0.85	25-50
MEDIUM	0.92	50-100
HIGH	0.95	100-175

The pattern of slump is shown True Slump/Shear Slump/ Collapse Slump.



Collapse

Shear
Types of slump

True slump

COMPRESSIVE STRENGTH TEST

FOR CONCRETE

OBJECTIVE:-

This check provide us an concept about all the traits of concrete. With the help of this take a look at we will chweck the whetjher or not Concrete is been finished well or now no.andcompressile power is the capablility of materials/ shape for holding masses lessen the scale, whilst in tensison, length elongated.

Then cube is typically examined at seven& twenty eight days till the results exams is reqd and electricity in concrete growth with time showe in under desk in followng :

AGE	STRENGTH IN PERCENT(%)
DAY-1	16 PER.
DAY-3	40 PER.
DAY-7	65 PER.
DAY-14	90 PER
DAY -28	99 PER.



FIG. 5.1:- CTM MACHINE



FIG. 5.2:- CUBE MOULD (150mm * 150mm)

Process:-

1). easy the moulds nicely and also follow oil/grease within the frame of cube .

2). Moulds should be filled about 50 millimeter thickness layer by layers.

three). Each layer must be compacted with tamping rode (metal road of dia. 16mm and length 600mm).

4). Smooth the floore and degree it with the help of trowel.

five). Remove the cubes from the molds among sixteen too seventy two hrs, commonly thiss executed after the period of 24 hrs. take away specimen out of water and then remove excess water from it .Note the measurement from specimens till closest 0.2 millimeter..

6). follow a weight steadily with out surprise and constantly at the price of one hundred forty kilogram/cm/minutes. until the specimens fail.

7). Take out the max-m load and enter it in notes.

Note:-

- 1). Cubes are removed from the mould among 16 to seventytwohours , basically performed in every 24hrs.
- 2). Smooth floors are provided at6 the top .
- three). It is poureed inside the mold and well temopered . so that again no voids enter in the dice.
- 4). those specimens are examined by way of compressionn test of gadget .by seven or twentyeightday ,curing.
- five). The cubes needed to blanketed by a humid piece ofcloth and a sheets of plastic.
- 6). The tank should be functioned in the temperature b/w 20+-2 tiers also it should give humid environmental to cubes.
- 7).Pressure need to get implemented step by step on the rate of a hundred and forty kilogram/cm2/minute untill thee Specimen get failed. Force divided by region of specimens offers the concrete COMPRESSIVE(fck) STRENGTH .
- 8). Curing Water should be investigated in every seven day .Water should be at temperature of 27 C(+20).
- 9). minimal 3 specimen have to bee examined in eacheselectetive ages. In case of electricity varies of specimenwwith the aid of extra fiveteen % of an average power, outcomes of these specimens ought to get rejected by it. common of ththree specimen results in crushing of concrete of electricty.

CEMENT CONCRETE ROAD

Road having their sporting surface including cement concrete slab are referred to as as cement concrete road. Cement concrete roads are taken into consideration as most serviceable and inflexible pavements.



Starting from botom such roads consist of below :

- . Subgrade
- Subbase
- Concrete Slab

Advantages of Cement Concrete Road:-

- 1). life of such street is greater.
- 2). Such roads provide an impervious layer. cement
- three). Cement concrete roads are sturdy and durable and are unaffected a lot with the aid of weathering agencies.
- 4). They give accurate visibility at night.
- five). Cement concrete roads offer dustless and sanitary floor.
- 6). Cement concrete roads do not show corrugations and consequently it presents noiseless floor.
- 7). it may be designed more appropriately for load distribution.
- eight). Cement concrete roads are nearly unaffected with the aid of weather and temperature.
- nine). it's more feasible to make use of vintage concrete as a basis for brand new concrete street or for bituminous street.

Disadvantages of Cement Concrete Road:-

- 1). throughout rains, the water collects on the surface of the bays which are not constructed.
- 2). more time is required in completion of work in it.

three). It calls for massive quantity of transverse joints.

four). The development is unfavourable over the entire width of roads pavement and because of which the site visitors had to be completely diverted.

PCC ROAD:-

Plain cement concrete is the mixture of cement, first-rate combination (sand) and coarse mixture without metal. % is an critical factor of a construction that's laid at the soil surface to avoid direct contact of reinforcement of concrete with soil and water.

RCC ROAD:-

Roller compacted concrete (RCC) is a difficult, durable kind of concrete pavement this is well desirable for heavy business packages, as well as low-velocity roads and arterial roads. Roller compacted concrete attracts its call from the development practices used to area and end the fabric.

Preparation of Sub-grade or Sub base

SUBGRADE:-

1) The natural soil on which the concrete slab is poured is known as the sub-grade.

