

ROAD CONSTRUCTION AND MAINTENANCE WORK

**A
PROJECT REPORT**

submitted in partial fulfillment of the requirements for the Degree

of

BACHELOR OF TECHNOLOGY

IN

CIVIL ENGINEERING

Under the supervision

of

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By

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to



**JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY
WAKNAGHAT SOLAN-173234
HIMACHAL PRADESH INDIA
MAY- 2023**

STUDENT'S DECLARATION

I hereby declare that the work presented in the Project report entitled “**ROAD CONSTRUCTION AND MAINTENANCE WORK**” submitted for partial fulfilment of the requirements of the degree of Bachelor of Technology in Civil Engineering at **Jaypee University of Information Technology, Wagnaghat** is an authentic record of my work carried out under the supervision of **Mr. Chandrapal Gautam**. This work has not been submitted elsewhere for the reward of any other degree/diploma. I am fully responsible for the contents of my project report.

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CERTIFICATE

This is to certify that the project report titled "**ROAD CONSTRUCTION AND MAINTENANCE WORKS**" submitted to the Department of Civil Engineering, **Jaypee University of Information Technology, Wagnaghat**, in partial fulfilment of the requirements for the degree of Bachelor of Technology in Civil Engineering, is an authentic record of work conducted by **Manish (191618)** between February 2023 to April 2023, under the supervision of **Mr. Chandrapal Gautam** (Assistant Professor, Grade II), Department of Civil Engineering, Jaypee University of Information Technology, Wagnaghat.

The above statement made is correct to the best of our knowledge.

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Lastly, I would like to express my thanks to the entire team at Roy Engineers for making my internship a rewarding and memorable experience. The knowledge and experience that I have gained during my time here will undoubtedly serve me well in my future endeavours.

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CHAPTER 1

INTRODUCTION

This internship report is a summary of my experience working as an intern at Roy Engineers. The report provides an overview of the tasks, projects, and responsibilities I was involved in during my internship, as well as an analysis of my personal and professional growth during the experience.

The primary objective of my internship was to gain practical work experience to enhance my skills, and learn about the day-to-day operations of an organization in this field.

In my two-and-a-half-month internship (15 Feb 2023 to 30 Apr 2023) in a construction company (Roy Engineers), Patna, Bihar, India, I was involved in various activities like site management, road construction, measurement book filling, etc. My focus was on road construction and its quality. To ensure this goes well my objective was to manage the various work parties involved in the road construction and arrange the materials needed to complete the work.

In this report, I will describe the key activities, tasks, and projects I worked on during my internship, the skills and knowledge I gained.

Overall, this internship provided me with a unique opportunity to gain practical work experience and develop my skills in Road Construction.

CHAPTER 2

WORK DONE DURING MONTH OF FEBRUARY

After joining the company, Firstly, the work was assigned to learn about the “measurement book” and filling of “measurement book” under company’s supervisor. The supervisor Er. Abhishek Patel taught how to read detailed project report (DPR) and to take measurement of different material used in road construction from site and based on that to fill measurement book.

The measurement book includes details of the work carried out, the materials used, and the measurements taken, including length, width, height, area, and volume. It also includes details of any deviations from the original plan, such as changes to the design or materials used.

Sch. XLV - Form No. 134

_____ DIVISION
_____ SUB-DIVISION

Measurement Book
No. _____

Name of officer _____

Date of first entry _____

Date of last entry _____

Figure 1.1 Measurement book sample

Percentage BQ

Tender Inviting Authority : Engg-in Chief RWD Patna

Name of Work : Andwas Dharahara Road Diliubigha To Bahera Tak

Contract No : Civil Works /

Name of the Bidder / Bidding Firm / Company :

PRICE SCHEDULE

(This BQ template must not be modified/replaced by the bidder and the same should be uploaded after filling the relevant columns, else the bidder is liable to be rejected for this tender. Bidders are allowed to enter the Bidder Name and Values only.)

