



ग्रामीण कार्य विभाग

Rural Works Department, Govt of Bihar



BIHAR RURAL ROADS PROJECT Bihar Rural Road Development Agency (BRRDA) Govt. of Bihar

YEAR 24-25

MUKHYA MANTRI GRAM SAMPRAK YOJNA, AWASHES (NDB)



A.A. COPY

Name of the Road :-

Chandisthan Se Mahadevpur TO Tarapur

Survey ID	:	27227	
DISTRICT	:	Gaya	
DIVISION	:	Sherghati	
BLOCK	:	Gurua	
TOTAL LENGTH OF ROAD	:	2.000	KM
TOTAL COST OF CONSTRUCTION	:	144.020	Lac
COST OF ROAD CONSTRUCTION PER KM	:	72.010	Lac
SIX YEARS OPERATION & MANAGEMENT (O&M) COSTS AFTER COMPLETION OF CONSTRUCTION .	:	21.324	Lac
(EMERJENT@15% ,CONTINGENCY @1% & ADMINISTRATIVE COST @2.25%) .	:	30.175	Lac
LAND ACQUISITION COST.	:	0.000	Lac
TOTAL COST OF PROJECT.	:	195.519	Lac

SUBMITTED BY:-

PREPARED BY:-

EXECUTIVE ENGINEER
RWD (W) DIVISION Sherghati
Gaya

Prepared By:

A.K. ENGINEERING SERVICES.
Darna Road, Mahunwan
Hamzapur, Sherghati-824211
Mob: +91 7739181616

MUKHYA MANTRI GRAM SAMPRAK YOJNA, AWASHES (NDB)**YEAR 24-25****GENERAL ABSTRACT OF COST**Block:- **Gurua**District:- **Gaya**Length of Road:- **2.000 KM**Name of Road:- **Chandisthan Se Mahadevpur TO Tarapur**

SL. No.	Item of Work	Amount
1	CONSTRUCTION COST :	101.171 Lacs
2	5TH YEAR PERIODIC RENEWAL COST . :	17.103 Lacs
	TOTAL ESTIMATED COST (1+2) :	118.274 Lacs
	Add Labour Cess @ 1% :	1.183 Lacs
	Add Seigniorage Fee @ 10% on Material Cost only :	2.594 Lacs
	Sub Total :	122.051 Lacs
	Add GST @ 18% :	21.969 Lacs
A	TOTAL CONSTRUCTION COST (INC GST, LC @ SEIGN. FEE) SAY "A" :	144.020 Lacs
3	SIX YEARS OPERATION & MANAGEMENT (O&M) COSTS AFTER COMPLETION OF CONSTRUCTION . :	17.430 Lacs
	Add Labour Cess @ 1% :	0.174 Lacs
	Add Seigniorage Fee @ 10% on Material Cost only :	0.467 Lacs
	Sub Total :	18.071 Lacs
	Add GST @ 18% :	3.253 Lacs
B	TOTAL OPERATION & MANAGEMENT COST (INC GST, LC @ SEIGN. FEE) SAY "B" :	21.324 Lacs
C	SUB TOTAL COST (A+B)	165.344 Lacs
D	EMERGENT & PRICE ADJUSTMENT COST @ 15% OF "C" :	24.802 Lacs
E	Contingency @ 1% OF "C" :	1.653 Lacs
F	Administrative Cost @ 2.25% OF "C" :	3.720 Lacs
G	Land acquisition :	0.000 Lacs
H	TOTAL PROJECT COST (C+D+E+F+G+H) :	195.519 Lacs

Junior Engineer

Asstt. Engineer

E. Engineer

SE
RWDSuperintending Engineer
Rural Works Department
Works Circle, Gaya

SUMMARY OF COST ESTIMATE FOR THE PROJECT

NAME OF ROAD : Chandisthan Se Mahadevpur TO Tarapur

DISTRICT Gaya
BLOCK Gurua
DIVISION Sherghati
LENGTH OF ROAD (in Km) 2.000
LENGTH OF BT PAVEMENT 1200
LENGTH OF CC PAVEMENT 800
ROAD STRUCTURES
HUME PIPE 2
CC CULVERT 0
BOX CELL CULVERT 1
CAUSEWAY / MINOR BRIDGE 0

Sl. No.	DESCRIPTION	AMOUNT (LAKHS)
1	PREPARATORY WORKS ,SITE CLEARANCE , DISMANTLING	0.981
2	EARTHWORK	13.193
3	GSB GRADING - II	12.443
5	WBM GRADE II	10.207
5	WMM GRADE III	11.322
6	PRIME COAT	2.518
7	TACK COAT	0.866
8	MIX SEAL SURFACING WITH WASTE PLASTIC	9.380
9	PAVEMENT QUALITY CONCRETE.	19.785
10	Edging with 1st Class Bricks	1.553
11	SIDE DRAINS & CROSS DRAIN	0.000
12	PROTECTION WORKS	0.000
13	ROAD FURNITURES , KM STONES , TRAFFIC & DIRECTION SIGN, PMGSY LOGO	5.131
14	CABLE DUCT ACROSS THE ROAD	0.417
	SUB TOTAL OF PAVEMENT COST IN LACS =	87.796
14	CROSS DRAINAGE STRUCTURES	
I	HUME PIPE	5.685
II	RCC	0.000
III	BOX	7.691
IV	CAUSEWAY	0.000
V	REPAIR OF CD WORK	0.000
	SUB TOTAL OF CD STRUCTURES COST IN LACS =	13.376
	Total Construction Cost.	101.171
15	SIX YEARS OPERATION & MANAGEMENT (O&M) COSTS AFTER COMPLETION OF CONSTRUCTION.	
	I st Year	2.380
	II nd Year	2.931
	III rd Year	3.483
	IV th Year	4.035
	VI th Year	1.975
	VII th Year	2.627
	SUB TOTAL OF =SIX YEARS OPERATION & MANAGEMENT (O&M)	17.431

Mhs
31.1.2025
JE
RWD

V. K. K.
31.1.2025
AE
RWD

Repe
31.1.2025
JE
RWD

Total Construction Cost:	→	144,020 lacs.
Minor Improvement	}	
Initial Rectification		
5th Year Periodic Renewal		
Total Maintenance Cost	→	21,324 lacs.
(1st, 2nd, 3rd, 4th, 6th & 7th):		
Other Cost:		
Emergent Cost	→	
Contingency Cost	→	1,220 lacs.
Administrative Cost	→	3,240 lacs.
Total		169,804 lacs.

T.A. No. dt.

Ref. SE letter No. dt.

Technically Approved for Rs. 169,804 lacs.

(Rupees one crore sixty nine lac eighty thousand four hundred) Only

for construction work & 5 Years Maintenance

A.E.

[Signature]
E. E. M. S.

Tec. Secy



ग्रामीण कार्य विभाग

Rural Works Department, Govt of Bihar



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प्रपत्र
एकल संपर्कता प्रमाण - पत्र
 (Single Connectivity Certificate)
 (यह प्रमाण-पत्र कार्यपालक अभियंता द्वारा स्व-हस्तालिखित होना चाहिए)

प्रमाणित किया जाता है कि:-

(1) Chandisthan Se Mahadevpur TO Tarapur

पथ का DPR बनाया गया है वह राज्य कोर नेटवर्क में सम्मिलित है

तथा Gaya जिला Gurua प्रखंड के State CNCPL/State CUPL के कमांक
27227 पर अंकित है।

(2) इस पथ को मैंने स्वयं देखा है तथा इस पर भ्रमण किया है। इस पथ का बनाया जाना जनोपयोगी है तथा इसके लिये सरकारी भूमि उपलब्ध है।

(3) इस पथ से जिन बसावटो को संपर्कता प्रदान की जा रही है उन्हें पहले से किसी बारहमासी पथ से संपर्कता पथ नहीं मिल रही है तथा प्रस्तावित पथ/पुल उन्हें बारहमासी एकल संपर्कता (Single connectivity) ही प्रदान करेगा।

(4) इस पथ के निर्माण होने पर अनुसूचित जाति/जनजाति के लगभग जनसंख्या लाभान्वित होंगे ।

कार्यपालक अभियंता
 ग्रामीण कार्य विभाग
 कार्य प्रमंडल

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	Annexure - 5 (Plan & Profile and Cross Section)	Attached

R E P O R T

1 Introduction

1.1 Objectives of Mukhya Mantri Gram Sampark Yojna

Rural Road connectivity is a key component of rural development by promoting access to economic and social services and thereby generating increased agricultural incomes and productive employment opportunities. It is also a key ingredient in ensuring poverty reduction. To Provide all weather connectivity having population more than 250, A new scheme name as **Mukhya Mantri Gram Sampark Yojna** has been started.

The project road Chandisthan Se Mahadevpur to Tarapur, is a link road with Link No 27227 in Gurua block of Gaya District. This road directly connects the habitations of Tarapur, 0, 0, , with total populations of 200. Thus this link Road serves the total population of 200.

1.2 All Weather Road

An all-weather road is one which is negotiable during all weathers, with some permitted interruptions as given below :

At cross-drainage structures, the duration of overflow or interruption at one stretch shall not exceed 12 hours for ODRs and 24 hours for VRs in hilly terrain, and 3 days in the case of roads in plain terrain. The total period of interruption during the year should not exceed 10 days for ODRs and 15 days for VRs.

The pavement should be negotiable during all-weathers, but this does not necessarily imply that it should be paved or surfaced or black-topped. The pavement should consist of metalling (WBM) or higher type where rainfall is more than 1500mm/ year and should at least be of material better than local soil, such as moorum, gravel, kankar, laterite etc where the rainfall is less than 1500mm/ year.

1.3 Core Network

The rural road network required for providing the 'basic access' to all villages/ habitations is termed as the Core Network. Basic access is defined as one all-weather road access from each village/ habitation to the nearby Market Centre or Rural Business Hub (RBH) and essential social and economic services.

A Core Network comprises of Through Routes and Link Routes. Through routes are the ones which collect traffic from several link roads or a long chain of habitations and lead it to a market centre or a higher category road, i.e. the District Roads or the State or National Highways. Link Routes are the roads connecting a single habitation or a group of habitations to Through Roads or District Roads leading to Market Centres. Link Routes generally have dead ends terminating on habitations, while Through Routes arise from the confluence of two or more Link Routes and emerge on to a major road or to a Market Centre.

The Core Network may not represent the most convenient or economic route for all purposes. However, since studies show 85-90% of rural trips are to market centres, the Core Network is likely to be a cost-effective conceptual frame work for investment and management purposes, particularly in the context of scarce resources.

1.6 The Sub-Project Road

The road passes through plain terrain

District :-- Gaya
 Block :-- Gurua
 Road Name :-- Chandisthan Se Mahadevpur TO Tarapur
 Survey ID :-- 27227
 Road Length :-- 2.000 Km
 Start Point :-- Latitude 0.000000 Longitude 0.000000
 End Point: :-- Latitude 0.000000 Longitude 0.000000

Sl.No.	Habitation benefited	Poulation benefited		Chaniage	
		Direct	Indirect	From	To
1	Tarapur	200	-		
2	0	-	0		
3	0	-	0		

2.0 Planning and Basic Design Consideration

2.1 Key maps

2.2 Preliminary alignment investigation :-- (Transect Walk)

Refer Annexure-1.

2.3 Site Photographs :--

Refer Annexure-2

2.4 Road Design Brief

Table 2.1 Road Design Brief

Sl. No	Location	Issue	Design Solution
1	0.00 to 1200.00	Open Area	Flexible Pavement has been Provided.
2	1200.00 to 1400.00	Village Area	Rigid Pavement has been Provided.
3	1400.00 to 1600.00	Village Area	Rigid Pavement has been Provided.
4	1600.00 to 2000.00	Village Area	Rigid Pavement has been Provided.
5			
6			

In preparation of detail project report of rural road , we consider following activities i.e. Topographic Survey, Soil/ Materials test, Traffic Survey, Hydrological Survey, Geometric Design Standards, Alignment Design, Pavement Design, Design of Cross Drainage, Protective Works & Drainage, Utility shifting, Road Furniture, Analysis of Rates, carriage cost by economical mode of transport as per material lead / source, quantity estimation & Cost Estimate. Site visit with authorized persons of department to see the proposed road alignment.

Initially, reconnaissance survey is done for the assigned road. By local enquiry we collect the data about starting served village to last served village of road, villages along road, block / district name, the habitation adjoining the road, villages served, direct/indirect benefited villages by this road, cross drainage works lying along the stretch of road, tracking of road alignment by GPS & gathering latitude/longitude data of all important point along the alignment.

We collect all important input data for elaborate description of road (Climatic condition of the area , whether there are temples, schools, mosques along the alignment, existing cross drainage structures, existing utilities like electric & telephone poles and water lines along the existing road.

In preliminary planning, locational map showing proposed new road, entire important features adjoining the road and its connectivity to nearest block, district, SH & NH. Strip plan of proposed road alignment containing important features i.e. existing width of road, merging of another road, location of utilities, electric poles, road crossing amidst the village, C/D structures, markets, godowns, educational / health and religious structure etc are shown by taken Latitue, Longitude from GPS instrument.

Topographical, Traversing & Leveling survey is done by total station & temporary bench mark is fixed for rural road design. Cross section will be taken at every 50m interval. In case of any major variation in the long section cross sections have to be taken irrespective of the 50m interval.

2.5 Transect Walk Summary

Chainage	Existing Land Width*	Additional Land Required		Type of Loss		Village	Remarks /Suggestions
		LHS	RHS	LHS	RHS		
0 to 1200	12	No	No	No	No	Open Area	
1200 to 1400	6	No	No	No	No	Village Area	
1400 to 1600	6	No	No	No	No	Village Area	
1600 to 2000	6	No	No	No	No	Village Area	

1 Total No. of people present for the Transect walk:

Male :-- 5

Female :--

Total :-- 7

2 Demographic information where the walk was conducted: :--

3 No. of Govt. Employees present :--

4 No. of Contractors Employees :--

5 No. of participants from Minority community :--

6 Enclose a separate sheet with names, designation (if Govt.Employee,or Elected Representative) and signatures of participants of transect walk

2.6 Checklist

Transect walk done	Yes	☒	No	☐
Transect walk summary table included	Yes	☒	No	☐
Photographs taken	Yes	☒	No	☐
Major Changes in alignment perceived	Yes	☐	No	☒
Design brief provided	Yes	☒	No	☐

3.0 Topographic Survey

3.1 General

Topographical surveys will be carried out on the identified stretches of rural roads with the help of Total Station Equipment. The width of the corridor to be covered would be sufficient enough to plot the existing profile of the road and also to cater to the requirement of engineering designs. All the features of the road like centerline, pavement edges, shoulder edges, toe points etc. shall be accurately lifted from the ground on the map including details of trees & permanent structures if any. The X-sections of the road shall be taken at every 25 m interval or less if so required in the case of steep rise & fall & horizontal curves. The permanent reference pillars shall be marked on the ground at suitable intervals for the purpose of layout work during execution. The features of all water bodies shall also be taken during the survey including bed levels & HFL.

The in-house standards, work procedures and quality plan prepared with reference to IRC:SP 19-2001, IRC: SP 20, IRC: SP 13 (in respect of surveys for rivers/streams) and current international practices have been followed during the above survey.

3.2 Traversing

The Consultant has carried out detailed topographical survey as per detailed methodology and TOR for all the project roads under MMGSY in Bihar. It includes carrying out continuous open traverse along the existing road, establishing the elevations of the survey stations by using Auto Levels/Digital Level, topographic survey by using Total Station instrument.

To control the traverse the consultant fixed 4-6 cement concrete reference pillars per km along the project road and then carried out open traverse using these reference pillars as control points. Three coordinates (X,Y and Z i.e. easting, northing and altitude) of controlled beacons with respect to the cumulative chainage of alignment have been prepared. The reference pillars were also connected with the benchmark (if available) by carrying out double run levelling by Auto Level/Digital Level for vertical Control. The starting coordinate was assumed depending upon the direction of the road and accordingly the coordinates of other reference/temporary bench mark was established. All the control points was established on existing permanent structures i.e. near school building, panchayat bhawan, hand pump and pucca structures. On each instrument station, back station and fore station readings have been taken in x,y,z form. A check station was established for each instrument setting and its reading was taken from two traverse stations.

3.3 Leveling

Topographical survey was conducted by total station machine and the data was processed by Mx Road, Auto-plotter and Road Design software. After field work was completed, all the drawings are prepared which is presented in Drawing Volume . RL of TBM has been assuming as 100 m. Temporary Bench Marks have been left at permanent structures.

3.4 Cross Section & Detailing

Generally, cross section will be taken at every 50m interval. In case of any major variation in the long section cross sections have to be taken irrespective of the 50m interval. The cross section details are to be taken for a further distance of half the formation width beyond the shoulders on either side of the road. Cross sections were taken in smaller interval (05 to 10m) in locations of sharp curves and change of gradients. The details i.e. spot levels, typical features; habitation, canals, drain, rivers etc. have been mapped during topographic survey. The plan covers all permanent features near the alignment, the existing roadway, location of culverts, bridges, retaining walls, house/building, utility services etc.

3.5 Data Processing

All data from topographic survey recorded in Total Station was downloaded in computer in X,Y,Z (Northing, Easting and Elevation) format and final alignment, plan, profile were prepared by MX Road software and presented in AutoCAD Format.

3.6 Checklist

Reference pillars given	Yes	☒	No	☐
TBM with northing-easting given	Yes	☒	No	☐
Traverse survey carried out	Yes	☒	No	☐
Cross section and detailing carried out	Yes	☒	No	☐

4.0 Soil and Materials Survey

4.1 General

The soil and material investigations were done following the guidelines of IRC: SP: 20-2014 and IRC: SP: 72-2015 and other relevant IS codes. The potential sources of borrow areas for soil and quarry sites will be identified.

4.2 Soil sample collection and Testing

Soil samples will be collected along and around the road alignment at three (3) locations per km, from the adjoining borrow areas, as well as one sample is collected from the existing road. Soil Classification tests like grain size analysis and Atterberg's limit were conducted for all the samples collected. Standard Proctor test and the corresponding 4 day soaked CBR test were conducted either for a minimum of one test per km for soil samples of same group or more tests due to variation of soil type. The following tests were conducted as detailed below:

- Grain size analysis as per IS : 272 (Part 4) – 1985
- Atterberg's limit as per IS : 2720 (Part 5) – 1985
- Standard Proctor density test as per IS : 2720 (Part 7) – 1980
- 4 day soaked CBR test as per IS : 2720 (Part 16) – 1985

4.3 Analysis of Test Results

The IRC Rural Roads Manual SP: 20 contains instructions on Soil Survey and materials for the road projects. Soil samples will be collected along and around the road alignment at three (3) locations per km, from the adjoining borrow areas, as well as one sample is collected from the existing road.

Grain size analysis, atterberg limit & CBR value is obtained in lab after its testing.