2) It has been thoroughly cleaned, shaved, and levelled.

three).

It is then cleaned and graded to the necessary grade and profile.

four).

It should be obvious that the sub-grade contains consistent energy over its whole width.

5). If any neighbouring vulnerable locations are located, they must be removed and strengthened with the use of fresh compacted earth.

SUBBASE:-

1). whilst the sub-grade is not very firm, a sub-base over the sub-grade is provided.

2). relying upon the kind of soil, design load, depth of water and financial consideration, the choice for providing the sub-base is taken.

The sub-base serves the following 3 functions :

1). It gives a capillary cut-off and the damage because of dust pumping is prevented.

presents a strong supporting layers.

2). It reduces the thickness of concrete slab and hence results in decrease value of construction.

The sub-

base can also include some of the subsequent layers :

1). A layer of nicely graded soil-gravel mixture of most thickness 15 cm.

2). Brick soiling with one layer of W.B.M. of most general thickness 10 cm.

three). layers of W.B.M. of most general thickness 15 cm.

four). A layer of lean cement concrete of most thickness 10 cm.

while sub-grade soil could be very terrible, the sub-

base must be located over a blanket of a few granular cloth or stabilized soil.



FORMS PLACING IN CC ROAD:-

- 1). The bureaucracy made from metal or timber.
- 2). The steel forms are of moderate steel channel sections and their intensity is equal to the thickness of the pavement.
- 3). Forms are properly braced and glued to the ground by stakes.
- 4). Forms are fixed in function by means of three stakes at an interval of each 3 m length.
- 5). While the forms are fixed, they have to be checked for their trueness.
- 6). The maximum deviations permissible in the vertical direction is 3 mm and in horizontal direction five mm in 3 m duration of the shape.

7). The paperwork are oiled earlier than putting concrete in them.



Batching of Materials and Mixing

- 1). After figuring out the proportions of elements for the Concrete blend, the quality and course aggregates are nicely proportioned via weight in weight-batching plant.
- 2). they're then fed into the hopper at the side of important quantity of cement which is likewise measured by means of weight.

three). The components of concrete are jumbled in right proportions in dry country. the integration must rather be done in a concrete mixer.

4). The measured amount of water is introduced in order that the desired water cement ratio is received.



PLACING AND TRANSPORTATION OF CONCRETE:-

1). After blending, the concrete is transported to the work site in wheelbarrows or in pans which can be manually carried.

2). The blended concrete is deposited swiftly at the sub-grade in layer of thickness now not more than 50 mm to 80 mm or approximately two or three instances the size of aggregates.

three). The concrete should be located over the entire width of bay in successive batches as a non-stop operation and topmost layer is laid approximately 10 mm higher than the real profile for further tamping.

4). The pinnacle layer must additionally be laid to the desired camber and gradient, whilst putting the concrete it's far roded with suitable device to dispose of voids.

5). Segregation of concrete is prevented at some point of transportation and setting. when reinforcement has been laid out in avenue slab, concrete is positioned in two degrees.

6). In first level, concrete is positioned and compacted to the depth similar to in level of r/f proven in the drawings.

7). R/F is placed at the top of concrete (compacted) and then rest thickness of slab is afterwards finished in the second degree.

'COMPACTION OF CC ROAD'

Compaction happens while particles are pressed together to reduce the air area among them.

We use the use of inner vibrator that's also is aware of as tube vibrator for high-quality compaction of cc street or reduce number of air voids.



Floating

- 1). After the compaction, the hole slab surface is floated longitudinally with the wooden flow board.
- 2). The reason of floating is to offer a good surface free from corrugations..



Belting

- After floating, the surface is in addition completed by using belting simply earlier than the concrete end up hard.
- . The operation is omitted once in the tests.

'BROOMING'

- .After belting, brooming is done from facet to side with drawing brushes at right angled to the avenue's central line.
- 'Brooming' is done just before 'concrete' hardens. into non-plastic.
- The operation is likewise every so often ignored.

‘EDGING’:-After broomming, the rimms of slabs are carefully completed with an ‘edging’ device until the concrete is in the end process of setting.



CEMENT CONCRETE CURING

-).Curing include checking losses in water from the concr. slab, and retaining the concrete slab wet all through harden length.
-).initial curing is completed for 24 hrs.
- With aid of this time, the concrete will become tough sufficient to walk upon and then moist mats are removed and final curing achieved for two to three weeks.

Final curing:

- Sand bage technique.
- Ponding approach.
- by using masking the slab with four to eight centimeter thickness layer of sand or soil.
- Spraying appropriate chemical together with sodium or calcium chloride on concrete surface.



CASE STUDY

Road Construction Plays a important role in development in our country. We had started learning about the various types of layer of road .