NUMBER #	TEXT #	NUMBER #	TEXT #	NUMBER #	NUMBER #	TEXT #
Sl. No	Item Description	Quantity	Units	Estimated Rate	TOTAL AMOUNT With Taxes	TOTAL AMOUNT In Words
1	2	4	5	6	54	55
1	Providing & Fixing of Working benchmark Pillars 4 nos. per km & 40 Nos. of reference pillars required for 1 Km as per drawings given and direction of E/I	1.956	Km	3953.82	7709.96	INR Seven Thousand Seven Hundred & Nine and Paise Ninety Five Only
2	Clearing and Grubbing Road Land including uprooting wild vegetation, grass, bushes, shrubs, saplings and trees of girth upto 100mm, removal of stumps of such trees cut earlier and unserviceable materials & stacking of serviceable materials to be used or auctioned upto a lead of 1000m including removal and disposal of top organic soil not exceeding 150mm in thickness as per technical specification (clause 201.1)	0.399	Ha	52979.33	20656.43	INR Twenty Thousand Six Hundred & Fifty Eight and Paise Forty Three Only
3	Excavation for roadway in soil using manual means for carrying of cut earth to embankment site with a lift upto 1.5 m and lead upto 60 m as per Technical Specification Clause 192.3	24.000	cum	75.57	1813.68	INR One Thousand Eight Hundred & Thirteen and Paise Sixty Eight Only
4	Construction of Embankment with material obtained from borrow pits with a lift upto 1.5 m, transporting to the site spreading, grading to required slope and compacting to meet requirements of Tables 300.1 and 300.2 with a lead upto 1300 m & 100 m as per Technical Specification Clause 301.5. (Including Royalty & Labour Cost).	13181.529	Cum	192.04	2531379.10	INR Twenty Five Lakh Thirty One Thousand Three Hundred & Fifty Nine and Paise Ten Only

Approved as per
 26/11/2017
 SE, RWD (W) Circle
 Nalanda

Figure 1.2 DPR sample

Upon gaining knowledge of reading detailed project review (DPR) and filling measurement book of maintenance road where road does not start from scratch.

After learning for 15 days, the concepts of DPR as well as Measurement book became clear. The Company handed the DPR and measurement book of another road to fill as well as on-site training was given.

CHAPTER 3

WORKDONE DURING THE TIME FRAME (01ST MARCH, 2023 to 30TH MARCH 2023)

By starting of the month, the concept of measurement book or MB was introduced and its various aspects were taught like how to record the values in it and make the entry.

MEASUREMENT				
① Clearing & Grubbing Road Land				
20	20	42		
2x	8x	30.00x1.00	480.00	480.00
2x	8x	30.00x1.00	480.00	480.00
2x	8x	30.00x1.00	480.00	480.00
2x	8x	30.00x1.00	480.00	480.00
2x	8x	30.00x1.00	480.00	480.00
2x	8x	30.00x1.00	480.00	480.00
2x	8x	30.00x1.00	480.00	480.00
2x	1x	30.00x1.00	60.00	60.00
2x	1x	25.00x1.00	50.00	50.00
			3470.00	3470.00
			3470.00/10000	20.347%

Continuation

Figure 3.1 Filled Measurement book

2
Sch. XLV-Form No. 134

Particulars	Details of actual measurement			Contents of area
	No.	L.	B.	
<u>② Scambling Existing B/S Surface</u>				
	20	20		52
	8x	2.30	0.90	16.56m ²
	12x	1.75	0.90	18.90m ²
	6x	2.50	1.15	17.25m ²
	8x	2.35	1.15	25.30m ²
	4x	3.20	1.30	16.64m ²
	2x	3.20	2.30	14.72m ²
	6x	2.30	1.25	17.25m ²
	4x	3.20	1.50	19.20m ²
	2x	3.30	2.00	16.50m ²
	4x	2.70	2.25	24.30m ²
	6x	1.60	2.70	25.92m ²
	2x	3.83	3.15	24.12m ²
				236.66m ²
<u>③ Construction of G.S. B. 4 ft</u>				
	20	20		82
	6x	0.90	0.60	0.975
	18x	1.15	0.60	0.975
	16x	1.15	0.90	0.975
	22x	0.90	1.00	0.125
	16x	1.25	1.15	0.125
	9x	1.15	1.25	0.125
	13x	1.25	1.00	0.20
	Continuation			18.645m ²