CBR is the basic requirement for an economical pavement design. The grain-size (wet sieve) analysis leading to the soil classification is a simple test and must be carried out to have an idea of the CBR value with a reasonable level of accuracy,

The soil laboratory test results has been summarized in Annexure-1

4.4 Coarse and Fine Aggregates

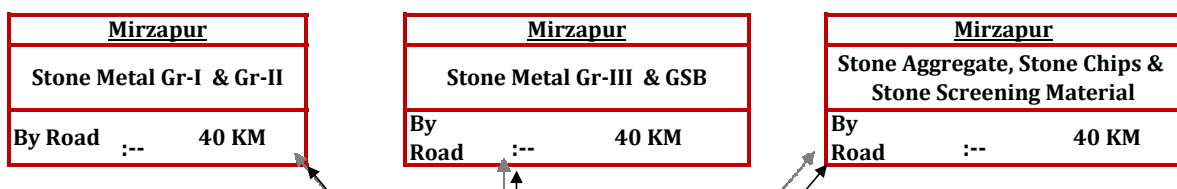
Information regarding the source of aggregate and sand will be gathered. The stone aggregates shall be procured from Mirzapur & Mirzapur where as the locally available sand shall be used. The source and the lead

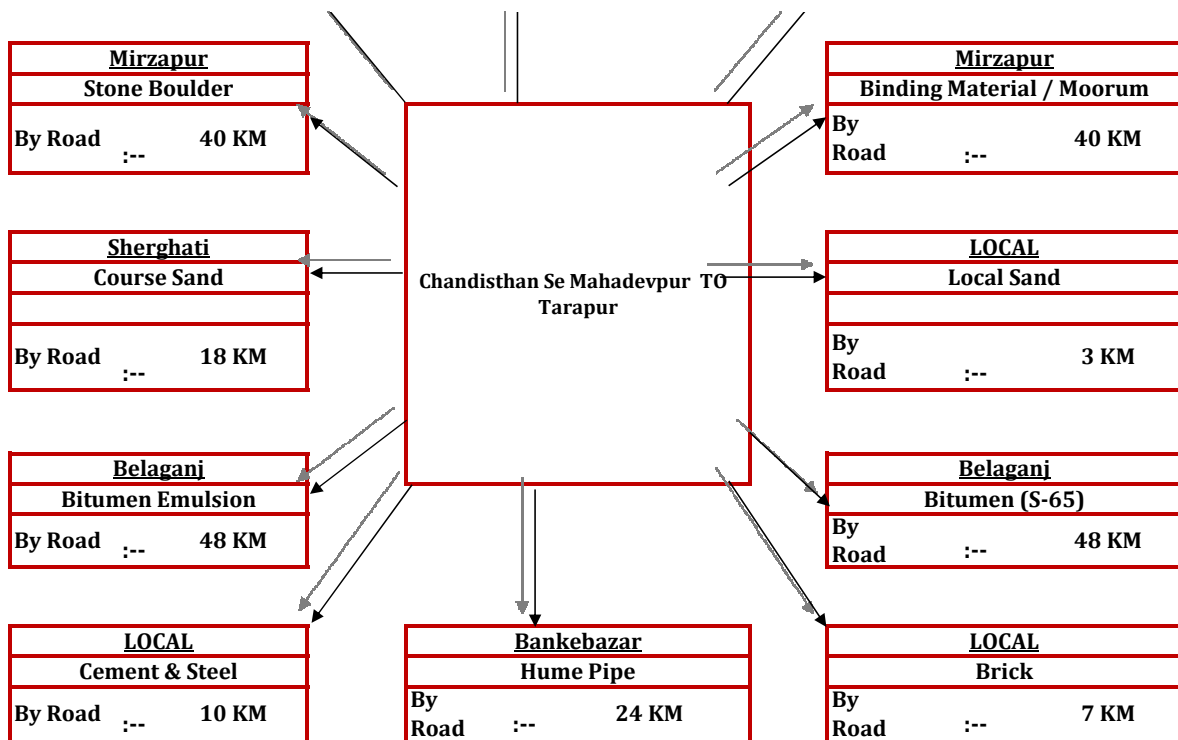
distance from the quarry to project site will be finalized in discussion with the PIU. The aggregates and sand where available and acceptable shall be used for bituminous work, concrete works, other pavement works.

Figure -3 :--- **Quarry Map**

Name of Road :-- Chandisthan Se Mahadevpur TO Tarapur
Block :-- Gurua
District :-- Gaya

Length of the Road:- 2.000 KM





* Subjected to Verification of Lead

J.E

A.E.

E.E

S.E.

4.5 Sub-soil investigation for bridges

Soil survey has been done by collecting samples of local soils from the project road in accordance to the guidelines of IRC: SP: 19-2001. The important tests carried out on the soil intended for use for sub-grade.

4.6 Checklist

Borrow pit suitable	Yes	☒	No	☐
SSI for existing ground	Yes	☒	No	☐
Investigation for coarse/fine aggregate	Yes	☒	No	☐
Quarry map	Yes	☒	No	☐

6.0 Hydrological Survey

A. Local drainage plan for the area of the road

One of the very important reasons for a very rapid loss in the level of serviceability of most of the rural roads in the country is the lack of attention to appropriate drainage. It is basically due to the lack of proper drainage that the maintenance requirements of a rural road rise rapidly even during the early years of its service life. The modern trend is to incorporate maintenance considerations at the design stage itself. Ensuring proper drainage during the design life is considered one of the most essential pre-requisites for a satisfactory performance of the road during its service life.

Provision of adequate drainage should be considered more of an investment than an expenditure, since it yields benefits by way of more economical designs and much reduced subsequent maintenance costs.

As the insufficient drainage of surface water leads to rapid damage of road, road side drain should be provided particularly on the location of habitation areas.

Generally, minimum gradient of 0.3% for drainage purpose is considered for designing the vertical alignment of this road. Vertical curves are not required when grade change is less than 1%, however a minimum vertical curve is provided to avoid vertical kink.

It is mandatory to have a drainage plan prepared for each rural road project. The following points must be taken into the design of Rural Roads:

- Provide the specified camber both for the carriageway and the shoulder. Shoulders should never be allowed to be higher than the pavement.
- Roadside drains, with proper longitudinal slopes leading the water to cross drains and hence to a natural water course, must be provided.
- When the road passes through a village, keep the road level high, with side drains on both sides to ensure proper drainage and to prevent water from entering dwellings. The drains should be open L Shaped drains or U shaped depending upon site conditions.
- Integration of cross-drainage and longitudinal drainage is essential in the project.
- Hydrological design of waterway considering afflux, scour due to restricted water way is essential. High afflux causes flooding of up-stream and excessive scour on the downstream.
- Water balancing culverts (average 2 Km per Km) needs to be provided in areas which do not have a well defined water channel to drain out rain water.

B. Data required for hydraulic design of CD works

Hydrological survey is necessary for design of adequate and safe Cross Drainage Structures so that the rain water can pass as per natural slope. Hydrological survey of the proposed road is based on the following observations: ie. Rainfall Data, Catchments Area, Time of Concentration, Existing Cross Drainage Structures

Maximum rainfall / hr in Gaya 16.99 cm/hr as per CWC report.

Time of concentration (tc) in hours is calculated from the formula of $(0.87 \times L^3/H)^{0.385}$, where L is distance from the critical point to the structure site in km and H is the difference in elevation between the critical point and the structure site in meters.

1) Discharge by area velocity method = $A \times (1/n) \times R^{2/3} \times S^{0.5}$

Area of cross section = A

Wetted perimeter = P

Hydraulic mean depth = A/P

Longitudinal slope = S

Mannings coefficient = n

Velocity of flow of stream = $V = (1/n) \times R^{2/3} \times S^{0.5}$

Discharge = Q = A * V

2) BY CATCHMENT AREA METHOD (DICKENS'S FORMULA)

Dickens's formula, $(Q = CM^{3/4})$

M - Area in Sq.Km from Topo sheets

3) BY PEAK RUNOFF FROM CATCHMENT METHOD (RATIONAL FORMULA)

Rational formula, $(Q = 0.028 P.f.M.I_c)$

Considering, P - runoff coefficient

f - Mean intensity factor

I_c, critical intensity of rainfall in cm/hr = $I_o \{2 / (t_c + 1)\}$

I_o - Max. hourly rainfall, in cm/hr = $0.37 * \text{Rain fall in 24 hrs}$

tc, time of concentration, = $[0.87 * L^3/H]^{0.385}$;

L, distance in km =
(L & H as per Topo sheet or by google map)

M - Area Topo sheets in hectares =
Discharge,Q, at Bridge site=0.028P.f.M.Ic

6.1 General

Hydrological survey is necessary for design of adequate and safe Cross Drainage Structures so that the rain water can pass as per natural slope. Hydrological survey of the proposed road is based on the following observations:

- Rainfall Data
- Catchments Area
- Time of Concentration
- Existing Cross Drainage Structures

6.2 Rainfall Data

Rainfall Data as applicable for the project road were collected with maximum rainfall occurring in the months of July & August

6.3 Catchment Area

The Catchments area is calculated by gathering local information and topographical survey data as it was not possible to calculate from topographical sheets due to their unavailability.

6.4 Time of Concentration

Time of concentration (tc) in hours is calculated from the formula of $(0.87 \times L^3 / H)^{0.385}$, where L is distance from the critical point to the structure site in km and H is the difference in elevation between the critical point and the structure site in meters.

6.5 Existing Cross Drainage Structures

There are 0 number of cross drainage structures along the existing project road as listed below:

Table-6.1 List and condition of existing culverts

SL No.	Chainage (km)	Description of Existing Structure		
		Type	Condition	Remarks
1	0+700			
2	0+800			
3	1+200	RCC SLAB	DAMAGE	

7 Adopted Genometric Design Standards

7.1 General

The geometric design standards for this project conform to PMGSY / MMGSY guidelines and the guidelines as started in IRC-SP 20:2002. Recommended design standards via-a-vis the standards followed for this road are described below.

7.2 Terrain

The classification of terrain was selected from plain/rolling classification for which following criteria will be applicable.

Terrain classification	Cross slope for the country	
Plain	0-10%	More than 1 in 10
Rolling	10-25%	1 in 10 to 1 in 4
Mountainous	25-60%	1 in 4 to 1 in 1.67
Steep	Greater than 60%	Less than 1 in 1.67

7.3 Design Speed

The proposed design speed along this project road will be selected from the following table:

Road classification	Plain terrain		Rolling terrain		Mountainous		Steep terrain	
	Ruling	Min	Ruling	Min	Ruling	Min	Ruling	Min
Rural Roads (DOR and VR)	50	40	40	35	25	20	25	20

7.4 Right of way (ROW)

The requirement of ROW for this road is as follows (as specified in IRC-SP 20:2002):

Road classification	Plain and Rolling Terrain				Mountainous and Steep Terrain			
	Open Area		Built-up Area		Open Area		Built-up Area	
	Normal	Range	Normal	Range	Normal	Range	Normal	Range
Rural roads (ODR and VR)	15	15-25	15	15-20	12	12	12	9

7.5 Roadway Width

Roadway Width for this road is given below:

Terrain Classification	Roadway Width (m)
Plain and Rolling	6.00

7.6 Carriageway Width

The width of carriageway for this project road is 3.75 m.

7.7 Shoulders

It is proposed to have (1.125 m) wide shoulder.

7.8 Roadway width at Cross -drainage structure

Roadway width at culvert location for this road is (6.0 m in plain terrain and 6.0 m in mountainous terrain). Roadway width at bridges will be (4.25 m on link routes and 5.5m in through routes in plain-area and 4.25m in hilly areas)

7.9 Sight Distance

The safe stopping sight distance is applicable in the geometric design. The sight distance value for this road as per IRC recommendation are presented below:

Design Speed (km/hr)	Safe Stopping Sight Distance (m)
20	20
30	30
40	45
50	60

7.10 Radius of Horizontal Curve

According to IRC recommendations/standards, the minimum radius of horizontal curve for this project road is given below:

Terrain Category	Radius of Horizontal Curve (m)	
	Ruling Minimum	Absolute Minimum
Plain	90	60

To minimize extra land arrangement, minimum radius used is 20 m and design speed in these curve are also restricted to 20 km/hr. For safety condition speed limit board will be erected at limited speed as per (<50Km/hr)

7.11 Camber & Super elevation

A camber adopted on this road section is given below. The maximum super elevation as per design for this project road.

Surface Type	Camber (%)	
	Low rainfall (Annual rainfall <1000mm)	High rainfall (Annual rainfall >1000mm)
Earth road	4.0	5.0
WBM Gravel road	3.5	4.0
Thin bituminous road	3.0	3.5
Rigid Pavement	2.0	2.5

7.12 Vertical Alignment

The present road is in plain terrain and vertical alignment has been designed well within ruling gradient.

Generally, minimum gradient of 0.3% for drainage purpose is considered for designing the vertical alignment of this road. Vertical curves are not required when grade change is less than 1% however a minimum vertical curve is provided to avoid vertical kink.

7.13 Vertical Curves

For satisfactory appearance, the minimum length of vertical curve for different design speed is given in IRC-SP 20:2015. Vertical curves will be designed to provide the visibility at least corresponding to the safe stopping sight distance. Valley curves will be designed for headlight sight distance.

7.14 Side Slope for this rural road where embankment height is less than 3.0m is given in the table below.

Condition	Shope (H:V)
Embankment in silty/sandy/gravel soil	2:01
Embankment in clay or clayey silt or included condition	2.5:1 to 3:1
Cutting in silty/sandy/gravelly soil	1:1 to 0.5:1
Cutting in disintegrated rock or conglomerate	0.5:1 to 0.25:1
Cutting in soft rock like shale	0.25:1 to 0.125:1
Cutting in medium rock like sandstone, phyllite	0.083:1 to 0.0625:1
Cutting in hard rock like quartzite, granite	Near Vertical

7.15 Extra Widening of Pavement

The Extra Widening of Pavement at Curve as per IRC guideline is given below

Radius of Curve (m)	Upto 20	21-60	above 60
Extra Widening for 3.75 m wide single lane carriageway, (m)	0.9	0.6	Nil

8 Alignment Design

8.1 General

The basic aim of highway design is to identify sound, environment-friendly and economically feasible highway alignment. The ensuing sections deals with obligatory points, which control highway alignment, design of cross-section, highway geometric design & methodology, design of miscellaneous items.

The main components included in the highway design are:

- * Cross-section elements
- * Embankment
- * Horizontal alignment
- * Vertical profile
- * Junctions and/or Interchanges
- * Road furniture
- * Miscellaneous items

8.2 Horizontal alignment Attached with DWG

Table 8.1 - Features of Horizontal Alignment (Example)

Chainage		Length	Description	Reason for deviation from existing alignment, if necessary
From (km)	To (Km)	(Km)		

Checklist

- | | | |
|--|-----|-------------------------------------|
| a) Centre line of the existing and proposed horizontal alignment coincide | Yes | ☒ |
| b) Centre line of the existing and proposed horizontal alignment deviate at certain sections | Yes | ☐ |

Table 8.2-Horizontal Curve details :-- With Dwg

Curve No.	Chainage	Radius	LS	Speed	S.E.	Def Angle			Lc	L total	Hand of Curve
		(m)	(m)	(kmph)		D	M	S	(m)	(m)	

8.3 vertical alignment :-- With Dwg.

Table 8.3-Vertical Curve details

Sl. No	Chainage (m)	Level of pvi	Lenth of curve	Type of Curve	Grade in(%)	Grade out(%)	Grade difference (%)	Chainage		Level	
								St.of Curve	End of Curve	St.of Curve	End of Curve
1											
2					Nil						
3											

9 Pavement Design

9.1 General

Considering the subgrade strength, projected traffic and the design life, the pavement design for low volume MMSY roads was carried out as per guidelines of IRC: SP: 72-2015, or IRC SP:77 "Design of Gravel Road". In built up area for hygienic and safety reasons, C.C. pavement was used with a hard shoulder and drain appropriate line drain.

9.2 Pavement Design Approach

9.2.1 Design Life

A design life of 10 years was considered for the purpose of pavement design of flexible and granular pavements. For Rigid pavement it will be taken as 20 years.

9.2.2 Design Traffic

The average annual daily traffic (AADT) for the opening year as well as the total commercial vehicle per day (CVPD) was presented in Table 5.2.

9.2.3 Determination of ESAL applications

Only commercial vehicles with a gross laden weight of 3 tonnes or more are considered. The design traffic was considered in terms of standard axies to be carried during the design life of the road. The numbers of commercial vehicle of different axle loads are converted to number of standard axle repetitions by a multiplier called the vehicle Damage Factor (VDF). An indicative VDF value was considered as the traffic volume of rural road does not warrant axle load survey

For calculating the VDF, the following categories of vehicle was considered as suggested in paragraph 3.4.4 of IRC: SP: 72-2015.

- * Laden heavy/medium commercial vehicles
- * Un-laden /partially loaded heavy/medium commercial vehicles
- * Over loaded heavy/medium commercial vehicles

Indicative VDF values considered 10% of laden MCV and 10% of laden MCV and 10% laden HCV as overloaded & given below:

Vehicle type	Laden	Un-laden/partially laden
HCV	2.86	0.31
MCV	0.34	0.02

Lane distribution factor (L) for single lane road = 1.0 Cumulative ESAL application = $T_o \times 4811 \times L$, Where T_o = Easal application per day. The cumulative ESAL application for the project road as per paragraph 3.5 of IRC: SP: 72-2015.

9.2.4 Subgrade CBR

The subgrade CBR range of 5 % was considered and the traffic falls in the Traffic category : T03 (Cumulative ESAL Application, Para No. 3.5, (60000 to 100000) category.

9.3 Design Alternatives

Design alternatives considered {tick the applicable box}

Chainage		Design alternatives considered					Soil stabilizati on and use of locally available marginal materials.	Specify design alternative selected	justification
From	To	Pavement		Shoulder					
		Flexible	Rigid	Earthen full Width	Hard Full width	Hard shoulder 0.500 m each side			
0	1200	✓							
1200	1400		✓						
1400	1600		✓						

1600	2000		√						

9.4 Pavement composition

Flexible Pavement

The designed pavement thickness and composition was calculated by referring Figure 4 (pavement design catalogue) of IRC: SP: 72-2015. The ratio between heavy commercial vehicles and medium commercial vehicles as given in Chapter 5 should be maintained as far as possible.

The pavement layers provided are given below:

Top Layer	Mix Seal Surfacing	
Base layer	WMM Grading-III	75 mm
Base layer	WBM Grading-II	75 mm
Sub-Base layer	Granular Sub -Base Grading-II	125 mm
Total thickness		275 mm

Rigid Pavement

Top Layer	PQC	100 mm
Base layer	WMM Grading-III	75 mm
Sub-Base layer	Granular Sub -Base Grading-II	100 mm
Total thickness		275 mm

9.5 Embankment Design :- Not a high embankment hence normal slope of 2:1 will be provided

10 Design of Cross Drainage Works

10.1 General

There are many types of cross drainage works. The type of CD works depends on the flood discharge and the site conditions. These may include pipe culverts, box culverts, RCC Slab Culverts and Causeways. Some times only a flushed causeway is sufficient but if a discharge is more, a vented Causeway is provided.