After that we studied about various types of material available and the materials that are essential for road construction. We performed various Lab Tests like C.B.R Test , Bitumen Extractor Test , MDD OMC Test etc...

Road having their carrying floor together with cement concrete slab are known as ceement concrete avenue.

In Pawaya Village CC Road construction was undergoin. There we created approx.. 3 Km long road in the village. The Rigid Pavement was given on surface and road construction work had started.

The Grade of concrete is used in RCC road is M25 and Grade of concrete used in PCC was M30.

CONCLUSION

Conclusion is that this training became beneficial for use. We've a whole lot of level in approximately avenue kind and its traits in addition to village road connection. we've got knowledge Indian street codes. we have understanding approximately Pradhan Mantri Gram Sadak Yojana. we have knowledge about MPRRDA. we have understanding about village street condition. we've got knowledge approximately road creation fabric like SOIL & AGGREGATES. SO, those a hundred and twenty days were golden duration of lifestyles via which I realize that, what is CIVIL.

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S.K*Khanna* and C.E.G *Justo* and A.Veeraragavan.

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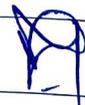
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Industry/Organization	MPPRDA, GWL		Date/Duration	19/1/22 - 2/2/22	
Criterion	Poor	Average	Good	Very Good	Excellent
Punctuality/Timely completion of assigned work				✓	
Learning capacity/Knowledge up gradation				✓	
Performance/Quality of work				✓	
Behaviour/Discipline/Team work				✓	
Sincerity/Hard work				✓	
Comment on nature of work done/Area/Topic	CC Pavement				
<u>OVERALL GRADE (Any one)</u>	<u>POOR/AVERAGE/GOOD/VERY GOOD/EXCELLENT</u>				
<u>Name of Industry Mentor</u>	J. P. Arjaria, AM, MPPRDA, Gwalior				
<u>Signature of Industry Mentor</u>	 (J.P. ARJARIA) Asstt. Manager				

Receiving Date	Name	Faculty Mentor	Sign
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Punctuality/Timely completion of assigned work				✓	
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Performance/Quality of work				✓	
Behaviour/Discipline/Team work				✓	
Sincerity/Hard work				✓	
Comment on nature of work done/Area/Topic	Various test done in lab like soil testing				
<u>OVERALL GRADE (Any one)</u>	✓ <u>POOR/AVERAGE/GOOD/VERY GOOD/EXCELLENT</u>				
<u>Name of Industry Mentor</u>	J.P. Arjaria, Asst. MRRDA Gwalior				
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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	Various test done in lab like MDD-OMC test, CBR test, Retention extraction test. Visited site several times (Pawaya village)				
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Asstt. Manager

MPRRDA, PIU - Gwalior

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Behaviour/Discipline/Team work				✓	
Sincerity/Hard work				✓	
Comment on nature of work done/Area/Topic	Various but done & visited site many times.				
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<u>Name of Industry Mentor</u>	J. P. Arjaria, Am, MPRRPA				
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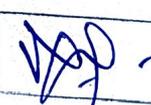
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Behaviour/Discipline/Team work				✓	
Sincerity/Hard work				✓	
Comment on nature of work done/Area/Topic	cc Pavement & Soil Testing				
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Learning capacity/Knowledge up gradation				✓	
Performance/Quality of work				✓	
Behaviour/Discipline/Team work				✓	
Sincerity/Hard work				✓	
Comment on nature of work done/Area/Topic	visited various sites				
<u>OVERALL GRADE (Any one)</u>	✓ <u>POOR/AVERAGE/GOOD/VERY GOOD/EXCELLENT</u>				
<u>Name of Industry Mentor</u>	MPPRRDA. PIU-Gwalior				
<u>Signature of Industry Mentor</u>	 (J.P. ARJARIA) Asstt. Manager MPPRRDA, PIU-Gwalior				

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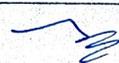
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Punctuality/Timely completion of assigned work			✓		
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Performance/Quality of work				✓	
Behaviour/Discipline/Team work				✓	
Sincerity/Hard work				✓	
Comment on nature of work done/Area/Topic	Various Lab tut Done				
<u>OVERALL GRADE (Any one)</u>	POOR/AVERAGE/GOOD/VERY GOOD/EXCELLENT ✓				
<u>Name of Industry Mentor</u>	MPRRDA, PIU-Gwalior				
<u>Signature of Industry Mentor</u>	 (I.P. ARJARIA) Asstt. Manager MPRRDA, PIU-Gwalior				

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Punctuality/Timely completion of assigned work			✓		
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Performance/Quality of work				✓	
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Sincerity/Hard work				✓	
Comment on nature of work done/Area/Topic	Various Soil Testing on field				
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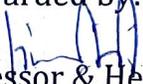
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