Figure 3.2 Filled Measurement book

3
Sch. XLV-Form No. 134

Particulars	Details of actual measurement			Contents of area	
	No.	L.	B.		D.
	B.F				18.6436 ²
	9x	2.15x	1.50x	0.20	5.8050 ²
	14x	1.75x	1.35x	0.20	6.6150 ²
	8x	1.90x	1.85x	0.20	5.6240 ²
	4x	2.50x	1.75x	0.20	3.5000 ²
	14x	2.50x	1.50x	0.15	7.8750 ²
	12x	2.00x	2.00x	0.15	7.2000 ²
	6x	3.50x	2.00x	0.15	6.3000 ²
	4x	2.50x	2.50x	0.20	5.0000 ²
	12x	2.50x	1.50x	0.20	9.0000 ²
	10x	2.00x	2.00x	0.20	8.0000 ²
	4x	3.50x	2.00x	0.20	5.6000 ²

	12x	3.25x	3.00x	0.20	23.4000 ²
	8x	3.15x	2.75x	0.15	10.3950 ²
	10x	3.50x	2.50x	0.15	15.3125 ²
					138.2600 ²
		Sum			138.2600 ²

① Paving & concrete work 4m²

	26x	0.90x	0.60x	0.075	1.0530 ²
	24x	1.15x	0.60x	0.075	1.2420 ²
	25x	1.15x	0.90x	0.075	1.9400 ²
	38x	0.90x	1.00x	0.075	2.5650 ²
	22x	1.25x	1.15x	0.075	2.3220 ²
	18x	1.15x	1.25x	0.075	1.9400 ²

Continuation

11.1120²

Figure 3.3 Filled Measurement book

4
Sch. XLV-Form No. 134

Particulars	Details of actual measurement				Contents of area
	No.	L.	B.	D.	
B.P.					11.1124 ³
24x	1.25	1.00	0.075		2.2504 ³
16x	2.15	1.50	0.075		3.8704 ³
22x	1.75	1.35	0.075		3.8984 ³
18x	1.90	1.85	0.075		4.7454 ³
8x	2.50	1.75	0.075		2.6254 ³
22x	2.50	1.50	0.075		6.1884 ³
18x	2.00	2.00	0.075		5.4004 ³
11x	3.50	2.00	0.075		7.2504 ³
10x	2.50	2.50	0.075		4.6884 ³
20x	2.50	1.50	0.075		5.6254 ³
24x	2.00	2.00	0.075		4.2004 ³
9x	3.50	2.00	0.075		4.7254 ³
16x	3.25	3.00	0.075		11.7004 ³
18x	3.15	2.75	0.075		11.6744 ³
12x	3.50	2.50	0.075		7.8254 ³
8x	4.50	3.30	0.075		8.9104 ³
4x	6.00	3.15	0.075		5.6704 ³
14x	2.75	2.75	0.075		7.9404 ³
10x	3.70	2.60	0.075		7.2454 ³
6x	4.25	3.15	0.075		6.0244 ³
8x	3.90	2.90	0.075		6.7864 ³
12x	2.90	3.00	0.075		7.8304 ³
16x	2.70	3.10	0.075		10.0444 ³
8x	4.60	3.50	0.075		9.6604 ³
4x	5.20	3.50	0.075		5.4804 ³
Continuation					17.3484 ³

Figure 3.4 Filled Measurement book

Sch. XLV-Form No. 134

Particulars	Details of actual measurement				Contents of area
	No.	L.	B.	D.	
	B.A.				169.5584 ³
	3X	30.00	3.75	0.075	25.3134 ³
	3X	30.00	3.75	0.075	25.3134 ³
1X14.00	$\frac{3.75 + 4.20 + 3.75}{2}$			0.075	$\frac{25.3134 + 40.9504}{2}$
	3X	30.00	3.75	0.075	25.3134 ³
	3X	30.00	3.75	0.075	25.3134 ³
	3X	30.00	3.75	0.075	25.3134 ³
	3X	30.00	3.75	0.075	25.3134 ³
1X12.00	$\frac{3.75 + 4.00 + 3.75}{2}$			0.075	3.454 ³
	3X	30.00	3.75	0.075	25.3134 ³
	3X	30.00	3.75	0.075	25.3134 ³
	3X	30.00	3.75	0.075	25.3134 ³
2127702300	3X	30.00	3.75	0.075	25.3134 ³
	3X	30.00	3.75	0.075	25.3134 ³
	3X	30.00	3.75	0.075	25.3134 ³
	1X	25.00	3.75	0.075	7.0314 ³
1X18.00	$\frac{3.75 + 4.60 + 3.90}{2}$			0.075	7.7634 ³
Per measurement	18X	0.70	0.60	0.075	0.5634 ³
	22X	0.80	0.75	0.075	0.9904 ³
	26X	0.90	0.60	0.075	1.0534 ³
	16X	1.15	0.90	0.075	1.2424 ³
	22X	0.90	0.70	0.075	1.3354 ³
	18X	1.25	1.15	0.075	1.9404 ³
	12X	2.50	1.35	0.075	3.0384 ³
	8X	2.50	1.50	0.075	2.2504 ³
	10X	1.50	1.75	0.075	1.9694 ³
	4X	2.50	1.90	0.075	1.4254 ³
	Continuation				509.8644 ³