In general, RCC Slab Culvert and for small drainage, pipe culvert with 1000mm (min) diameter NP-3 Pipe shall be provided.

10.2 Catchment & discharge calculation

1. Catchments area: Marking the watershed on topo sheet and measuring the area, or by google map with the help of latitude & longitude at culvert location.
2. Cross-sections: Three cross-sections, one at selected site, one at upstream and one at downstream.
3. Longitudinal section: Should show bed levels, L.W.L. and H.F.L.
4. Maximum H.F.L. : Observation of marks left by flood, local enquiry and comparing with data for any nearby structure.
5. Velocity observations: Calculate by Manning formula or Observed during actual flood.
6. Discharge is calculated by By peak runoff from catchment method (rational formula)

10.3 Justification for selection

The Rural Roads Manual contains instructions on the suitability of various types of cross-drainage structures. Generally, the provisions of the Rural Roads Manual are adequate for CD Structures for Rural Roads. However, when special CD Works are needed due to location specific conditions, such CD Structures are to be designed after appropriate exploratory investigations. Number of existing cross drainage structures with its conditions along the existing project road are listed during survey & accordingly pipe or slab culvert is provided. On the basis of hydrological survey & requirement as per past overtopping of water or irrigational point of view to cross the water from one side to another side / necessity of villagers for watering their crop , new cross drainage structures are recommended with consent of JE / AE / Mukhiya / Sarpanch etc. Hydrological survey is necessary for design of adequate and safe Cross Drainage Structures so that the rain water can pass as per natural slope.

On the basis of above points / hydrological survey, 0 No new cross drainage structures are recommended for the project road as listed below.

SL No.	Chainage (km)	Description of Proposed Structure		
		Type	Span/ Dia. (m)	Remarks
#VALUE!	0+700	HPC		
#VALUE!	0+800	HPC		
#VALUE!	1+200	BOX		

10.2 Hydrological Design

The existing structures in poor condition that are proposed for replacement as listed below. Agricultural conduits, which basically act as balancers, have also been provided as listed below;

SL No.	Chainage (km)	Description of Existing Structure		Description of Proposed Structure	
		Type	Condition	Type	Span/ Dia. (m)
1	0+700			HPC	
2	0+800			HPC	
3	1+200	RCC SLAB	DAMAGE	BOX	

10.3 Design Feature

Design standards for culverts has been prepared based on standard codes and guidelines of IRC : SP: 20:2014 and similar type of ongoing projects. General features of the designed cross drainage structures are given below:

For Hume Pipe culvert, minimum road width has been taken as 6.00 m

Width of culvert: 7.5 m with parapet.

Width of Bridge : 7.5m with parapet.

10.4 Justification for retaining/widening and replacement of culverts

During the visit of the road it has been observed there are ponds and water logged areas near the right of way of the proposed road. At some locations the height of embankment is very high due to the existing slab/box culverts constructed above HFL. The approach of such type of culverts needed to be protected so that there is no any erosion of the slope of the embankment. Therefore keeping in mind the above conditions toe wall with boulder pitching in slopes of the embankment or retaining wall would be provided. The existing condition of the Pipe Culverts are mostly poor. Most of the Pipe Culverts are choked and are with broken headwalls. So all the Cross Drainage works are to be designed to ensure that water is quickly drained off and no stagnation takes place. During the site visit it was felt that culverts were inadequate at certain locations.

10.5 Hydraulic calculation for culvert

The design discharge was calculated by the rational method considering peak runoff from catchment using the formula,

$$Q = 0.028 \times P \times A \times I_c$$

Where P = coefficient of Run off for the catchments characteristics, A = Catchments Area in Hectares & I_c = Rainfall intensity Small bridge - site length of which exceeds 15 m to be jointly visited by STA and S.E. Design - as per SP - 20 & SP-13 and relevant IRC codes for Bridges.

Causeways and submersible bridges-Design to be done as per SP-20 and SP-80:2005

Table 10.2 Proposed Culverts

Sl. No.	Chainage	Type of Culvert	Span/ Dia. (m)
#####	0+700	HPC	
#####	0+800	HPC	
#####	1+200	BOX	

11.0 Protective Works & Drainage

11.1 General

Protective Works :-- Nil

Cross Drain (Drainage) :-- Nil

Road Side Drainage :-- Nil

11.2 Road side drain

As the insufficient drainage of surface water leads to rapid damage of road, road side drain as shown in drawing volume has been provided particularly on the location of habitation areas. Sketch for a standard roadside drain should be made available.

11.3 Protective Works

Necessary protection works consisting of closed piling and ballah piling have been provided near pond and water bodies falling within the proposed alignment. Table 11.1 gives the chainage-wise protection works adopted.

Table 11.1 List of Protective Works

Sl. No.	Chainage	Type of protective works		Comments
		LHS	RHS	
1				
2		Nil		

12.0 Land Requirement :-- Nil

12.1 General

The existing road is generally an earthen track with some stretches of brick bat soling (description of the road surface). Thus the project road is a new connectivity road. The existing Right of Way (ROW) is varying from 4.00 m to 12 m.

12.2 Proposed ROW

The width of carriageway has been considered as 3.75 m in accordance with the IRC-SP 20: 2014. The total roadway width is limited to 6 m with 1.125 m earthen shoulder on either side of carriage way. The proposed ROW generally varies from 12 m – 15 m depending upon the embankment height and the proposed ROW is even less than 10 m in some stretches of habitation area and in areas having tree plantation.

12.3 Additional Land

As the road will be built in Govt. land no additional land is required.

13.0 Utility shifting/relocation

13.1 Existing utilities

:-- Nil

Utility line like electricity pole ,sewer line overhead wire , water pipe line or underground telephone line may be shifted during construction of road. This electric line required some additional electric pole in between to raise the electric wires.Protect utility services during construction period.

Table 13.1 Estimated Cost for Relocation of Utilities

Sl. No.	Utility Type	Qty	Estimated Rate	Estimated Cost
1				
2		Nil		
3				
Etc.				
Estimated Total Cost				

13.2 list of departments responsible for utility shifting

:-- Nil

State Electricity Board of Bihar or power grid of india is responsible for electrical utility shifting. PHED responsible for water utility & BSNL for telephone wire,its pole or tower.

13.3 Rules pertaining to shifting of utilities

:-- Nil

Total expenses occurred will be paid by BRRDA for Shifting or relocating of any utility services as per their norms / guidelines without any interruption. Parent department will do the shifting of utility services job if required.

13.4 Provide an estimate with breakdown of costs for relocation of utilities :-- Nil

An estimate for relocation of utilities is given below in Table 13.1.

14.0 Traffic Management and Road Safety Measures

Rural roads are generally designed for a design speed of 50 km/hr in plain and 40 km/hr in rolling terrain. On the low volume roads drivers have tendency to cross these limits. Over speeding has been a major cause of accidents on certain location and most vulnerable are pedestrians and riders of two wheelers. To control the speed of vehicles on rural roads at such locations, some engineering measures are available. Constructing a speed breaker with sign post and marking has been most effective measure in regulating the speed of vehicle.

Location

Provision of speed breaker on the following critical locations on rural or PMGSY road may be made for new projects.

- (i) All manned and unmanned railway crossings.
- (ii) Junction of rural road with higher order roads (MDRs, SH & NH).
- (iii) Near Schools/ Anganwadi Centers / Health Centers.
- (iv) Entry points of habitation
- (v) Any situation where there is a consistent record of accidents primarily attributed to speed of vehicles
- (vi) Approaches to weak or narrow bridges and culverts requiring speed restriction for safety
- (vii) Sharp curves with poor sight distances

Design

Design of speed breaker shall conform to IRC-99:1988. For rural roads in PMGSY/MMGSY single speed breaker may be provided on both sides of such locations as per design suggested for rounded hump type of speed breaker for general traffic at preferred crossing of 25 kmph. This can be constructed by providing a rounded (17 meter radius) hump of 3.7m width and 10 cm height

Specifications for speed breakers

Location of speed breaker is marked on the pavement. Surface is cleaned for dust and loose particles and tack coat is applied. Forms of requisite height and shape are placed and hot premix bitumen is poured to required dimensions and shape. Compaction of material, curing and finishing using fine premix bituminous material is completed before traffic is allowed.

Placement

These speed breakers shall be placed at 40m on either side of the locations mentioned in the previous paragraphs. Only one hump on each side of the locations would be sufficient.

Speed breakers placed at the threshold of a habitation and at regular intervals (150 - 200 m) through the habitation.

On roads where, because of the lack of dry land in the general area, the shoulder will be continually occupied and only intermittently available for traffic, speed breakers are installed at regular intervals, not more than 300 m apart, for the entire length of the road.

Speed breakers are provided at sharp curves and bends where the curve design speed is less than 40 km/h in plain and rolling terrain, and less than 25 km/h in mountainous and steep terrain.

Speed breakers are provided and directional sight boards installed at sites where reverse horizontal curves are closely spaced and speed reduction is required.

In certain locations speed breakers may have to be repeated over section to keep speeds low throughout. The distance between one hump to another can vary 100 to 120 m centre to centre. This is only provided to control the speeds / deceleration.

14.1 Road Furniture

Road Furniture details include:

- * Road markings
- * Cautionary, mandatory and information signs
- * KM stones and 200m stones
- * Delineators and object markers
- * Delineators and object markers

Table 14.1
Details of Km. stone. 5th km. stone and boundary pillars

Sl.	Name of Road	Chainage (km)	5th . Km. stone (nos.)	Km. stone (nos.)	200m stone (nos.)	Boundary stone (nos.)
1	Chandisthan Se Mahadevpur TO Tarapur	-	0	4	7	-

14.1.1 Road Markings

Road markings perform the important function of guiding and controlling traffic on a highway. The markings serve as psychological barriers and signify the delineation of traffic paths and their lateral clearance from traffic hazards for safe movement of traffic. Road markings are therefore essential to ensure smooth and orderly flow of traffic and to promote road safety. The Code of Practice for Road Markings, IRC: 35-1997 has been used in the study as the design basis. Schedules of Road Markings are included in contract drawings.

14.1.2 Cautionary, Mandatory and Informatory Signs

Cautionary, mandatory and informatory signs are provided depending on the situation and function they perform in accordance with the IRC: 67-2001 guidelines for Road Signs. Overhead signs are proposed in accordance with IRC: 67-2001.

14.1.3 Kilometer Stone and Hectometer Stone

The details of kilometre stones are in accordance with IRC: 8-1980 guidelines. Both ordinary and fifth kilometre stones are provided as per the schedule. Kilometre stones are located on both the side of the road.

The details of 200m stones conform to IRC: 26-1967. 200m stones are located on the same side of the road as the kilometre stones. The inscription on the stones shall be the numerals 2,4,6 and 8 marked in an ascending order in the direction of increasing kilometerage away from the starting station. Table 14.1 gives the details of Km. stone. 5th km. stone and boundary pillars provided.

14.1.4 Delineators and Object Markers

Roadway delineators are intended to mark the edges of the roadway to guide drivers on the alignment ahead. Object markers are used to indicate hazards and obstructions within the vehicle flow path, for example, channelising islands close to the intersections.

Delineators and object markers are provided in accordance with the provisions of IRC: 79-1981. They are driving aids and should not be regarded as substitutes for warning signs, road markings or barriers.

14.1.5 Guard Posts, Crash Barriers and Speed Breakers

Guard Posts, Crash Barriers and Speed Breakers are proposed on embankments of height more than 1.5m and bridge approaches. The spacing of guard post shall be 10.0m c/c in these areas. Typical Guard post consists of pre-cast (M20) CC post of size 200mm x 200mm and a height of 600mm above ground level. They are encased in M15 cement concrete to a depth of 450mm below ground level. Guard posts are painted with alternate black and white reflective paint of 150mm wide bands. Table 14.2 gives the details of guard posts, crash barrier and speed breakers. A layout of a typical speed breaker is given.

Table 14.2
Details of guard posts, crash barrier and speed breakers

Sl.	Name of Road (km)	Chainage (m)	Guard post (nos.)	Crash Barrier (m)	Speed breakers (nos)
1	Chandisthan Se Mahadevpur TO Tarapur	-			

14.2 Temporary traffic control

The road under consideration has to be widened alongwith the bridges and culvert. The list below provides the c/d structures to be widened/reconstructed and temporary traffic control measures to be implemented.

Table 14.3 gives the section-wise details of temporary traffic control measures to be adopted.

Table 14.3
Details of temporary traffic control measures to be adopted

Sl.	Name of Road	Chainage (km)	Temporary traffic control measures to be adopted			
1	Chandisthan Se Mahadevpur TO Tarapur	-				

15.0 Specification

15.1 General

The "Specification for Rural Roads" published by IRC on behalf of the Ministry of Rural Development, Govt. of India has been followed.

15.2 Construction Equipment

Construction by manual means and simple tools has been considered for the project as per the guideline of NRRDA. For handling of bulk materials like spreading of aggregates in sub- base & base courses by mix-in-place method, use of motor grader & tractor-towed rotavator has been allowed in line with the schedule of rate for MMGSY work. Compaction of all items shall be done by ordinary smooth wheeled roller if the thickness of the compacted layer does not exceed 100 mm. It is also considered that, hot mix plant of medium type & capacity with separate dryer arrangement for aggregate shall be used for bituminous surfacing work that can be easily shifted. A self-propelled or towed bitumen pressure sprayer shall be used for spraying the materials in narrow strips with a pressure hand sprayer. Now the vibratory rollers are also being used for rapid progress.

For structural works, concrete shall be mixed in a mechanical mixer fitted with water measuring device.

The excavation shall be done manually or mechanically using suitable medium size excavators.

15.3 Construction Methods

15.3.1 Preparation for Earthwork

After setting out existing ground shall be scarified to a minimum depth of 150 mm and leveled manually and compacted with ordinary roller to receive the first layer of earthwork. In filling area, existing embankment will be generally widened on both sides as per the alignment plan. Continuous horizontal bench, each at least 300 mm wide, shall be cut on the existing slopes for bonding with the fresh embankment/ subgrade material as per CI 301.7.

15.3.2 Embankment work

Material from borrow pits will be used for embankment construction as well as the approved material deposited at site from roadway cutting and excavation of drain & foundation may be used. Layer of the earth shall be laid in not more than 25 cm (loose) thick layers & compacted each layer of the soil up to 30 cm below the subgrade level at OMC to meet 97% of Standard Proctor Density.

Material for embankment and sub-grade shall satisfy the requirements of Table 300-1 and 300-2 as per the Specification for Rural Roads.

15.3.3 Sub-grade

Material from borrow pits will be used for construction of top 30 cm as sub-grade. Soil in these sections is quite good for road construction. Top 30 cm upto the subgrade level and shoulder at OMC to meet 100 % of Standard Proctor Density by proper control of moisture and by required compaction with a smooth wheeled roller.

15.3.4 Sub-base

Sub base material in the form of stone aggregates and sand as available in the area to be used in GSB Grade I layer.

15.3.5 Base

Stone aggregates will be used in base course. 53 mm to 24.4 mm size (Grading 3) aggregate as been proposed for the layer.

15.3.6 Shoulder

Earthen shoulder shall be constructed in layers and compacted to 100% of Proctor's Density. First layer of shoulder shall be laid after the sub-base layer is laid. Thereafter earth layer shall be laid with base layer of pavement and compacted.

15.3.7 Surfacing

Slow setting bitumen emulsion will be applied as primer on water bound layer. Emulsion shall be sprayed on surface with pressure distributor.

Mix Seal Surfacing equivalent viscosity grade bitumen shall be laid as surfacing course.

15.3.8 Structural Works

Following grades of concrete are proposed for Structural works and comply with MORD and IRC specifications:

- Concrete in superstructure of slab culvert – M-25 (RCC)
- Concrete in abutment cap, dirt wall of slab culverts – M-20 (RCC)
- Brickwork in abutment, return wall, headwall - M-20 (RCC)
- Concrete below abutment, return wall, headwall – M-20 (RCC)

16.0 Environmental Issues

16.1 Alignment

The proposed road has planned to be designed considering the impact on environment. Proposed road alignment follows existing pathway to the maximum extent so that huge land acquisition is not necessary for construction of the project road. Proposed road, when completed, will be an addition to the aesthetics of this rural area.

16.2 Environmental Sensitive Area (National Park, Wild Life Sanctuary, Protected /Reserve Forest, Wet land etc.)

The alignment will be finalise avoiding the environmental sensitive area such as National Park, Wild Life Sanctuary, Protected /Reserve Forest, Wet land etc. It is also necessary to maintain the minimum distance of 500 m of the project road from environmental sensitive area.

16.3 Construction Camp

Construction camps will be established away from forest area/water body. The minimum facilities such as water supply, sanitation, storm water drainage, solid waste management and first aid box will be provided during the construction period of the project. Necessary provision for rehabilitation or restoration after the completion of construction phase will be done.

16.4 Permit / Clearance required prior to commencing of civil work

- No objection Certificate- This will be taken by PIU from SPCB.
- Forest Department- If the project road passing thorough forest land and acquisition of the same is involved and it will be taken by PIU from Forest Department
- Consent to establish (CFE) and Consent to Operate (CFO) - This is required for Plant Hot Mix Plant, WMM Plant, Batching Plant required for the project and the same will be taken by the Contractor from SPCB.
- Lease from Mines & Geology- This will be taken by the Contractor for new Stone Quarry required for the project.

16.5 Borrow area

The filling soil will have to be procured from borrow pit. Borrow area will be so excavated that the lands can be reused as agricultural field. The depth of borrow pit shall not exceed 450 mm (150 mm top soil included). The top soil shall be stripped and stacked and shall be spread back on the land. As far as possible the borrow pits shall not be dug close to the road embankment. The Redevelopment of borrow area will be done before closure of the same and it will be as per agreement between landowner and the Contractor.

16.6 Erosion Control

Turfing of the embankment slopes and earthen shoulder to prevent erosion of slopes of the embankment, rain cuts and erosion of shoulder is being suggested.

16.7 Drainage

Suitable cross drainage structures have been provided on the basis of hydrological survey of the area. So, there will be no obstruction to the natural drainage of the area. Road side drainage is also duly considered in a manner so that surface water is led to the low points and is drained through the CD structures.

16.8 Use of Material

Cut back bitumen is not proposed in the project to avoid contamination with Kerosene. Bitumen emulsion is proposed for primer coat.