Figure 3.6 Filled Measurement book

<u>ABSTRACT OF COST</u>			
① Clearing & Grubbing Road Land			
.....dodoE ₁	
0.347 Ha.	VTMBP-01		
	@ Rs 52930.33/Ha.	Rs 18381/-	
② Scanning existing B.P. surface			
.....dodoE ₂	
236.66 m ²	VTMBP-02		
+ 236.69	@ Rs 15.77/m ²	Rs 3732/-	
③ Construction of Embankment for			
B.P. Portion.....do.....do.....E ₂			
1093.05 m ³	VTMBP-11		
	@ Rs 192.04/m ³	Rs 209909/-	
		Rs 232022/-	
Continuation			

Figure 3.7 Filled Measurement book

Particulars	Details of actual measurement				Contents of area
	No.	L.	B.	D.	
	B.P.				2320227
④ Construction of Subamument on Pec					
Position					
43.50 m ²	VTMB P-11				
	@Rs 75.59/m ²			Rs 32837	
⑤ Construction of C.S. B.					
138.266 m ³	VTMB P-03				
	@Rs 1691.07/m ³			Rs 233807	
⑥ P/W, laying of concrete work on 2					
199.263 m ³	VTMB P-05				
	@Rs 2694.41/m ³			Rs 536907	
⑦ P/W, laying of concrete work on 3					
523.963 m ³	VTMB P-03				
	@Rs 2629.09/m ³			Rs 1374632545	
⑧ Provision of applying Prime Coat (RS1)					
9250.20 m ²	VTMB P-09				
124.835 m ²	VTMB P-15				
9395.075 m ²	@Rs 40.99/m ²			Rs 380501	
⑨ Provision of applying Tack Coat (RS1)					
					Rs 2664070

Continuation

Rs 2764070

Figure 3.8 Filled Measurement book

Material statement			
① E/W			
② S/Metal	1093.0543	+	43.582
③ (p/cm)	981.97343		
④ S/screening	70.5143		
⑤ Prime Coat (SS)	221.09643		
⑥ Tack Coat (RS)	7.98647		
⑦ Bitumen	4.88747		
⑧ S/chips	42.97947		
⑨ Bricks	626.31243		
	3091405		

Figure 3.9 Filled Measurement book

After completing the work of filling the measurement book, the supervisor allotted the work of site in charge and various aspects of practical on-site work were taught. The work included providing and laying of WBM Grade 3 in road named “Andwasdharhara road dillubigha to bahera”. On reaching the site, it was observed that soil work as well as GSB work has already been completed.

According to DPR, next due work is laying of grading 3. In this process It was learnt that width of roads that comes under rural works department (RWD) is 12’4”. Thickness of grading-3 is 75 mm which settles at 60 mm after compaction. After laying of grade 3, dust is being scattered on it to fill the remaining void and water is also provided for the settlement of the same. Grade-3 materials is the last before asphalt, after compacting, it takes time (approx. 7 days) to get settled. Due to less compaction, it does not settle.

The base course of the pavement, which is composed of mechanically interlocked aggregate that has been mechanically crushed or broken, and where the spaces are filled with screening and binding material with the aid of water. The size and gradation of the aggregates utilised will determine whether the WBM can be employed as a sub base or base compacted layer of

WBM. The coarse aggregates used in WBM generally consists of hard varieties of crushed aggregates or broken stones.