17.0 Analysis of Rates

17.1 General

Rates for various item of works of the project have been derived from the "Department Schedule of rates published in 2024 based on MORD data book and updated rates of RCD SOR approved by State Level Schedule Rate Committee, Road Construction Department, Govt. of Bihar for Road works, Culvert works & Carriage. The rates of different items have been worked out inclusive of all labour charges, hire charges of Tools & Plants, Machineries and all other cost estimates for the item of work, overhead and contractor's profit@ 12.5%,

17.2 Basic Rate of Material

The basic rates for stone materials & river bed materials have been taken from Sixteenth edition, Road Construction Department, Govt of Bihar effective from 01/04/2024. [State Level Schedule Rate Committee, Road Construction Department, Govt. of Bihar.](#)

For bituminous materials, basic rate at (location) for equivalent viscosity grade bitumen and for emulsion the basic rate of (location) has been considered as suggested in from [State Level Schedule Rate Committee, Road Construction Department, Govt. of Bihar.](#)

Basic rate of other materials like coarse & fine sand, cement are as per the latest from [State Level Schedule Rate Committee, Road Construction Department, Govt. of Bihar.](#)

Basic rate of steel materials at sub-divisional office has been considered in analysis after adding cost of carriage, loading & unloading.

17.3 Lead for Materials

For stone aggregates and sand, lead from source to work site is calculated from the district map and block level map of core network and finalizing the same in discussion with PIU. The supply of different materials to worksite is by Road & Rail. Lead for bituminous & steel materials are similarly obtained using SOR. Earth in builtup area will be brought from 1 Km lead.

18.0 Cost Estimate

18.1 General

Cost Estimate of project has been arrived on the following basis

- Selection of Items of work
- Estimation of item wise quantities
- Analysis of Rates

18.2 Estimation of Quantities

All the relevant road and structure work Items have been identified as per survey, design and drawings. Following major item of works considered are given below:

- Site clearance, dismantling and earthwork
- Pavement works (GSB, WBM, Bituminous layers)
- Cross drainage structure works
- Drainage and protective works
- Utility relocation
- Road safety and furniture
- Maintenance works

Quantity of earthwork have been derived from the proposed cross section drawings. Volume of cut and fill will be obtained directly using the design package software. Quantity derived from software will be manually verified. There are same stretches of the road in cut section. The details are provided chainage wise in Table-18.1 of total cut and fill volume. The soil obtained from roadway excavation shall be used for construction of embankment and shall be paid as per item no.4. All other quantities will be computed from the drawings of finished road, miscellaneous drawings & drawings of CD Structures.

Table of cut and fill volume in Earthwork Chart in page no :

154 to 155

18.3 Abstract of Cost

Unit rates have been derived by using the “Schedule of Rates for Road Works, Culvert works and Carriage etc. **Stat Level Schedule Rate Committee, Road Construction Department, Govt. of Bihar.**” The abstract of Cost estimate is given in the Table below.

The details of cost in Format F6 Attached.

18.4 Maintenance

Cost of Annual Maintenance for five years after completion of project have been estimated as per the PMGSY Guidelines. Different activities of ordinary repairs are done as and when.

Total Cost of 5 year Routine Maintenance Works Attached

19.0 Construction Program :- Attached

JE
RWD

AE
RWD

EE
RWD

MUKHYA MANTRI GRAM SAMPRAK YOJNA, AWASHES (NDB)

YEAR 24-25

GENERAL ABSTRACT OF COST

Block:-- Gurua

District:- Gaya

Length of Road:-- 2.000 KM

Name of Road:-- Chandisthan Se Mahadevpur TO Tarapur

SL. No.	Item of Work	Amount
1	CONSTRUCTION COST :	101.171 Lacs
2	5TH YEAR PERIODIC RENEWAL COST . :	17.103 Lacs
	TOTAL ESTIMATED COST (1+2) :	118.274 Lacs
	Add Labour Cess @ 1% :	1.183 Lacs
	Add Seigniorage Fee @ 10% on Material Cost only :	2.594 Lacs
	Sub Total :	122.051 Lacs
	Add GST @ 18% :	21.969 Lacs
A	TOTAL CONSTRUCTION COST (INC GST, LC @ SEIGN. FEE) SAY "A" :	144.020 Lacs
3	SIX YEARS OPERATION & MANAGEMENT (O&M) COSTS AFTER COMPLETION OF CONSTRUCTION . :	17.430 Lacs
	Add Labour Cess @ 1% :	0.174 Lacs
	Add Seigniorage Fee @ 10% on Material Cost only :	0.467 Lacs
	Sub Total :	18.071 Lacs
	Add GST @ 18% :	3.253 Lacs
B	TOTAL OPERATION & MANAGEMENT COST (INC GST, LC @ SEIGN. FEE) SAY "B" :	21.324 Lacs
C	SUB TOTAL COST (A+B)	165.344 Lacs
D	EMERGENT & PRICE ADJUSTMENT COST @ 15% OF "C" :	24.802 Lacs
E	Contingency @ 1% OF "C" :	1.653 Lacs
F	Administrative Cost @ 2.25% OF "C" :	3.720 Lacs
G	Land acquisition :	0.000 Lacs
H	TOTAL PROJECT COST (C+D+E+F+G+H) :	195.519 Lacs

Junior Engineer

Asstt. Engineer

E. Engineer

SE
RWD

SUMMARY OF COST ESTIMATE FOR THE PROJECT

NAME OF ROAD : Chandisthan Se Mahadevpur TO Tarapur

DISTRICT Gaya
BLOCK Gurua
DIVISION Sherghati
LENGTH OF ROAD (in Km) 2.000
LENGTH OF BT PAVEMENT 1200
LENGTH OF CC PAVEMENT 800

CD STRUCTURES

HUME PIPE 2
RCC CULVERT 0
BOX CELL CULVERT 1
CAUSEWAY / MINOR BRIDGE 0

Sl. No.	DESCRIPTION	AMOUNT (LAKHS)
1	PREPARATORY WORKS ,SITE CLEARANCE , DISMANTLING	0.981
2	EARTHWORK	13.193
3	GSB GRADING - II	12.443
5	WBM GRADE II	10.207
5	WMM GRADE III	11.322
6	PRIME COAT	2.518
7	TACK COAT	0.866
8	MIX SEAL SURFACING WITH WASTE PLASTIC	9.380
9	PAVEMENT QUALITY CONCRETE.	19.785
10	Edging with 1st Class Bricks	1.553
11	SIDE DRAINS & CROSS DRAIN	0.000
12	PROTECTION WORKS	0.000
13	ROAD FURNITURES , KM STONES , TRAFFIC & DIRECTION SIGN, PMGSY LOGO	5.131
14	CABLE DUCT ACROSS THE ROAD	0.417
	SUB TOTAL OF PAVEMENT COST IN LACS =	87.796
14	CROSS DRAINAGE STRUCTURES	
I	HUME PIPE	5.685
II	RCC	0.000
III	BOX	7.691
IV	CAUSEWAY	0.000
V	REPAIR OF CD WORK	0.000
	SUB TOTAL OF CD STRUCTURES COST IN LACS =	13.376
	Total Construction Cost.	101.171
15	SIX YEARS OPERATION & MANAGEMENT (O&M) COSTS AFTER COMPLETION OF CONSTRUCTION .	
	I st Year	2.380
	II nd Year	2.931
	III rd Year	3.483
	IV th Year	4.035
	VI th Year	1.975
	VII th Year	2.627
	SUB TOTAL OF =SIX YEARS OPERATION & MANAGEMENT (O&M)	17.431

JE

AE

EE

Sl. NO.	SOR Item No.	Description	Qty.	Length (m)	Width (m)	Height (m)	Quantity	Unit	Rate in Rs.	Amount in Rs.
Miscellaneous :										
1		Cost of Private land	1	0	8		0	Sqm		
		1 Decimal =40.465 Sqm					0	Dec	26,000.00	0
		Four Time multiply Amount	4							0

MUKHYA MANTRI GRAM SAMPRAK YOJNA, AWASHES (NDB)

YEAR 24-25

Checklist for P.I.U.
(For Individual Road Works)**To be Filed by PIU**

1 Location :	State : Bihar	District : Gaya	Block : Gurua
2 PACKAGE NO :	Survey ID 27227		
3 Name of Road :	From : Chandisthan Se Mahadevpur	To : Tarapur	
4 Total Length :	2.000 Km	In Built - up Area : 0.800 Km	In Open Area : 1.200 Km
5 Estimated Cost	111.472 Lakhs	Cost Per Km	55.736 Lakhs
6 Type of Proposal :	New Connectivity		
If the proposal road is a new connectivity		√	
*	Is the road a part of core network	YES / No	
*	Name of the unconnected Habitation {s} (To be crosschecked with CN-6)	Tarapur, 0, 0, ,	
*	Does the proposed road lead upto the habitation for which it is supposed to provide connectivity (In other words are you sure that the road is not being made partially ?)	√ YES / No	
*	Does the proposed road connect the unconnected habitation to		
a)	Another habitation having All weather Road		
b)	Directly to an All weather Road	(b)	
	If 'b', indicate the nature of the road to which the proposed road leads.	RR	MDR SH NH
If the proposal for upgradation		√	
*	- Is the road a part of core network	YES / No	
	- Is it associated through route or not	√ YES / No	
	(In case if it is not associated TR)		
	Whether	√	
	- PCI has been done	YES / No	
	- Age of road given	√ YES / No	
	- Is it certified that there are no other Unconnected Habitation in the district	√ YES / No	
	- Total Population sub served by the proposed road	200	
7 a)	Whether the proposed road has desired carriageway width.	√ YES / No	
	roadway width and road land width (RLW).		
b)	Indicate the actual widths of the following for the proposed road.	In the Built-Up Area(m)	In the Open Area (m)
	a Carriageway	3.75	3.75
	b Roadway	6.00	6.00
	c Road Land Width	10.00	15.00
c)	Index Map (Not to Scale):- Attached		
Habitation	Chandisthan Se Mahadevpur		
Chainage			
Culverts			
		Tarapur	

8 Base Year Traffic Volume :											
Date ,Month & Year of Traffic Volume : 4 - 06 - 2019 to 6 - 06 - 2019											
Days	Motorized						Non Motorized			Total	
	Cars, Jeeps, Vans, Three-wheelers,	Motorised two-wheelers	Light Commercial Vehicles	Trucks	Agricultural Tractors/ Trailers	Buses	Cycles	Cycle Rickshaws	Cycle Rickshaw / Hand Cart	Motorized	Non Motorized
1	2	3	4	5	6	7	8	9	10	11	12
Day 1	40	83	44	10	65	0	137	39	70	242	246
Day 2	42	73	34	8	88	0	149	34	63	245	246
Day 3	31	79	46	13	37	0	143	22	46	206	211
Day 4	27	83	2	0	40	0	115	19	53	152	187
Day 5	37	86	6	2	42	0	149	24	79	173	252
Day 6	27	81	0	3	27	0	152	17	49	138	218
Day 7	27	68	0	2	44	0	64	15	46	141	125
Average	33.00	79.00	18.86	5.43	49.00	0.00	129.86	24.29	58.00	185.29	212

9	- Growth Rate Adopted (%) =	6%	Projected Traffic =	73 CVPD
	- Design Life in Years =	10 Years	- Total Motorized Vehicle =	185
			- Total Non Motorized Vehicle =	212
	- No. of Days in each Harvesting Season (t) =	75	Cumulative ESAL in the design period =	95306
	- Value of (n) Assumed =	1	Traffic Category =	T 3

10 Sub-grade CBR											
Chainage (KM)											
Sub-grade CBR (%)											
Design CBR (%)	5 %										

11 COST DETAILS										Cost in Rs.	
A. Clearing and Grubbing										98,070.00	
B. Pavement Components											
For Black Top						For Unsealed (Cement Concrete Road)					
	Item	Thickness in mm	Cost in Rs.			Item	Thickness in mm	Cost in Rs.			
	- EARTHWORK		11,47,219.00			EARTHWORK		1,72,115.00			
	- GRANULAR SUB BASE	125	11,27,373.00			GRANULAR SUB BASE	100	1,16,913.00			
	WBM - 1					WMM - 3	75	3,77,394.00			
	- WBM - 2	75	10,20,681.00			PQC	125	21,33,844.00			
	- WMM - 3	75	7,54,767.00								
C. Bituminous Layers											
	- Prime Coat		2,51,762.00								
	- Tack Coat		86,613.00								
	- Mix Seal Surfacing		9,38,012.00								
Total Cost of Black Top						53,26,427.00		Total Cost of CC Road		28,00,266.00	
Say Rs in Lakhs						53.26		Say Rs in Lakhs		28.00	
D. CD WORKS											
No of existing CD works						0					
Do they require any improvement						YES/NO					
If YES, their number & cost of improvement (In lakhs)=								0.00			
No of proposed CD works with Classification :						3					
	Type of Culvert	Nos.	Cost in Rs.								
	Hume Pipe Culvert	2	5,68,474.00								
	Slab	1	0.00								
	Box Culvert	1	7,69,078.67								
	REPAIR OF CD WORK	0	0.00								
	CABLE DUCT ACROSS THE	0	41,683.00								
	Total Cost of proposed CD works		13,79,235.67								
E.	Protection Works	Length	0 M			0.00					
F.	Pucca Side Drain / Cross Drain (if Provided)	Length	0 M			0.00					
G.	Road Logo and Other Furniture					5,13,114.00					
H	5TH YEAR PERIODIC RENEWAL COST .					17,10,299.00					
Total Cost of Project in Rs.=						1,18,27,411.67					
Add GST @ 18 % Rs.=						21,96,914.00					
Add Lavour Cess @ 1% Rs.=						1,18,274.12					
Add Seigniorage Fee @ 10% Rs.=						2,59,392.00					

H. Five Years Maintainance Cost

Years of Maintainance	Cost in Rs.	Cost Rs in Lakhs	Percentage of Construction Cost
1st Year	2,38,000.00	2.380	1.653
2nd Year	2,93,100.00	2.931	2.035
3rd Year	3,48,300.00	3.483	2.418
4th Year	4,03,500.00	4.035	2.802
6th Year	1,97,500.00	1.975	1.371
7th Year	2,62,700.00	2.627	1.824
Total Cost	17,43,100.00	17.431	10.279
Add GST @ 18 %	3,25,296.00	3.253	1.850
Add L.C @ 1%	17,431.00	0.174	0.103
Add S.F @ 10%	46,669.00	0.467	0.019
Total Maintenance Cost including GST and L.C	21,32,496.00	21.325	12.232

12 Whether the road has geometrics as per RRM/Latest Circulars of NRRDA

√
YES/NO

13 Whether the CD works/Protection works are provided as per RRM

√
YES/NO

14 Whether the Cost Estimates are as per standard data analysis an S.S.R.

√
YES/NO

Certified that the information provided is true.

Prepared By

J.E

Checked By

A.E

R.W.D

E.E.

R.W.D

Scrutinized By

SE

Association of Routes

FORMAT F-4A

DISTRICT: **Gaya**
BLOCK: **Gurua**

Package No.	Primary Network			Associated Through Route (ATR)	PCI	Age	Wheather proposed for Upgradation(U) or Renewal®	Other Non-conformance subsidiary to the ATR	Wheather includes in package Y/N	Habitation served with population	
	No.	Habitation served (with population)								Habitation	Population
		Tarapur	200							Tarapur	200
		0	0								
		0	0								

MUKHYA MANTRI GRAM SAMPRAK YOJNA, AWASHES (NDB)

Cost Estimate for Road Construction

Name of Road : Chandisthan Se Mahadevpur TO Tarapur

Block : Gurua

Total Length : 2

B T Length : 1200 mt

C C Length : 800 mt

District : Gaya

Sl. No.	SDB SL.NO	MORD Ref.No	Description	Unit	NOS	LENGTH	WIDTH	HEIGHT	QUANTITY	RATE	AMOUNT (in Rs.)
			SUB HEAD : PREPARATORY WORKS ,SITE CLEARANCE , DISMANTLING								
1		100	Setting Out Pillars								
			Providing & Fixing of Working benchmark Pillars 2 nos. per km & 6 Nos. of reference pillars required for 1 Km. as per drawings given and direction of E/I								
				No	8.00	2.000			16.0	2,654.79	42,477.00
2	2.2	201 (I-A)	Clearing and Grubbing Road Land (By manual means) including uprooting wild vegetation, grass, bushes, shrubs, saplings and trees of girth upto 300mm, removals of stumps of such trees cut earlier & disposal of unserviceable materials & stacking of serviceable materials to be used or auctioned upto a lead of 1000 m including removal and disposal of top organic soil not								
				Ha	1	2,000.00	3.500		7,000.00		
									0.700	73,248.75	51,274.00
3	2.14	202	Box Cutting								
	I		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 50 m as per Technical Specification Clause 302.3								
		A	Be side of BES for Provision of Flexible Road	cum	2	0.00	0.525	0.100	0.00		
		B	Be side of BES for Provision of Rigid Road	cum	2	600.00	0.375	0.100	45.00		
									45.00	95.97	4,319.00
										A) SUB TOTAL =	98,070.00
			SUB HEAD : EARTHWORK								
4	3.3	301.5	Construction of embankment with approved material deposited from road way cutting and excavation from drain and foundation of other structures and excavated with an average lead of 50 m graded and compacted to meet requirement of tables 300.1 and 300.2 as per technical specification clause 301.5 (Including Royalty & Labour Cess).								
				Cum		60% of Total Qty.		325.42			
								195.25	195.25	58.36	11,395.00
5	3.5	(iii)	Excavation in Soil using Hydraulic Excavator and Tippers with disposal upto 1000 m								
			Excavation for roadwork in soil with hydraulic excavator of 0.9 cum bucket capacity including cutting and loading in tippers, trimming bottom and side slopes, in accordance with requirements of lines, grades and cross-sections, and transporting to the embankment location with a lift upto 1.5 m and lead upto 1000 m as per Technical Specification Clause 302.3 (Including Royalty & Labour Cess).								
			As per Earth Work Calculation Sheet Annexure - 3								
			TOTAL QTY. OF CUT	Cum					280.42	95.97	26,912.00
6	3.4	301.5	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 requirement of Tables 300.1 and 300.2 with a lead upto 1000 m & 100 m as per Technical Specification Clause 301.5 . (Including Royalty & Labour Cess).								
			As per Calculation Sheet						1,937.04		
			For 1000 m lead @ 20 %	Cum					387.41	243.88	94,482.00
			For 100 m lead @ 80%	Cum					1,549.63	173.61	2,69,031.00
7	3.14	303.1	Construction of Subgrade and Earthen Shoulders								

MUKHYA MANTRI GRAM SAMPRAK YOJNA, AWASHES (NDB)