Figure 3.10 Rolling of WBM/ Grade-3



Figure 3.11 WBM/Grade-3 after compaction



Figure 3.12 Thickness of WBM/ Grade-3

Spreading and compacting a foundation course of coarse aggregates, such as broken stones, is the first step in building a WBM surface. The surface course is then created by spreading a second layer of finer materials, such as gravel or sand, on top and compacting it once again. During the compaction process, water is utilised to help bind the components together.

In order to prevent the stones from raveling, binding material with fine grains that pass through a 0.425 mm screen is used in WBM construction, lime stone dust may also be used. In the building of WBM surface courses, binding materials with plasticity ranging from 4 to 8.

The screenings are used to fill up the voids in the compacted layer of coarse aggregates. The screenings consist of the same material as the coarse aggregates, but of smaller size.

Table 3.1 Size and grading requirements for screening of WBM

Grading classification of screening	Size of screenings, m	Sieve size, m	Passing the sieve by weight, Percentage
A	13.2	13.2	100
		11.2	95 to 100
		5.60	15 to 35
		0.18	0 to 10
B	11.2	11.2	100
		5.60	90 to 100
		0.18	15 to 35



Figure 3.13 Laying of binding material and providing water assistant



Figure 3.14 Rolling of binding material

At the end of half of the month after completing grading 3 and leaving it for settlement the supervisor took to another site named “Nonhi to basuain” for the planting of trees in both side of the road. The distance between the trees is approximately 15 m crossed and 30 m horizontally. The diameter and depth of hole is approximately 1’ and 3’ respectively.



Figure 3.15 Plantation of trees along roadside

CHAPTER 4

WORKDONE DURING THE TIME FRAME

(01ST APRIL, 2023 to 15TH APRIL, 2023)

During this time frame, the company assigned the task of providing and laying of bituminous material (SDBC-25mm) in road Silao Maijra Road to Azadnagar via Nonidih.

Semi Dense Bituminous Concrete (SDBC) is a type of road surfacing material that is commonly used in road construction. It is a mixture of bitumen, aggregates, and filler materials that are compacted to form a smooth and durable surface for roads.

SDBC is typically used as a wearing course, which is the top layer of a road that is in direct contact with vehicle. It is designed to provide a smooth and skid-resistant surface that can withstand the weight and friction of vehicles over an extended period.

SDBC is normally laid using a paver, which distributes the substance uniformly over the road surface. To get the proper density and smoothness, it is then compacted using a vibrator roller.

Depending on the requirements of the particular project, the SDBC layer's thickness can change. It normally ranges in thickness from 25 to 40 mm (1 to 1.5 inches).

Description of road

According to the DPR length of this road is 2.350 km and the width is 12 feet 4 inch and depth is 45-50 mm. The road is located in Nalanda District of Bihar. It connects Village Azad Nagar to Maijara. The population residing around this area is 2500-3000.



Figure 4.1 Laying and Rolling of SDBC



Figure 4.2 Thickness of pavement after SDBC

After laying of SDBC in SilaoMaijra Road to Azadnagar via Nonidih road, remaining work of road named Satuabandh to Aikairbhagwanpur of providing and laying of bituminous surfacing material, Mixed seal surface (MSS- 20mm) is completed according to the DPR.

Using a sprayer, bitumen emulsion is spread over the road surface. Bitumen emulsion works as an adhesive which bind the bituminous material to the ground or wmm. The next layer is an aggregate layer that is spread uniformly across the surface to generate another layer.



Figure 4.3 Spraying of bitumen emulsion using sprayer

Bitumen emulsion is a mixture of bitumen and water, along with a small amount of emulsifying agent that helps to stabilize the mixture. It serves as an asphalt binder. Various grades and varieties of bitumen emulsion are available, based on the particular application and performance requirements. Emulsions with a quick or long setting time are examples of this. Bitumen emulsion can also be used for sealing and surface treatments, which can help to increase the skid resistance and lifespan of the road surface.

After applying bitumen emulsion, first layer of asphalt (MSS) is layered with the help of paver. MSS are frequently used on low-traffic roads, but they may also be utilised on high-traffic roads with the proper mix design and building process adjustments. A MSS is a common option for maintenance projects since it may be built for less money than other types of road surfaces.