Cost Estimate for Road Construction

Name of Road : Chandisthan Se Mahadevpur TO Tarapur

Block : Gurua

Total Length : 2

B T Length : 1200 mt

C C Length : 800 mt

District : Gaya

Sl. No.	SDB SL.NO	MORD Ref.No	Description	Unit	NOS	LENGTH	WIDTH	HEIGHT	QUANTITY	RATE	AMOUNT (in Rs.)
			Sub Head : PAVEMENT LAYERS - GSB & WBM ITEMS								
8	4.1	401	Granular Sub-base with Well Graded Material (Table 400.1)								
		(i)	(By mix in place method) For Grading II Material								
			Construction of granular sub-base by providing well graded material, spreading in uniform layers with motor grader on prepared surface, mixing by mix in place method with rotavator at OMC, and compacting with smooth wheel roller to achieve the desired density, complete as per Technical Specification Clause 401.								
			GSB in Earthen Portion	Cum	1.00	1,200.00	4.050	0.125	607.50		
			GSB in Widening	Cum	2.00	0.00	0.525	0.100	0.00		
			GSB in Full width	Cum	1.00	0.00	4.050	0.075	0.00		
			Add for extra for Profile Correction (20%)	Cum	20%	0.00	3.000	0.100	0.00		
			Add for extra widening on curve (2%)	Cum					12.15		
			Net GSB Qty. Required form Grading I Material						619.65	1,819.37	11,27,373.00
9	4.8	405	Water Bound Macadam with Crushable Screenings								
	(2-A)		WBM Grading 2								
			Providing, laying, spreading and compacting stone aggregates of specific sizes to water bound macadam specification including spreading in uniform thickness, hand packing, rolling with three wheel 80-100 kN static roller in stages to proper grade and camber, applying and brooming, crushable screening to fill-up the interstices of coarse aggregate, watering and compacting to the required density Grading 2 as per Technical Specification Clause 405.								
			In full width WBM Qty. Required	Cum	1.00	1,200.00	3.750	0.075	337.50		
			Add for extra widening on curve (2%)	Cum					6.75		
			Net WBM -2 Qty						344.25	2,964.94	10,20,681.00
10	4.7	405	Wet Mix Macadam								
	(3-A)		Providing, laying, spreading and compacting graded stone aggregate to wet mix macadam specification including premixing the material with water at OMC in mechanical mixer (Pug Mill), carriage of mixed material by tipper to site, laying in uniform layers in sub-base/base course on a well prepared sub-base and compacting with smooth wheel roller of 80 to 100kN weight to achieve the desired density including lighting, barricading and maintenance of diversion, etc as per Tables 400.11 & 400.12 and								
				Cum	1.00	1,200.00	3.750	0.075	337.50		
			Add for extra widening on curve (2%)						6.75		
			Net WBM -3 Qty						344.25	2,192.50	7,54,767.00
										C) SUB TOTAL OF CRUST =	29,02,821.00

Cost Estimate for Road Construction

District : Gaya

Sl. No.	SDB SL.NO	MORD Ref.No	Description	Unit	NOS	LENGTH	WIDTH	HEIGHT	QUANTITY	RATE	AMOUNT (in Rs.)
			SUB HEAD : BITUMINOUS ITEMS								
11	5.1	502	Prime Coat (Low porosity)								
			Providing and applying primer coat with Bitumen emulsion (SS-1) on prepared surface of granular base including cleaning of road surface and spraying primer at the rate of 0.70- 1.0 kg/sqm using mechanical means as per Technical Specification Clause 502.								
				Sqm	1.00	1,200.00	3.750		4,500.00		
			Add for extra widening on curve (2%)	Sqm					90.00		
			Net Area	Sqm					4,590.00	54.85	2,51,762.00
12	5.2	503	Tack Coat								
			Providing and applying tack coat with bitumen emulsion using emulsion pressure distributor at the rate of 0.25 to 0.30 kg per sqm on the prepared granular surface treated with Primer and cleaned with hydriloc broom as per technical specification clause 503.								
				Sqm	1.00	1,200.00	3.750		4,500.00		
			Add for extra widening on curve (2%)	Sqm					90.00		
			Net Area	Sqm					4,590.00	18.87	86,613.00
13	5.11	509	Mix Seal Surfacing with Waste Plastic(Type B) Bituminous (S-65) By Mechanical Means								
			Providing, laying and rolling of close-graded premix surfacing material of 20 mm thickness composed of 11.2 mm to 0.9 mm (Type-A) or 13.2 mm to 0.9 mm (Type-B) aggregates using penetration grade bitumen to required line, grade and level to serve as wearing course on a previously prepared base, including mixing in a suitable plant, laying and rolling with a three wheel 8-10 kN static roller and finishing to required level and grades as per Technical Specification Clause 509.								
				Sqm	1.00	1,200.00	3.750		4,500.00		
			Add for extra widening on curve (2%)	Sqm					90.00		
			Net Area	Sqm					4,590.00	204.36	9,38,012.00
							D) SUB TOTAL OF BITUMINOUD ITEM =				12,76,387.00
			SUB HEAD : CC PAVEMENT								
14	4.1	401	Granular Sub-base with Well Graded Material (Table 400.1)								
		(i)	(By mix in place method) For Grading II Material								
			Construction of granular sub-base by providing well graded material, spreading in uniform layers with motor grader on prepared surface, mixing by mix in place method with rotavator at OMC, and compacting with smooth wheel roller to achieve the desired density, complete as per Technical Specification Clause 401.								
			GSB in Earthen Portion	Cum	1.00	0.00	3.750	0.100	0.00		
			GSB in Widening	Cum	2.00	600.00	0.375	0.100	45.00		
			Add for extra for Profile Correction (10%)	Cum	10%	600.00	3.000	0.100	18.00		
			Add for extra widening on curve (2%)	Cum					1.26		
			Net GSB Qty. Required form Grading I Material						64.26	1,819.37	1,16,913.00

MUKHYA MANTRI GRAM SAMPRAK YOJNA, AWASHES (NDB)

Cost Estimate for Road Construction

Name of Road : Chandisthan Se Mahadevpur TO Tarapur

Block : Gurua

Total Length : 2

B T Length : 1200 mt

C C Length : 800 mt

District : Gaya

Sl. No.	SDB SL.NO	MORD Ref.No	Description	Unit	NOS	LENGTH	WIDTH	HEIGHT	QUANTITY	RATE	AMOUNT (in Rs.)
			SUB HEAD : ROAD FURNITURES , KM STONES , TRAFFIC & DIRECTION SIGN , PMGSY LOGO								
19	10.1	1700	Kilometre stone								
			Reinforced cement concrete M15 grade kilometre local stone of standard design as per IRC:8 fixing in position including painting and printing , etc as per drawing and technical specification clause 1703.								
			i) 5th km stone	No.	0.00					4,397.06	0.00
			ii) Km stone	No.	4.00					2,354.52	9,418.00
			iii) 200 m stone	No.	7.00					691.88	4,843.00
20	10.2	1700.3,	Retro-reflectorised Traffic Signs								
		800	Providing and fixing of retro-reflectorised cautionary, mandatory and informatory sign as per IRC:67 made of encapsulated lens type reflective sheeting vide Clause 1701.2.3 fixed over aluminium sheeting, 1.5 mm thick supported on a mild steel angle iron post 75 mm x 75 mm x 6 mm firmly fixed to the ground by means of properly designed foundation with M15 grade cement concrete 450 mm x 450 mm x 600 mm, 600 mm below ground level as per drawings and Technical Specification Clause 801								
		i)	600 mm equilateral & triangle, Left Hand & Right Hand Curve	Nos	4						
			School	Nos	0						
			Total		4					3,830.48	15,322.00
		ii)	900 mm side octagon, OR								
			Stop	Nos	4					9,176.46	36,706.00
		iii)	600 mm x 450 mm rectangular, Place Board	Nos	4					5,011.57	20,046.00
21	11.9	307	Planting of Trees and their Maintenance for one Year								
			Planting of trees by the road side (Avenue trees) in 0.60 m dia holes, 1 m deep dug in the ground, mixing the soil with decayed farm yard/sludge manure, planting the saplings, backfilling the trench, watering, fixing the tree guard and maintaining the plants for one year								
				Each	2.00	1,200.00	/	50.00	48.00	1,221.96	58,654.00
22	8.13	803	Road Marking with Hot Applied Thermoplastic Compound with Reflectorising Glass Beads on Bituminous Surface								
	RCD	300	Providing and laying of hot applied thermoplastic compound 2.5 mm thick including reflectorising glass beads @ 250 gms per sqm area, thickness of 2.5 mm is exclusive of surface applied glass beads as per IRC:35 .The finished surface to be level, uniform and free from streaks and holes.								
		i)	At Edge	Sqm	2	1200.00	0.100		240.00	801.65	1,92,396.00
23	8.13	803	Road Marking with Hot Applied Thermoplastic Compound with Reflectorising Glass Beads on Concrete Surface								
	RCD	300	Providing and laying of hot applied thermoplastic compound 2.5 mm thick including reflectorising glass beads @ 250 gms per sqm area, thickness of 2.5 mm is exclusive of surface applied glass beads as per IRC:35 .The finished surface to be level, uniform and free from streaks and holes. Sealing primer may be applied in advance which is incidentally Included to the work.								
		i)	At Edge	Sqm	2	800.00	0.100		160.00	902.11	1,44,338.00
24	10.6	1700	(I)Providing and Fixing 'Logo' of MMGSY Project								

MUKHYA MANTRI GRAM SAMPRAK YOJNA, AWASHES (NDB)

Cost Estimate for Road Construction

Name of Road : Chandisthan Se Mahadevpur TO Tarapur

Block : Gurua

Total Length : 2

B T Length : 1200 mt

C C Length : 800 mt

District : Gaya

Sl. No.	SDB SL .NO	MORD Ref.No	Description	Unit	NOS	LENGTH	WIDTH	HEIGHT	QUANTITY	RATE	AMOUNT (in Rs.)
			Providing and fixing of typical MMGSY WB informatory sign board with Logo as per MORD specifications and drawing. Three MS Plates of 1.6 mm thick, top and middle plate duly welded with MS flat iron 25mm x 5m size on back on edges. The lower plate will be welded with MS angle iron frame of 25mm x 25mm x 5mm. The angle iron frame of the lower most plate and flat iron frame of middle plate will be welded to 2 nos. 75mm x 75 mm of 12 SWG sheet tubes posts duly embedded in cement concrete M-15 grade blocks of 450mm x 450mm x 600mm, 600mm below ground level. The top most diamond plate will be welded to middle plate by 47mm x 47mm of 12 SWG steel plate tube. All M.S. will be stove enameled on both sides. Lettering and printing arrows, border etc. will be painted with ready mixed synthetic enamel paint of superior quality in required shade and colour. All sections of framed posts and steel tube will be painted with primer and two coats of epoxy paint as per drawing Clause 1701 and Annexure 1700.1								
			Providing and Fixing 'Logo' of MMGSY (NDB) Project	No.	1.00				1.00		
			Citizen Information Board As per Drawing	No.	1.00				1.00		
			Providing and Fixing 'Logo' of Maintenance	No.	1.00				1.00		
									3.00	10,463.82	31,391.00
									F) SUB TOTAL OF ROAD FURNITURES =		5,13,114.00
									TOTAL COST OF PAVEMENT IN RS. (A+B+C+D+E+F)=		87,79,560.00

**JE
RWD**

**AE
RWD**

**EE
RWD**

SUMMARY OF 1ST FOUR YEARS OPERATION & MANAGEMENT (O&M) COSTS AFTER COMPLETION OF CONSTRUCTION .

NAME OF ROAD:- Chandisthan Se Mahadevpur TO Tarapur

Survey ID 27227

DISTRICT:- Gaya

BLOCK:- Gurua

LENGTH OG ROAD (KM):- 2.000

Particulars	Amount in Rs.	Amount in (Lakh)
1st Year Maintenance cost	2,38,024.00	2.380
2nd Year Maintenance cost	2,93,067.00	2.931
3rd Year Maintenance cost	3,48,266.00	3.483
4th Year Maintenance cost	4,03,467.00	4.035
Total Cost of Ist Four years Maintenance	12,82,824.00	12.828
Total Cost	12,82,824.00	12.828

MATE FOR 4 YEARS MAINTENANCE WO

Total Length of Road(L) =	2000	m
Length of the Flexible Pavement(Lf) =	1200	m
Length of the Rigid Pavement(Lc) =	800	m
Width of the Road (Br) =	3.750	m
Width Of the Shoulder (Bs) =	1.125	m
No. Of Hume Pipe Culvert =	2	
No. Of Slab Culvert =	0	
No. Of Box Culvert =	1	
Length of Drain=	0	m
No. of guard stone	0	

JE
RWD

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RWD

EE
RWD

Multiplying factor for traffic intensity(β)

Low (≤ 15 CVD)	Medium (15 to 45 CVD)	High (> 45 CVD)
1.0	1.25	1.5

Multiplying factor for making for pothole(α_1)

Rainfall			
	High %	Medium %	Low %
I YEAR	1.0	0.5	--
II YEAR	2.0	1.0	0.5
III YEAR	3.0	1.5	1.0
IV YEAR	4.0	2.0	1.5

Multiplying factor for making for berms(α_2)

Rainfall			
	High %	Medium %	Low %
I YEAR	15.0	18.0	7.5
II YEAR	18.0	16.0	9.0
III YEAR	21.0	14.0	10.5
IV YEAR	24.0	12.0	12.0

Multiplying factor for making for rain cut(α_3)

Rainfall			
	High %	Medium %	Low %
I YEAR	7.5	10.8	5.0
II YEAR	9.0	9.6	6.0
III YEAR	10.5	8.4	7.0
IV YEAR	12.0	7.2	8.0

DETAILED ESTIMATE FOR 4 YEAR ORDINARY MAINTENANCE								
Multiplying Factor for Commercial Vehicle 15 to 45 per days = 1.25 {ref. – Annexure 14.4 operation Manual from Rural Road}								
Sl. No.	OM No.	SOR No.	Description of Items	Unit	% Taken	Yearly Estimated Qty.	Rate (Rs.)	Amount (Rs.)
1	OM 101 & OM 105	15.3(ii)	Pot hole patching- Treatment of isolated failed pavement areas in traffic lanes using appropriate materials to repair the defect and restore the riding surface to a smooth condition and Edge Repair - Repair of broken edge of seal to line and level to maintain nominal sealed width. with Mix Seal Surfacing (Qty=Lf*Br* α_1 * β)	Sqm	0.5%	28.125	849.71	23,898.00
2	OM 102	15.3 (i)	Surface Depression and Rut Patching Application of a levelling course of bituminous materials to depressed or rutted areas of pavement Repair of Pot holes filled with 75 mm BM X 1.25 (Qty=Lf*0.15*0.075* α_1 * β)	Cum	0.5%	0.084	12,045.98	1,016.00
3	OM 103	RCD 10.6	Crack Sealing Filling of cracks and joints,excluding "crocodile" cracking using liquid bituminous sealents in accordance with monthly works program (Qty=L _r	M	-	1200	4.17	5,004.00
4	OM 104	15.3(iii)	Surface Treatmentt Application of bituminous surface materials and cover aggregate ares of pavement with:- (a) Loss of aggregate(surface ravelled) (b) bleeding and flushing; or (c) Laminated asphalt surface. Patch repair over bituminous surface with 20 mm Premix carpet with seal coat Type B (Qty=Lf*Br* α_1 * β)	Sqm	0.5%	28.125	870.55	24,484.00
5	OM 106	15.3 (i)	Digout Repair Treatment of isolated failed pavement areas>0.25m ³ by replacemnet with new material or improvement of existing material,including reinstatement of road surface. Repair of Pot holes filled with 75 mm BM X 1.25 (Qty=Lf*Br* α_1 *0.075* β)	Cum	0.5%	2.109	12,045.98	25,409.00
6	OM 107	15.3 (ii)	Repair of concrete pavement Repair isolated areas of damaged concrete pavement <0.25m ² patching with 20 mm thick premix carpet with seal coat Type B seal coat Type B (Qty=Lc*Br* α_1 * β)	Sqm	0.5%	18.750	849.71	15,932.00

DETAILED ESTIMATE FOR 4 YEAR ORDINARY MAINTENANCE								
Multiplying Factor for Commercial Vehicle 15 to 45 per days = 1.25 {ref. – Annexure 14.4 operation Manual from Rural Road}								
Sl. No.	OM No.	SOR No.	Description of Items	Unit	% Taken	Yearly Estimated Qty.	Rate (Rs.)	Amount (Rs.)
7		RCD 10.10	Repair of old joint sealant Removal of existing sealant and re sealing of construction, longitudinal or expansion joint in concrete pavement with fresh sealant material $Qty = (L_c/4) * B_r$	M	-	750.000	45.86	34,395.00
8	OM 201	15.2	Unsealed Shoulder Repair Making up the irregularities/loss material on shoulder to design level/profit/ Making up of Berms/shoulder, stripping excess soil from the shoulder surfaces to achieve level etc. $(Qty = L_f * B_s * \alpha_2 * \beta) * 2$	Sqm	18.0%	607.500	67.34	40,909.00
9	OM 202	15.1	Embankment Repairs Restoration of Raincuts in the embankment and shoulder/Berms with soil. moorum etc $(Qty = L_r * B_s * 0.3 * \alpha_3) * \beta * 2$	Cum	10.8%	109.350	459.70	50,268.00
10	OM 301	15.6	Surface Drain Cleaning Cleaning of channels, including kerb and channel, and reshaping earthen drain, including culvert inlet and outlet drains, to maintain flow of water and protect road and road side from scour.	M	-	0	3.87	0.00
11	OM 302 & OM 303		Culvert Cleaning and Culvert Repair					
		15.7 (i)	Maintenance of C/D Works (Hume Pipe Culvert)	No.	-	2	1,515.71	3,031.00
		15.7 (ii)	Maintenance of C/D Works (Slab Culvert)	No.	-	0	3,070.58	0.00
		15.13	Painting of parapet walls of CD work	Sqm	-	0	128.82	0.00
12	OM 401	15.12	Tree and Shrub management Cutting of branches of trees, shrubs and trimming of grass and weeds from the Roadway or within the Road land.					
			(I) Cutting of branches of trees and shrubs	No.	-	3	157.21	472.00
			(ii) Cutting of shrubs from roadway	No.	-	0	9.66	0.00
			(iii) Trimming of grass and weeds	Sqm	-	2700	3.22	8,694.00
13	OM 501	15.9	Sign maintenance Sign repair, re-erection, support replacement and/or maintenance cleaning.	Km	-	2.000	1,382.29	2,765.00
15	OM 503	15.11	Maintenance of 200 m and km stones	Km	-	2.000	873.56	1,747.00
			Estimate For First Year Maintenance Work				Rs.	2,38,024.00

DETAILED ESTIMATE FOR 4 YEAR ORDINARY MAINTENANCE								
Multiplying Factor for Commercial Vehicle 15 to 45 per days = 1.25 {ref. – Annexure 14.4 operation Manual from Rural Road}								
Sl. No.	OM No.	SOR No.	Description of Items	Unit	% Taken	Yearly Estimated Qty.	Rate (Rs.)	Amount (Rs.)
Sl. No.	OM No.	SOR No.	Description of Items	Unit	% Taken	Yearly Estimated Qty.	Rate (Rs.)	Amount (Rs.)
1	OM 101 & OM 105	15.3(ii)	Pot hole patching- Treatment of isolated failed pavement areas in traffic lanes using appropriate materials to repair the defect and restore the riding surface to a smooth condition and Edge Repair - Repair of broken edge of seal to line and level to maintain nominal sealed width. with 20 mm Premix carpet with seal coat Type B (Qty=Lf*Br* α_1 * β)	Sqm	1.0%	56.250	849.71	47,796.00
2	OM 102	15.3 (i)	Surface Depression and Rut Patching Application of a levelling course of bituminous materials to depressed or rutted areas of pavement Repair of Pot holes filled with 75 mm BM X 1.25 (Qty=Lf*0.15*0.075* α_1 * β)	Cum	1.0%	0.169	12,045.98	2,033.00
3	OM 103	RCD 10.6	Crack Sealing Filling of cracks and joints,excluding "crocodile" cracking using liquid bituminous sealants in accordance with monthly works program (Qty=L _f	M	-	1200	4.17	5,004.00
4	OM 104	15.3(iii)	Surface Treatmentt Application of bituminous surface materials and cover aggregate ares of pavement with:- (a) Loss of aggregate(surface ravelled) (b) bleeding and flushing; or (c) Laminated asphalt surface. Patch repair over bituminous surface with 20 mm Premix carpet with seal coat Type B (Qty=Lf*Br* α_1 * β)	Sqm	1.0%	56.250	870.55	48,968.00
5	OM 106	15.3 (i)	Digout Repair Treatment of isolated failed pavement areas>0.25m ³ by replacemnet with new material or improvement of existing material,including reinstatement of road surface. Repair of Pot holes filled with 75 mm BM X 1.25 (Qty=Lf*Br* α_1 *0.075* β)	Cum	0.50%	2.109	12,045.98	25,409.00
6	OM 107	15.3 (ii)	Repair of concrete pavement Repair isolated areas of damaged concrete pavement <0.25m ² patching with 20 mm thick premix carpet with seal coat Type B seal coat Type B (Qty=Lc*Br* α_1 * β)	Sqm	1.0%	37.500	849.71	31,864.00

DETAILED ESTIMATE FOR 4 YEAR ORDINARY MAINTENANCE								
Multiplying Factor for Commercial Vehicle 15 to 45 per days = 1.25 {ref. – Annexure 14.4 operation Manual from Rural Road}								
Sl. No.	OM No.	SOR No.	Description of Items	Unit	% Taken	Yearly Estimated Qty.	Rate (Rs.)	Amount (Rs.)
7		RCD 10.10	Reapir of old joint selant Removal of existing sealant and re sealing of construction,longitudial or expension joint in concrete pavement with fresh sealant materiaial $Qty=(L_c/4)*B_r$	M	-	750.000	45.86	34,395.00
8	OM 201	15.2	Unsealed Shoulder Repair Making up the irregularities/loss material on shoulder to design level/profit/ Making up of Berms/shoulder, stripping excess soil from the shoulder surfaces to achieve level etc. $(Qty=L_f*B_s*\alpha_2*\beta)*2$	Sqm	16.0%	540.000	67.34	36,364.00
9	OM 202	15.1	Embankment Repairs Restoration of Raincuts in the embankment and shoulder/Berms with soil.moorumetc $(Qty=L_f*B_s*0.3*\alpha_3) X \beta) *2$	Cum	9.6%	97.200	459.70	44,683.00
10	OM 301	15.6	Surface Drain Cleaning Cleaning of channels,including kerb and channel,and reshaping earthen drain,including culvert inlet and outlet drains,to maintain flow of water and protect road and road side from scour.	M	-	0	3.87	0.00
11	OM 302 & OM 303		Culvert Cleaning and Culvert Repair		-			
		15.7 (i)	Maintenance of C/D Works (Hume Pipe Culvert)	No.	-	2	1,515.71	3,031.00
		15.7 (ii)	Maintenance of C/D Works (Slab Culvert)	No.	-	0	3,070.58	0.00
		15.13	Painting of parapet walls of CD work	Sqm	-	0	128.82	0.00

DETAILED ESTIMATE FOR 4 YEAR ORDINARY MAINTENANCE								
Multiplying Factor for Commercial Vehicle 15 to 45 per days = 1.25 {ref. – Annexure 14.4 operation Manual from Rural Road}								
Sl. No.	OM No.	SOR No.	Description of Items	Unit	% Taken	Yearly Estimated Qty.	Rate (Rs.)	Amount (Rs.)
12	OM 401	15.12	Tree and Shrub management Cutting of branches of trees,shrubs and trimming of glass and weeds from the Roadway or within the Road land.		-			
			(I)Cutting of branches of trees and shrubs	No.		2	157.21	314.00
			(ii) Cutting of shrubs from roadway	No.		0	9.66	0.00
			(iii) Trimming of grass and weeds	Sqm		2700	3.22	8,694.00
13	OM 501	15.9	Sign maintenance Sign repair,re-erection,support replacement and/or maintenance cleaning.	Km		2.000	1,382.29	2,765.00
15	OM 503	15.11	Maintenance of 200 m and km stones	Km		2.000	873.56	1,747.00
16	OM 504	RCD 8.13	Road marking (Qty=Lf*0.1*2)	Sqm		0	801.65	0.00
17	New	Ref. to MoRTH Spec. 307	Maintenance of Already Planted Trees for additional four Years-Maintenance of trees by the road side (Avenue trees) by mixing the soil with decayed farm yard/sludge manure, watering, fixing the tree guard and maintaining the plants for additional four years.	Each	-	0	1013.46	0.00
			Estimate For Second Year Maintenance Work				Rs.	2,93,067.00

Sl. No.	OM No.	SOR No.	Description of Items	Unit	% Taken	Yearly Estimated Qty.	Rate (Rs.)	Amount (Rs.)
1	OM 101 & OM 105	15.3(ii)	Pot hole patching- Treatmnet of isolated failed pavement areas in traffic lanes using appropriate materials to repair the defect and restore the riding surface to a smooth condition and Edge Repair - Repair of broken edge of seal to line and level to maintain nominal sealed width. with 20 mm Premix carpet with seal coat Type B (Qty=Lf*Br* α_1 * β)	Sqm	1.5%	84.375	849.71	71,694.00
2	OM 102	15.3 (i)	Surface Depression and Rut Patching Application of a levelling course of bituminous materials to depressed or rutted areas of pavement Repair of Pot holes filled with 75 mm BM X 1.25 (Qty=Lf*0.15*0.075* α_1 * β)	Cum	1.5%	0.253	12,045.98	3,049.00

DETAILED ESTIMATE FOR 4 YEAR ORDINARY MAINTENANCE								
Multiplying Factor for Commercial Vehicle 15 to 45 per days = 1.25 {ref. – Annexure 14.4 operation Manual from Rural Road}								
Sl. No.	OM No.	SOR No.	Description of Items	Unit	% Taken	Yearly Estimated Qty.	Rate (Rs.)	Amount (Rs.)
3	OM 103	RCD 10.6	Crack Sealing Filling of cracks and joints,excluding "crocodile" cracking using liquid bituminous sealents in accordance with monthly works program (Qty= L_f)	M	-	1200	4.17	5,004.00
4	OM 104	15.3(iii)	Surface Treatmentt Application of bituminous surface materials and cover aggregate ares of pavement with:- (a) Loss of aggregate(surface ravelled) (b) bleeding and flushing; or (c) Laminated asphalt surface. Patch repair over bituminous surface with 20 mm Premix carpet with seal coat Type B (Qty= $L_f \cdot Br \cdot \alpha_1 \cdot \beta$)	Sqm	1.5%	84.375	870.55	73,453.00
5	OM 106	15.3 (i)	Digout Repair Treatment of isolated failed pavement areas $>0.25m^3$ by replacemnet with new material or improvement of existing material,including reinstatement of road surface. Repair of Pot holes filled with 75 mm BM X 1.25 (Qty= $L_f \cdot Br \cdot \alpha_1 \cdot 0.075 \cdot \beta$)	Cum	0.5%	2.109	12,045.98	25,409.00
6	OM 107	15.3 (ii)	Repair of concrete pavement Repair isolated areas of damaged concrete pavement $<0.25m^2$ patching with 20 mm thick premix carpet with seal coat Type B seal coat Type B (Qty= $L_c \cdot Br \cdot \alpha_1 \cdot \beta$)	Sqm	1.5%	56.250	849.71	47,796.00
7		RCD 10.10	Reapir of old joint selant Removal of existing sealant and re sealing of construction,longitudial or expension joint in concrete pavement with fresh sealant materiaal Qty= $(L_c/4) \cdot B_r$	M	-	750.000	45.86	34,395.00
8	OM 201	15.2	Unsealed Shoulder Repair Making up the irregularities/loss material on shoulder to design level/profit/ Making up of Berms/shoulder, stripping excess soil from the shoulder surfaces to achieve level etc. (Qty= $L_f \cdot Bs \cdot \alpha_2 \cdot \beta$)*2	Sqm	14.0%	472.500	67.34	31,818.00
9	OM 202	15.1	Embankment Repairs Restoration of Raincuts in the embankment and shoulder/Berms with soil.moorumetc (Qty= $L_f \cdot Bs \cdot 0.3 \cdot \alpha_3 \cdot \beta$) *2	Cum	8.4%	85.050	459.70	39,097.00

DETAILED ESTIMATE FOR 4 YEAR ORDINARY MAINTENANCE								
Multiplying Factor for Commercial Vehicle 15 to 45 per days = 1.25 {ref. – Annexure 14.4 operation Manual from Rural Road}								
Sl. No.	OM No.	SOR No.	Description of Items	Unit	% Taken	Yearly Estimated Qty.	Rate (Rs.)	Amount (Rs.)
10	OM 301	15.6	Surface Drain Cleaning Cleaning of channels,including kerb and channel,and reshaping earthen drain,including culvert inlet and outlet drains,to maintain flow of water and protect road and road side from scour.	M	-	0	3.87	0.00
11	OM 302 & OM 303		Culvert Cleaning and Culvert Repair		-			
		15.7 (i)	Maintenance of C/D Works (Hume Pipe Culvert)	No.	-	2	1,515.71	3,031.00
		15.7 (ii)	Maintenance of C/D Works (Slab Culvert)	No.	-	0	3,070.58	0.00
		15.13	Painting of parapet walls of CD work	Sqm	-	0	128.82	0.00
12	OM 401	15.12	Tree and Shrub management Cutting of branches of trees,shrubs and trimming of grass and weeds from the Roadway or within the Road land.					
			(I)Cutting of branches of trees and shrubs	No.	-	2	157.21	314.00
			(ii) Cutting of shrubs from roadway	No.	-	0	9.66	0.00
			(iii) Trimming of grass and weeds	Sqm	-	2700	3.22	8,694.00
13	OM 501	15.9	Sign maintenance Sign repair,re-erection,support replacement and/or maintenance cleaning.	Km	-	2.000	1,382.29	2,765.00
15	OM 503	15.11	Maintenance of 200 m and km stones	Km	-	2.000	873.56	1,747.00
17	New	Ref. to MoRTH Spec. 307	Maintenance of Already Planted Trees for additional four Years-Maintenance of trees by the road side (Avenue trees) by mixing the soil with decayed farm yard/sludge manure, watering, fixing the tree guard and maintaining the plants for additional four years.	Each	-	0.00	874.41	0.00
			Estimate For Third Year Maintenance Work				Rs.	3,48,266.00

DETAILED ESTIMATE FOR 4 YEAR ORDINARY MAINTENANCE								
Multiplying Factor for Commercial Vehicle 15 to 45 per days = 1.25 {ref. – Annexure 14.4 operation Manual from Rural Road}								
Sl. No.	OM No.	SOR No.	Description of Items	Unit	% Taken	Yearly Estimated Qty.	Rate (Rs.)	Amount (Rs.)
1	OM 101 & OM 105	15.3(ii)	Pot hole patching- Treatmnet of isolated failed pavement areas in traffic lanes using appropriate materials to repair the defect and restore the riding surface to a smooth condition and Edge Repair - Repair of broken edge of seal to line and level to maintain nominal sealed width. with 20 mm Premix carpet with seal coat Type B (Qty=Lf*Br* α_1 * β)	Sqm	2.0%	112.500	849.71	95,592.00
2	OM 102	15.3 (i)	Surface Depression and Rut Patching Application of a levelling course of bituminous materials to depressed or rutted areas of pavement Repair of Pot holes filled with 75 mm BM X 1.25 (Qty=Lf*0.15*0.075* α_1 * β)	Cum	2.0%	0.338	12,045.98	4,066.00
3	OM 103	RCD 10.6	Crack Sealing Filling of cracks and joints,excluding "crocodile" cracking using liquid bituminous sealents in accordance with monthly works program (Qty=L _f	M	-	1200	4.17	5,004.00
4	OM 104	15.3(iii)	Surface Treatmentt Application of bituminous surface materials and cover aggregate ares of pavement with:- (a) Loss of aggregate(surface ravelled) (b) bleeding and flushing; or (c) Laminated asphalt surface. Patch repair over bituminous surface with 20 mm Premix carpet with seal coat Type B (Qty=Lf*Br* α_1 * β)	Sqm	2.0%	112.500	870.55	97,937.00
5	OM 106	15.3 (i)	Digout Repair Treatment of isolated failed pavement areas>0.25m ³ by replacemnet with new material or improvement of existing material,including reinstatement of road surface. Repair of Pot holes filled with 75 mm BM X 1.25 (Qty=Lf*Br* α_1 *0.075* β)	Cum	0.5%	2.109	12,045.98	25,409.00

DETAILED ESTIMATE FOR 4 YEAR ORDINARY MAINTENANCE								
Multiplying Factor for Commercial Vehicle 15 to 45 per days = 1.25 {ref. – Annexure 14.4 operation Manual from Rural Road}								
Sl. No.	OM No.	SOR No.	Description of Items	Unit	% Taken	Yearly Estimated Qty.	Rate (Rs.)	Amount (Rs.)
6	OM 107	15.3 (ii)	Repair of concrete pavement Repair isolated areas of damaged concrete pavement <0.25m ² patching with 20 mm thick premix carpet with seal coat Type B seal coat Type B (Qty=Lc*Br*α ₁ * β)	Sqm	2.0%	75.000	849.71	63,728.00
7		RCD 10.10	Reapir of old joint selant Removal of existing sealant and re sealing of construction,longitudial or expansion joint in concrete pavement with fresh sealant materiaial Qty=(Lc/4)*B _r	M	-	750.000	45.86	34,395.00
8	OM 201	15.2	Unsealed Shoulder Repair Making up the irregularities/loss material on shoulder to design level/profit/ Making up of Berms/shoulder, stripping excess soil from the shoulder surfaces to achieve level etc. (Qty=Lf*Bs*α ₂ * β)*2	Sqm	12.0%	405.000	67.34	27,273.00
9	OM 202	15.1	Embankment Repairs Restoration of Raincuts in the embankment and shoulder/Berms with soil.moorumetc (Qty=L _r *Bs*0.3*α ₃) X β) *2	Cum	7.2%	72.900	459.70	33,512.00
10	OM 301	15.6	Surface Drain Cleaning Cleaning of channels,including kerb and channel,and reshaping earthen drain,including culvert inlet and outlet drains,to maintain flow of water and protect road and road side from scour.	M	-	0	3.87	0.00
11	OM 302 & OM 303		Culvert Cleaning and Culvert Repair					
		15.7 (i)	Maintenance of C/D Works (Hume Pipe Culvert)	No.	-	2	1,515.71	3,031.00
		15.7 (ii)	Maintenance of C/D Works (Slab Culvert)	No.	-	0	3,070.58	0.00
		15.13	Painting of parapet walls of CD work	Sqm		0	128.82	0.00
12	OM 401	15.12	Tree and Shrub management Cutting of branches of trees,shrubs and trimming of glass and weeds from the Roadway or within the Road land.					
			(I)Cutting of branches of trees and shrubs	No.	-	2	157.21	314.00
			(ii) Cutting of shrubs from roadway	No.	-	0	9.66	0.00
			(iii) Trimming of grass and weeds	Sqm	-	2700	3.22	8,694.00
13	OM 501	15.9	Sign maintenance Sign repair,re-erection,support replacement and/or maintenance cleaning.	Km	-	2.000	1,382.29	2,765.00
15	OM 503	15.11	Maintenance of 200 m and km stones	Km	-	2.000	873.56	1,747.00
16	OM 504	RCD 8.13	Road marking (Qty=Lf*0.1*2)	Sqm	-	0	801.65	0.00

DETAILED ESTIMATE FOR 4 YEAR ORDINARY MAINTENANCE								
Multiplying Factor for Commercial Vehicle 15 to 45 per days = 1.25 {ref. – Annexure 14.4 operation Manual from Rural Road}								
Sl. No.	OM No.	SOR No.	Description of Items	Unit	% Taken	Yearly Estimated Qty.	Rate (Rs.)	Amount (Rs.)
			Estimate For Fourth Year Maintenance Work				Rs.	4,03,467.00

MUKHYA MANTRI GRAM SAMPRAK YOJNA, AWASHES (NDB)

ESTIMATE FOR RENEWABLE COAT

1	5.2	503	Tack Coat							
		(III)	Providing and applying tack coat with bitumen emulsion using emulsion pressure distributor at the rate of 0.25 to 0.30 kg per sqm on the prepared granular surface treated with Primer and cleaned with hydriloc broom as per technical specification clause 503.							
				Sqm	1.00	1,200.00	3.75		4,500.00	
			Add for extra widening on curve (2%)	Sqm					90.00	
			Net Area	Sqm					4,590.00	18.87
2	5.7	508	Semi-Dense Bituminous Concrete							
	(II)	RCD	Providing and laying semi dense bituminous concrete with 100-120 TPH batch type HMP producing an average output of 75 tonnes per hour using crushed aggregates of specified grading, premixed with bituminous binder @ 4.5 to 5 per cent of mix and filler, transporting the hot mix to work site, laying with a hydrostatic paver finisher with sensor control to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MoRTH specification clause No. 508 complete in all respects.							
				Cum	1.00	1,200.00	3.75	0.025	112.50	
			Add For Extra Widening On Curve (2%)	Cum					2.25	
			Net Area	Cum					114.75	11,215.27
3	8.13	803	Road Marking with Hot Applied Thermoplastic Compound with Reflectorising Glass Beads on Bituminous Surface							
	RCD		Providing and laying of hot applied thermoplastic compound 2.5 mm thick including reflectorising glass beads @ 250 gms per sqm area, thickness of 2.5 mm is exclusive of surface applied glass beads as per IRC:35 .The finished surface to be level, uniform and free from streaks and holes.							
			At Both Edge	Sqm	2	1200.00	0.100		240.00	801.65
4	8.13	803	Road Marking with Hot Applied Thermoplastic Compound with Reflectorising Glass Beads on Concrete Surface							
	RCD		Providing and laying of hot applied thermoplastic compound 2.5 mm thick including reflectorising glass beads @ 250 gms per sqm area, thickness of 2.5 mm is exclusive of surface applied glass beads as per IRC:35 .The finished surface to be level, uniform and free from streaks and holes.							
			At Both Edge	Sqm	2	800.00	0.100		160.00	902.11
									SUB TOTAL =	17,10,299.00
TOTAL COST OF PAVEMENT IN RS. =										17,10,299.00

Junior Engineer

Assistant Engineer

Executive Engineer

SUMMARY OF LAST TWO YEARS OPERATION & MANAGEMENT (O&M) COSTS.