Figure 4.4 Laying of asphalt using paver

CHAPTER 5

WORKDONE DURING THE TIME FRAME (16TH APRIL, 2023 to 30TH APRIL, 2023)

Earthwork: Digging, filling, grading, and compacting are all part of this job to make stable surfaces that won't need ongoing maintenance. In terms of earthwork, excavation and embankment are the two basic categories. The roadbed is then contoured to produce the appropriate longitudinal slope and cross slope, allowing for effective rainwater drainage. The building of the road surface, which may be built of asphalt, concrete, or gravel, is the last stage of the earthwork process. Overall, earthwork is an essential part of building roads since it offers the support and foundation required for a road to be safe and long-lasting.



Figure 5.1 Levelling of earthwork using tractor grader

GSB Work: A common layer used in highway building is called granular sub base, or GSB. It is positioned above the sub grade and below the crust materials. For GSB, the highest grain size up to 65mm may be used, and the material is naturally available in a variety of grades. Thickness of the GSB ranges from 100 mm to 400 mm. By distributing the weight of the underlying structure across a broader area, the GSB layer helps to relieve pressure on the sub grade's natural soil. By doing this, the structure is less likely to settle and deform with time. The GSB layer must be properly compacted in order to obtain the necessary strength and stability.



Figure 5.2 Laying of GSB after earthwork

CONCLUSION

The project was completed before the time allotted by the government to complete the project.

The construction and maintenance of roads is an important aspect to be considered. Various materials used for constructing and maintaining the roads such as Soil work, GSB, Grade 2, Grade 3, Sand, Murram and its effectiveness were checked.

Various construction equipment's were also used such as JCB, Vibratory Roller, Grader, Paver, Tipper, Tractor, Bitumen emulsion sprayer, Static Roller, Asphalt ready mix plant etc.

Overall, from the date of joining till now I learned to read and understand the DPR of project as well as to register measurement book followed by managing of construction sites and gained knowledge about the asphalt, how it is being used and what different types of layers are present in rural roads.

In rural roads which is constructed by the Rural works department, mostly roads consist of different layers such as Earthwork, Bituminous Layers (GSB, WBM Items), Bituminous Items (Prime coat, Tack coat, Mix seal surface, Semi dense bituminous concrete. In the last Road furniture, KM Stones, Traffic & Direction Sign etc.

RESULT

After completing the project, it is found after the calculation that:

i) Road name- Satuabandh to aikairbhagwanpur canal

Total cost of the project (Acc. to agreement) - 116.015 Lacs (2.350 km)

Time duration given by the government- 9 months

Time taken by the company to complete the project- Approx. 4 months

Cost of completing the work - Approx. 80 Lacs

Materials used in construction:

Earthwork- 1136.55 m³

Sand- 70.51 m³

Metal- 981.573 m³

Screening- 221.096 m³

Prime coat- 7.986 M.T

Tack coat- 4.837 M.T

Bitumen- 42.979 M.T

10 mm aggregates- 626.312 m³

Waste plastic- 1.457 M.T

ii) Road name- Silaomaijra road to azadnagar via nonidih

Total cost of the project (Acc. to agreement) - 118.858 Lacs (2.450 km)

Time duration given by the government- 9 months

Time taken by the company to complete the project- Approx. 4 months

Cost of completing the work - Approx. 80 Lacs

Materials used in construction:

Earthwork- 704.58m³

Sand- 44.689 m³

Metal- 930.759 m³

Screening- 215.444 m³

Prime coat- 8.719 M.T
Tack coat- 5.191 M.T
Bitumen- 44.299 M.T
10 mm aggregates- 699.716 m³
Waste plastic- 1.537 M.T

ii) Road name- Andwasdharhara road dillubigha to bahera
Total cost of the project (Acc. to agreement) – 161.288Lacs (1.950 km)
Time duration given by the government- 12 months

Time taken by the company to complete the project- Approx. 7 months
Cost of completing the work - Approx. 110 Lacs

Materials used in construction:

Earthwork- 16895.918 m³
Sand- 630.58 m³
Metal- 1748.80 m³
Screening- 151.294 m³
Prime coat- 4.76 M.T
Tack coat- 1.54 M.T
Bitumen- 10.64 M.T
10 mm aggregates- 31..808 m³
Waste plastic- 1.537 M.T

On completing the project before the time given by the government, the cost of construction reduced. Government also provide experience to the company with the remarks on completing the project before the time which is helpful in next or future projects as it is added in the experience.

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