NAME OF ROAD:- Chandisthan Se Mahadevpur TO Tarapur

Survey ID 27227

DISTRICT:- Gaya

BLOCK:- Gurua

LENGTH OG ROAD (KM):- 2.000

Particulars	Amount in Rs.	Amount in (Lakh)
6TH Year Maintenance cost	1,97,501.00	1.975
7TH Year Maintenance cost	2,62,674.00	2.627
Total Cost of Ist Four years Maintenance	4,60,175.00	4.602
Total Cost	4,60,175.00	4.602

MATE FOR 2 YEARS MAINTENANCE W

Total Length of Road(L) =	2000	m
Length of the Flexible Pavement(Lf) =	1200	m
Length of the Rigid Pavement(Lc) =	800	m
Width of the Road (Br) =	3.750	m
Width Of the Shoulder (Bs) =	1.125	m
No. Of Hume Pipe Culvert =	2	
No. Of Slab Culvert =	0	
No. Of Box Culvert =	1	
Length of Drain=	0	m
No. of guard stone	0	

JE
RWD

AE
RWD

EE
RWD

Multiplying factor for traffic intensity(β)

Low (≤ 15 CVD)	Medium (15 to 45 CVD)	High (> 45 CVD)
1.0	1.25	1.5

Multiplying factor for making for pothole(α_1)

Rainfall			
	High %	Medium %	Low %
VI YEAR	5.0	0.5	2.0
VII YEAR		1.0	

Multiplying factor for making for berms(α_2)

Rainfall			
	High %	Medium %	Low %
VI YEAR	27.0	10.0	13.5
VII YEAR		10.0	

Multiplying factor for making for rain cut(α_3)

Rainfall			
	High %	Medium %	Low %
VI YEAR	13.5	6.0	9.0
VII YEAR		6.0	

DETAILED ESTIMATE FOR 2 YEAR (O&M)								
Multiplying Factor for Commercial Vehicle 15 to 45 per days = 1.25 {ref. – Annexure 14.4 operation Manual from Rural Road}								
Sl. No.	OM No.	SOR No.	Description of Items	Unit	% Taken	Yearly Estimated Qty.	Rate (Rs.)	Amount (Rs.)
1	OM 101 & OM 105	15.3(ii)	Pot hole patching- Treatment of isolated failed pavement areas in traffic lanes using appropriate materials to repair the defect and restore the riding surface to a smooth condition and Edge Repair - Repair of broken edge of seal to line and level to maintain nominal sealed width. with Mix Seal Surfacing (Qty=Lf*Br* α_1 * β)	Sqm	0.5%	28.125	849.71	23,898.00
2	OM 102	15.3 (i)	Surface Depression and Rut Patching Application of a levelling course of bituminous materials to depressed or rutted areas of pavement Repair of Pot holes filled with 75 mm BM X 1.25 (Qty=Lf*0.15*0.075* α_1 * β)	Cum	0.5%	0.084	12,045.98	1,016.00
3	OM 103	RCD 10.6	Crack Sealing Filling of cracks and joints,excluding "crocodile" cracking using liquid bituminous sealents in accordance with monthly works program (Qty=L _f	M	-	1200	4.17	5,004.00
4	OM 104	15.3(iii)	Surface Treatmentt Application of bituminous surface materials and cover aggregate ares of pavement with:- (a) Loss of aggregate(surface ravelled) (b) bleeding and flushing; or (c) Laminated asphalt surface. Patch repair over bituminous surface with 20 mm Premix carpet with seal coat Type B (Qty=Lf*Br* α_1 * β)	Sqm	0.5%	28.125	870.55	24,484.00
5	OM 106	15.3 (i)	Digout Repair Treatment of isolated failed pavement areas>0.25m ³ by replacemnet with new material or improvement of existing material,including reinstatement of road surface. Repair of Pot holes filled with 75 mm BM X 1.25 (Qty=Lf*Br* α_1 *0.075* β)	Cum	0.5%	2.109	12,045.98	25,409.00
6	OM 107	15.3 (ii)	Repair of concrete pavement Repair isolated areas of damaged concrete pavement <0.25m ² patching with 20 mm thick premix carpet with seal coat Type B seal coat Type B (Qty=Lc*Br* α_1 * β)	Sqm	0.5%	18.750	849.71	15,932.00

DETAILED ESTIMATE FOR 2 YEAR (O&M)								
Multiplying Factor for Commercial Vehicle 15 to 45 per days = 1.25 {ref. – Annexure 14.4 operation Manual from Rural Road}								
Sl. No.	OM No.	SOR No.	Description of Items	Unit	% Taken	Yearly Estimated Qty.	Rate (Rs.)	Amount (Rs.)
7		RCD 10.10	Reapir of old joint selant Removal of existing sealant and re sealing of construction,longitudial or expension joint in concrete pavement with fresh sealant materiaial $Qty=(Lc/4)*B_r$	M	-	750.000	45.86	34,395.00
8	OM 201	15.2	Unsealed Shoulder Repair Making up the irregularities/loss material on shoulder to design level/profit/ Making up of Berms/shoulder, stripping excess soil from the shoulder surfaces to achieve level etc. $(Qty=L_f*B_s*\alpha_2*\beta)*2$	Sqm	10.0%	337.500	67.34	22,727.00
9	OM 202	15.1	Embankment Repairs Restoration of Raincuts in the embankment and shoulder/Berms with soil.moorumetc $(Qty=L_f*B_s*0.3*\alpha_3)*\beta)*2$	Cum	6.0%	60.750	459.70	27,927.00
10	OM 301	15.6	Surface Drain Cleaning Cleaning of channels,including kerb and channel,and reshaping earthen drain,including culvert inlet and outlet drains,to maintain flow of water and protect road and road side from scour.	M	-	0	3.87	0.00
11	OM 302 & OM 303		Culvert Cleaning and Culvert Repair					
		15.7 (i)	Maintenance of C/D Works (Hume Pipe Culvert)	No.	-	2	1,515.71	3,031.00
		15.7 (ii)	Maintenance of C/D Works (Slab Culvert)	No.	-	0	3,070.58	0.00
		15.13	Painting of parapet walls of CD work	Sqm	-	0	128.82	0.00
12	OM 401	15.12	Tree and Shrub management Cutting of branches of trees,shrubs and trimming of glass and weeds from the Roadway or within the Road land.					
			(I)Cutting of branches of trees and shrubs	No.	-	3	157.21	472.00
			(ii) Cutting of shrubs from roadway	No.	-	0	9.66	0.00
			(iii) Trimming of grass and weeds	Sqm	-	2700	3.22	8,694.00
13	OM 501	15.9	Sign maintenance Sign repair,re-erection,support replacement and/or maintenance cleaning.	Km	-	2.000	1,382.29	2,765.00
15	OM 503	15.11	Maintenance of 200 m and km stones	Km	-	2.000	873.56	1,747.00
			Estimate For Sixth Year Maintenance Work				Rs.	1,97,501.00

DETAILED ESTIMATE FOR 2 YEAR (O&M)								
Multiplying Factor for Commercial Vehicle 15 to 45 per days = 1.25 {ref. – Annexure 14.4 operation Manual from Rural Road}								
Sl. No.	OM No.	SOR No.	Description of Items	Unit	% Taken	Yearly Estimated Qty.	Rate (Rs.)	Amount (Rs.)
1	OM 101 & OM 105	15.3(ii)	Pot hole patching- Treatment of isolated failed pavement areas in traffic lanes using appropriate materials to repair the defect and restore the riding surface to a smooth condition and Edge Repair - Repair of broken edge of seal to line and level to maintain nominal sealed width. with 20 mm Premix carpet with seal coat Type B (Qty=Lf*Br* α_1 * β)	Sqm	1.0%	56.250	849.71	47,796.00
2	OM 102	15.3 (i)	Surface Depression and Rut Patching Application of a levelling course of bituminous materials to depressed or rutted areas of pavement Repair of Pot holes filled with 75 mm BM X 1.25 (Qty=Lf*0.15*0.075* α_1 * β)	Cum	1.0%	0.169	12,045.98	2,033.00
3	OM 103	RCD 10.6	Crack Sealing Filling of cracks and joints,excluding "crocodile" cracking using liquid bituminous sealents in accordance with monthly works program (Qty=L _f	M	-	1200	4.17	5,004.00
4	OM 104	15.3(iii)	Surface Treatmentt Application of bituminous surface materials and cover aggregate ares of pavement with:- (a) Loss of aggregate(surface ravelled) (b) bleeding and flushing; or (c) Laminated asphalt surface. Patch repair over bituminous surface with 20 mm Premix carpet with seal coat Type B (Qty=Lf*Br* α_1 * β)	Sqm	1.0%	56.250	870.55	48,968.00
5	OM 106	15.3 (i)	Digout Repair Treatment of isolated failed pavement areas>0.25m ³ by replacemnet with new material or improvement of existing material,including reinstatement of road surface. Repair of Pot holes filled with 75 mm BM X 1.25 (Qty=Lf*Br* α_1 *0.075* β)	Cum	0.50%	2.109	12,045.98	25,409.00
6	OM 107	15.3 (ii)	Repair of concrete pavement Repair isolated areas of damaged concrete pavement <0.25m ² patching with 20 mm thick premix carpet with seal coat Type B seal coat Type B (Qty=Lc*Br* α_1 * β)	Sqm	1.0%	37.500	849.71	31,864.00

DETAILED ESTIMATE FOR 2 YEAR (O&M)								
Multiplying Factor for Commercial Vehicle 15 to 45 per days = 1.25 {ref. – Annexure 14.4 operation Manual from Rural Road}								
Sl. No.	OM No.	SOR No.	Description of Items	Unit	% Taken	Yearly Estimated Qty.	Rate (Rs.)	Amount (Rs.)
7		RCD 10.10	Reapir of old joint selant Removal of existing sealant and re sealing of construction,longitudial or expension joint in concrete pavement with fresh sealant materiaial $Qty=(L_c/4)*B_r$	M	-	750.000	45.86	34,395.00
8	OM 201	15.2	Unsealed Shoulder Repair Making up the irregularities/loss material on shoulder to design level/profit/ Making up of Berms/shoulder, stripping excess soil from the shoulder surfaces to achieve level etc. $(Qty=L_f*B_s*\alpha_2*\beta)*2$	Sqm	10.0%	337.500	67.34	22,727.00
9	OM 202	15.1	Embankment Repairs Restoration of Raincuts in the embankment and shoulder/Berms with soil.moorumetc $(Qty=L_f*B_s*0.3*\alpha_3) \times \beta) *2$	Cum	6.0%	60.750	459.70	27,927.00
10	OM 301	15.6	Surface Drain Cleaning Cleaning of channels,including kerb and channel,and reshaping earthen drain,including culvert inlet and outlet drains,to maintain flow of water and protect road and road side from scour.	M	-	0	3.87	0.00
11	OM 302 & OM 303		Culvert Cleaning and Culvert Repair		-			
		15.7 (i)	Maintenance of C/D Works (Hume Pipe Culvert)	No.	-	2	1,515.71	3,031.00
		15.7 (ii)	Maintenance of C/D Works (Slab Culvert)	No.	-	0	3,070.58	0.00
		15.13	Painting of parapet walls of CD work	Sqm	-	0	128.82	0.00

DETAILED ESTIMATE FOR 2 YEAR (O&M)								
Multiplying Factor for Commercial Vehicle 15 to 45 per days = 1.25 {ref. – Annexure 14.4 operation Manual from Rural Road}								
Sl. No.	OM No.	SOR No.	Description of Items	Unit	% Taken	Yearly Estimated Qty.	Rate (Rs.)	Amount (Rs.)
12	OM 401	15.12	Tree and Shrub management Cutting of branches of trees,shrubs and trimming of grass and weeds from the Roadway or within the Road land.		-			
			(I)Cutting of branches of trees and shrubs	No.		2	157.21	314.00
			(ii) Cutting of shrubs from roadway	No.		0	9.66	0.00
			(iii) Trimming of grass and weeds	Sqm		2700	3.22	8,694.00
13	OM 501	15.9	Sign maintenance Sign repair,re-erection,support replacement and/or maintenance cleaning.	Km		2.000	1,382.29	2,765.00
15	OM 503	15.11	Maintenance of 200 m and km stones	Km		2.000	873.56	1,747.00
			Estimate For Seventh Year Maintenance Work				Rs.	2,62,674.00

Analysis of Rates for (Seigniorage Fee)

Name of Road : Chandisthan Se Mahadevpur TO Tarapur						BLOCK : Gurua		LENGTH :		2.000 KM
Sl. No.	SDB Sl. No.	MORD Ref No.	DESCRIPTION	Unit	Quantity	Rate	Amount in Rs	Total material Qty. required	Total Material Amount	Add 10 % Seigniorage Fee
			EARTHWORK							
1	3.4	301.5	Construction of Embankment with Material Obtained from Borrow Pits							
		(A)	Construction of embankment with approved material obtained from borrow pits with a lift upto 1.5 m, transporting to site, spreading, grading to required slope and compacting to meet requirement of Tables 300.1 and 300.2 with a <u>lead upto 1000 m</u> as per Technical Specification Clause 301.5							
			Unit = cum							
			Taking output = 100 cum							
		a)	Material							
			Compensation for earth taken from private land	cum	100.00	35.25	3525.00			
			Cost for 100 cum = a				3525.00			
			Rate per cum = (a)/100=				35.25			
Total Cost				cum			35.25	387.41	13656.2	1365.62
2	3.4 (II)	301.5	Construction of Embankment with Material Obtained from Borrow Pits							
	B	(ii)	Construction of embankment with approved material obtained from borrow pits with a lift upto 1.5 m, transporting to site, spreading, grading to required slope and compacting to meet requirement of Tables 300.1 and 300.2 with a lead upto 100 m as per Technical Specification Clause 301.5							
			Unit = cum							
			Taking output = 100 cum							
		a)	Material							
			Compensation for earth taken from private land	cum	100.00	35.25	3525.00			
			Rate for 100 cum = (a)				3525.00			
			Rate per cum = (a)/100	cum			35.25			
Total Cost				cum			35.25	1549.63	54624.46	5462.446
3	3.14	303.1	Construction of Subgrade and Earthen Shoulders							
			Construction of subgrade and earthen shoulders with approved material obtained from borrow pits with all lifts and leads, transporting to site, spreading, grading to required slope and compacted to meet requirement of Table 300.2 with lead upto 1000 m as per Technical Specification Clause 303.1.							
			Unit = cum							
			Taking output = 100 cum							
		a)	Material							
			Compensation for earth taken from private land	cum	100.00	35.25	3525.00			
			Cost for 100 cum = a				3525.00			
			Rate per cum = (a)/100				35.25			
Total Cost				cum			35.25	903.75	31857.19	3185.719
PAVEMENT CRUST LAYERS										
4	4.1	401	Granular Sub-base with Well Graded Material (Table 400.1)							
			(By mix in place method) For Grading I Material							
			Construction of granular sub-base by providing well graded material, spreading in uniform layers with tractor mounted grader arrangement on prepared surface, mixing by mix in place method with rotavator at OMC, and compacting with smooth wheel roller to achieve the desired density, complete as per Technical Specification Clause 401.							

Analysis of Rates for (Seigniorage Fee)

Name of Road : Chandisthan Se Mahadevpur TO Tarapur				BLOCK : Gurua				LENGTH : 2.000 KM		
Sl. No.	SDB Sl. No.	MORD Ref No.	DESCRIPTION	Unit	Quantity	Rate	Amount in Rs	Total material Qty. required	Total Material Amount	Add 10 % Seigniorage Fee
		(i)	For Grading I Material							
			Unit = cum							
			Taking output = 300 cum							
		a)	Material							
			For well graded granular sub-base material as per Table 400.1							
			53 mm to 9.5 mm @ 50 per cent	cum	180.00	1115.24	200743.20			
			9.5 mm to 2.36 mm @ 20 per cent	cum	72.00	434.45	31280.40			
			2.36 mm below @ 30 per cent - Course Sand	cum	108.00	584.64	63141.12			
			Cost for 300 cum = a				295164.72			
			Rate per cum = (a)/300	cum			983.88			
Total Cost				cum			983.88	683.91	672885.37	67288.537
	(3-B)		WMM Grading 3							
			Providing, laying, spreading and compacting graded stone aggregate to wet mix macadam specification including premixing the material with water at OMC in mechanical mixer (Pug Mill), carriage of mixed material by tipper to site, laying in uniform layers in sub-base/base course on a well prepared sub-base and compacting with smooth wheel roller of 80 to 100kN weight to achieve the desired density including lighting, barricading and maintenance of diversion, etc as per Tables 400.11 & 400.12 and Technical Specification Clause 406.							
		(A)	By Machnical Means							
			Unit = cum							
			Taking output = 100 cum							
		a)	Material (Refer Tables 400.7, 8, 9 and 10)							
			Aggregate							
			Coarse aggregate 45 mm to 22.4 mm @ 30 per cent	cum	39.90	1115.24	44498.08			
			Aggregates 22.4 mm to 2.36 mm @ 40 per cent	cum	53.20	697.86	37126.15			
			Fine aggregate/Crushed sand 2.36 mm to 75 micron @ 30 per cent	cum	39.90	266.62	10638.14			
			Cost for 360 cum = a				92262.37			
			Rate per cum = (a)/100				922.62			
Total Cost				cum			922.62	516.38	476422.52	47642.252
			BITUMINOUS ITEMS							
6	5.11	509	Mix Seal Surfacing with Waste Plastic(Type B) Bituminous (S-65) By Mechanical Means							
			Providing, laying and rolling of close-graded premix surfacing material of 20 mm thickness composed of 11.2 mm to 0.9 mm (Type-A) or 13.2 mm to 0.9 mm (Type-B) aggregates using penetration grade bitumen to required line, grade and level to serve as wearing course on a previously prepared base, including mixing in a suitable plant, laying and rolling with a three wheel 8-10 kN static roller and finishing to required level and grades as per Technical Specification Clause 509.							
		(B)	Case - II By Mechanical Means							
			(i) Bitumen (S-90)							
			Unit = sqm							
			Taking output = 4000 sqm (80 cum)							

Analysis of Rates for (Seigniorage Fee)

Name of Road : Chandisthan Se Mahadevpur TO Tarapur				BLOCK : Gurua				LENGTH : 2.000 KM		
Sl. No.	SDB Sl. No.	MORD Ref No.	DESCRIPTION	Unit	Quantity	Rate	Amount in Rs	Total material Qty. required	Total Material Amount	Add 10 % Seigniorage Fee
		a)	Material							
			Stone crushed aggregates 13.2 mm to 0.09 mm @ 0.27 cum per 10 sqm	Sqm	108.00	523.37	56523.96			
			Cost of 4000 sqm = a				56523.96			
			Rate per sqm = (a)/4000				14.13			
Total Cost				sqm			14.13	4590	64856.7	6485.67
			CC PAVEMENT							
7	6.4	1500	PQC							
			Providing, laying and rolling of close-graded premix surfacing material of 20 mm thickness composed of 11.2 mm to 0.9 mm (Type-A) or 13.2 mm to 0.9 mm (Type-B) aggregates using penetration grade bitumen to required line, grade and level to serve as wearing course on a previously prepared base, including mixing in a suitable plant, laying and rolling with a three wheel 8-10 kN static roller and finishing to required level and grades as per Technical Specification Clause 509.							
			Unit = cum							
			Taking Output=900cum							
		a)	Material							
		(i)	Crushed Stone Of 25 mm & 12.5 mm nominal size	cum	810.00	913.48	739918.80			
		(ii)	Coarse Sand	cum	405.00	584.64	236779.20			
			Rate per cum = (a)/900				1085.22			
Total Cost				cum			1085.22	378.75	411027.08	41102.708
8	4.18	412	Brick Soling (With New Brick)							
			Laying brick soling layer on prepared sub-grade with brick on end edging according to lines, graded and cross-section shown on the drawing filling joints with sand and earth, spreading 25 mm thick layer of earth over brick soling, watering and rolliing the same with three wheel road roller 80-100 kN as per Technical Specification Clause 412.							
			Unit = sqm							
			Taking ouput = 150 sqm							
		(a)	Material							
			Brick 1st Class	No.	8160.00	6.12	49939.20			
			Brick 1st Class on edging	No.	1100.00	6.12	6732.00			
			Fine Sand	cum	5.66	145.87	825.62			
			Cost for 150 sqm = a				57496.82			
			Rate per sqm = (a)/150				383.31			
Total Cost				cum			383.31	1600	613296	61329.6

Analysis of Rates for (Seigniorage Fee)

Name of Road : Chandisthan Se Mahadevpur TO Tarapur				BLOCK : Gurua			LENGTH : 2.000 KM			
Sl. No.	SDB Sl. No.	MORD Ref No.	DESCRIPTION	Unit	Quantity	Rate	Amount in Rs	Total material Qty. required	Total Material Amount	Add 10 % Seigniorage Fee
9	9.3	1100	Providing and Laying Reinforced Cement Concrete Pipe NP4 as per design in Single Row							
(II)			Providing and laying reinforced cement concrete pipe NP3 for culverts on first class bedding of granular material in single row including fixing collar with cement mortar 1:2 but excluding excavation, protection works, backfilling, concrete and masonry works in head walls and parapets Clause 1106.							
		B.	1000 MM DIA							
			Unit =m							
			Taking output =7.5 m							
			(3 pipes of 2.5 m length each)							
			a) Material							
			I) Sand at site	cum	0.04	145.87	5.83			
			Cost for 7.5m = (a)				5.83			
			Rate per m =(a)/7.5				0.78			
Total Cost				m		0.78	15	11.7	1.17	
10	11.4	800 & 1200 II.	Providing concrete for plain/reinforced concrete in open foundations complete as per drawings and technical specifications Clause 802, 803, 1202 & 1203 P.C.C grade M 15 in foundation							
		(i)	Nominal mix (1:2.5:5)							
			Unit = cum							
		a)	Material							
			Coarse sand	cum	0.48	584.64	280.63			
			40 mm aggregate	cum	0.48	1,005.81	482.79			
			20 mm aggregate	cum	0.24	1,224.68	293.92			
			10 mm aggregate	cum	0.08	602.28	48.18			
			Rate per cum =(a)				1105.52			
Total Cost				cum		1105.52	25.050	27693.28	2769.328	
11	12.5	800	Plain/reinforced <u>cement concrete in substructure</u> complete as per drawings and technical specification Clauses 802, 804, 805, 806, 807, 1202 and 1204							
			For height upto 5 m							
			Unit = cum							
		II.	P.C.C. grade M 20							
		(i)	Nominal mix (1:2:4)							
			Unit = cum							
		a)	Material							
			Sand	cum	0.45	584.64	263.09			
			40 mm aggregate	cum	0.36	1,005.81	362.09			
			20 mm aggregate	cum	0.36	1,224.68	440.88			
			10 mm aggregate	cum	0.18	602.28	108.41			
			Rate per cum =(a)				1174.47			
Total Cost				cum		1174.47	111.690	131176.55	13117.655	

Analysis of Rates for (Seigniorage Fee)

Name of Road : Chandisthan Se Mahadevpur TO Tarapur				BLOCK : Gurua				LENGTH : 2.000 KM		
Sl. No.	SDB Sl. No.	MORD Ref No.	DESCRIPTION	Unit	Quantity	Rate	Amount in Rs	Total material Qty. required	Total Material Amount	Add 10 % Seigniorage Fee
12	8.29		Cable Duct Across the Road							
	RCD		Providing and laying of a reinforced cement concrete pipe duct,300 mm dia, across the road (new construction), extending from drain to drain in cuts and toe of slope to toe of slope in fills,constructing head walls at both ends, providing a minimum fill ofgranular material over top and sides of RCC pipe as per IRC:981997,bedded on a 0.3 m thick layer of granular material free of rock pieces, outer to outer distance of pipe at least half dia of pipe subject to minimum 450 mm in case of double and triple row ducts, joints to be made leak proof, invert level of duct to be above higher than ground level to prevent entry of water and dirt, all as per IRC: 98 - 1997 and approved drawings.							
			Unit = Rm							
			Taking output = 20 m							
			a) Material							
			Local Sand for bedding and sides of pipe	Cum	7.200	584.64	4209.41			
			Cost for 20 Rm = a				4209.41			
			Rate per Rm = a/20				210.47			
Total Cost				rm			210.47	37.5	7892.63	789.263
Total Construction cost of Seigniorage Fee @ 10%										259392.00
13	15.1	1900	Restoration of Rain Cuts							
			Restoration of rain cuts with soil, moorum gravel or a mixture of these, clearing the loose soil, benching for 300mm width laying fresh material in layers not exceeding 250 mm and compaction with plate compactor or power rammer to restore the original alignment, level and slopes as per drawings and technical specifications Clause 1902							
			A Manual Means							
			Unit = cum							
			Taking output = 10 cum							
			a) Material							
			Compensation for earth Taken from private land	Cum	7.500	35.25	264.38			
			Cost for 10 cum = a				264.38			
			Rate per cum = a/10				26.44			
Total Cost				cum			26.44	364.50	9637.38	963.738
14	15.2	1900	Maintenance of Earthen shoulder (filling with fresh							
			Making up loss of material/irregularities on shoulders to the design level by adding fresh approved selected soil and compacting it with appropriate equipment at OMC upto a lead of 1000 m as per technical specification Clause 1903							
			Unit = sqm							
			Taking output = 100 sqm							
			a) Material							
			Compensation of earth	Cum	15.000	35.25	528.75			
			Cost for 100 sqm = a				528.75			
			Rate per sqm = a/100				5.29			
Total Cost				sqm			5.29	2081.25	11009.81	1100.981

Analysis of Rates for (Seigniorage Fee)

Name of Road : Chandisthan Se Mahadevpur TO Tarapur			BLOCK : Gurua				LENGTH : 2.000 KM			
Sl. No.	SDB Sl. No.	MORD Ref No.	DESCRIPTION	Unit	Quantity	Rate	Amount in Rs	Total material Qty. required	Total Material Amount	Add 10 % Seigniorage Fee
15	15.3	1900	Maintenace of bituminous surface road							
			Repair to pot holes by removal of failed material, trimming the sides to vertical and levelling the bottom, cleaning the same with compressed air or any appropriate method filled with 75mm B.M, applying bitumen emulsion prime coat at the bottom and bitumen emulsion tack coat on sides and on bottom as per technical specifications Clauses 502 and 503.							
			Unit = cum							
			Taking output = $187.5 \times 0.075 = 14.06 \text{ cum} = (30.94 \text{ Tonne})$							
			a) Material							
			37.5 - 25 mm 15%	cum	2.985	1115.24	3328.99			
			25 - 10 mm 45%	cum	8.955	913.48	8180.21			
			10 - 5 mm 25%	cum	4.975	602.28	2996.34			
			5 mm and below 15%	cum	2.985	434.45	1296.83			
			Cost of 14.06 cum = a				15802.38			
			Rate per cum = a/14.06				1123.92			
Total Cost cum						1123.92	350.58	394021.77	39402.177	
16	15.3	1900	Patch repair on already filled pot holes with 75 mm BM with Mix Seal Surfacing as per drawings and technical specification Clause 1904.2							
			Unit = sqm							
			Takign output = 200 sqm							
			a) Material							
			Crushed stone aggregate @ 0.27 cum per 10 sqm= $200 \times 0.27 / 10 = 5.4 \text{ cum}$	cum	5.400	913.48	4932.79			
			Cost of 200 sqm = a				4932.79			
			Rate/sqm = a/200				24.66			
Total Cost sqm						24.66	2109.38	52017.19	5201.719	
Total Maintenance Cost of Seigniorage Fee @ 10% =										46669.00
Total Construction and Maintenance Cost of Seigniorage Fee @ 10% =										306061.00

CROSS DRAINAGE STRUCTURE DETAILS

NAME OF ROAD : Chandisthan Se Mahadevpur TO Tarapur

CNCPL NO. : 27227

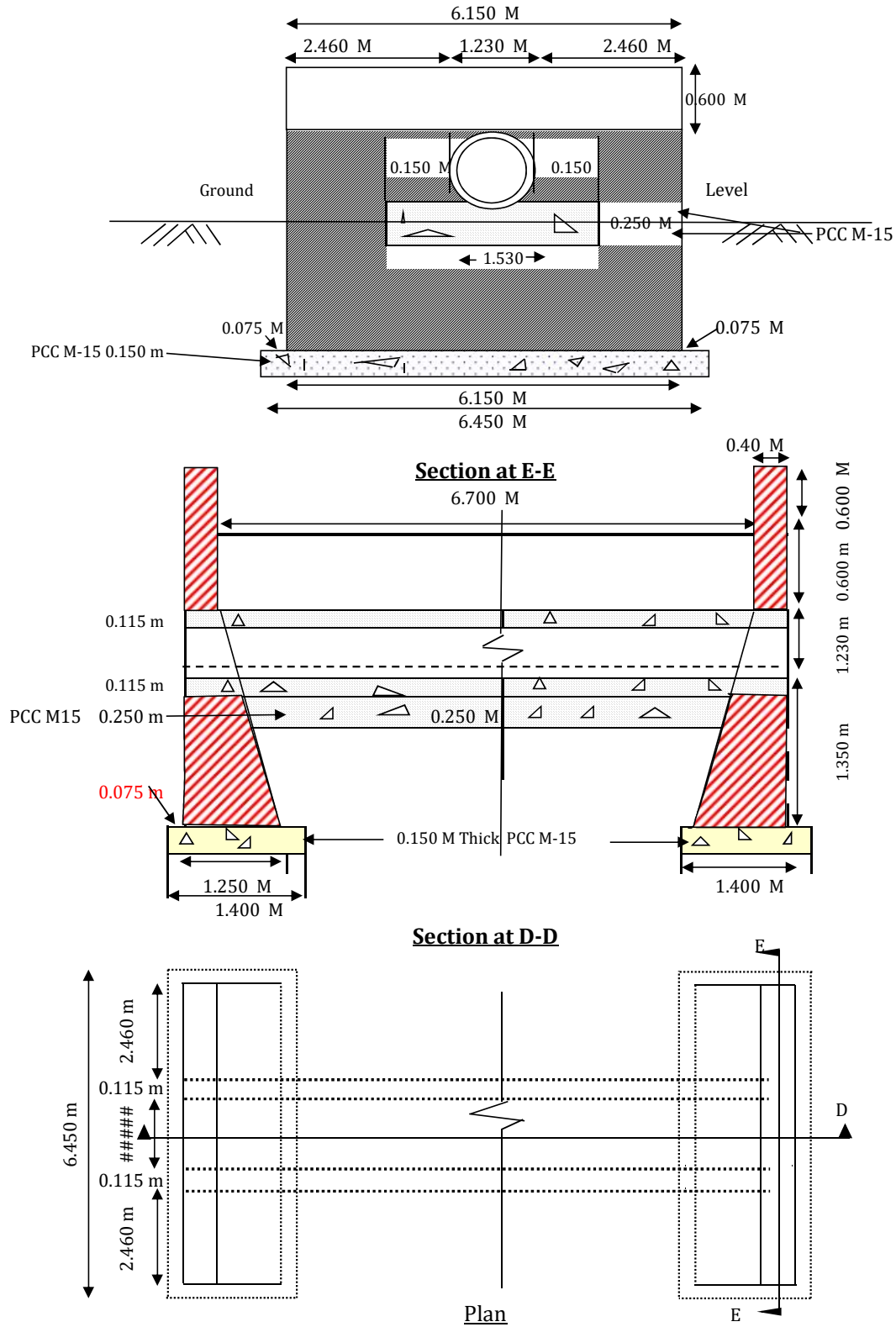
BLOCK Gurua

LENGTH OF ROAD (in KM) 2.000

Sr. No	CHAINAGE IN M	Existing Culvert arrangements			Proposed Culvert arrangement		Remarks
		Existing Culvert	Span , Dia / height	Condition	Proposed Culvert	Span , Dia / height	
1	0+700				HPC	1X1000 MM	NEW
2	0+800				HPC	1X1000 MM	NEW
3	1+200	RCC SLAB	1X2 M	DAMAGE	BOX	2X2 M	REPLACE

MUKHYA MANTRI GRAM SAMPRAK YOJNA, AWASHES (NDB)
(Govt. of Bihar)
YEAR 24-25

Single Row 1000 mm Dia Hume Pipe Culvert



QUANTITY FOR NEW H.P. CULVERT

Proposed and New H.P. Culvert
Internal Diameter
No. of Rows

2.00 nos
1000 mm
1 nos

Sl. No	SOR Item No	Description of Items	Unit	Qty	Rate (₹)	Amount (₹)
1	9.1 / 11.1	Earth work in excavation for foundation of structures upto 3.0 m depth as per drawing and technical specification clause 1104				
		H.W 2 x 6.450 x 1.400 x 1.500 = 27.090				
		Below Pipe 1 x 4.850 x 1.530 x 0.365 = 2.708				
		29.800 cum		29.800	386.53	11,519.00
2	11.4 (II)	Providing M15 (PCC 1:2.5:5) as levelling course in foundation :-- Providing PCC M 15 (1:2.5:5) concrete for plain concrete in open foundations complete as per drawings and technical specifications Clause 802, 803, 1202 & 1203				
		H.W 2 x 6.450 x 1.400 x 0.150 = 2.709				
		Below Pipe 1 x 4.931 x 1.530 x 0.250 = 1.886				
		4.600 cum		4.600	4,981.13	22,913.00
3	12.5(II)	Plain/reinforced cement concrete in substructure complete as per drawings and technical specification Clauses 802, 804, 805, 806, 807, 1202 and 1204 (M20)				
		H.W. 2 x 6.150 x 0.825 x 3.180 = 32.269				
		Parrapet 2 x 6.150 x 0.400 x 0.600 = 2.952				
		Less for pipe 2 x 0.7857 x 1.230 ² x 0.622 = -1.478				
		33.740 cum		33.740	5,745.94	1,93,868.00
4	9.3 (B)	Providing and laying RCC pipe NP-3 for culverts on first class bedding of PCC M10 material in single row including fixing collar with cement mortar 1:2 but excluding excavation, protection works, backfilling concrete and masonry works in head walls and parapets as per clause 1106				
		3 x 2.50 = 7.50				
		7.50 m		7.500	7,103.72	53,278.00
5	10.5	Painting on Parapet Wall (Black & White Strips) Painting two coats including primer coat after filling the surface with synthetic enamel paint in all shades on new, plastered / concrete surfaces as per drawing and Technical Specification Clause 1701				
		Top 2 x 6.150 x 0.400 = 4.920				
		Side 4 x 6.150 x 0.600 = 14.760				
		Front 4 x 0.400 x 0.600 = 0.960				
		20.640 Sqm		20.640	128.82	2,659.00
		COST OF ONE HP CULVERT Size (1000mm x Single Row) Rs.				2,84,237.00

Cost of 2 H.P. CULVERT Size (1000 mm) Rs. =

5,68,474.00

Junior Engineer

Asstt. Engineer

Executive Engineer

Mukhya Mantri Gram Sampark Yojna (MMGSY)
(Govt. of Bihar)

RCC BOX CULVERT (2.0 X 2.0)

Sl. No	SOR Item No	Description of Items	Unit	Qty	Rate (₹)	Amount (₹)
		Foundation				
1	9.1 / 11.1	Earth work in excavation for foundation of structures upto 3.0 m depth as per drawing and technical specification clause 1104	Cum	111.78	386.53	43,206.32
2	11.4 (I)	Providing concrete for plain/reinforced concrete in open foundations complete as per drawings and technical specifications Clause 802, 803, 1202 & 1203 PCC M-15 Grade	Cum	7.93	4981.13	39,500.36
3	11.4 (II)	Providing concrete for plain/reinforced concrete in open foundations complete as per drawings and technical specifications Clause 802, 803, 1202 & 1203 PCC M-20 Grade	Cum	33.46	5745.94	1,92,259.15
3	11.7	Supplying, fitting and placing HYSD bar reinforcement in foundation complete as per drawings and technical specifications Clauses 1000 and 1202	MT	0.16	66260.25	10,435.99
		Sub Structure				
4	12.5	Plain/reinforced cement concrete in substructure complete as per drawings and technical specification Clauses 802, 804, 805, 806, 807, 1202 ans 1204 PCC M-20 Grade	Cum	16.28	5745.94	93,543.90
5	12.9	Providing weepholes in brick masonry/stone masonry, plain/reinforced concrete abutment, wing wall, return wall with 100 mm dia AC pipe extending through the full width of the structures with slope of 1(V):20(H) towards drawing face complete as per drawing and technical specification Clauses 614, 709, 1204.3.7	Nos	36.00	172.82	6,221.52
6	12.5 (iv)	Plain/reinforced cement concrete in substructure complete as per drawings and technical specification Clauses 802, 804, 805, 806, 807, 1202 ans 1204 RCC M-25 Grade	Cum	11.55	6282.30	72,560.57
7	12.6	Supplying, fitting and placing HYSD bar reinforcement (Fe 415) in substructure complete as per drawings and technical specification Clauses 1002, 1005, 1010 & 1202	MT	1.14	66465.25	75,770.39
8	12.10	Backfilling behind abutment, wing wall and return wall complete as per drawings & technical specification Clause 1204.3.8 (With Sandy Materials)	Cum	34.29	895.23	30,697.44
9	12.11	Providing and laying filter media with granular crushed aggregates as per specification to a thickness of not less than 600 mm with smaller size towards the soil and bigger size towards the wall and providing over the entire surface behind abutment, wing wall, return wall to the full height, compacted to firm condition complete as per drawing and technical specification Clause 1204.3.8	Cum	19.82	2269.69	44,985.26
10	12.5 (II)	Plain/reinforced cement concrete in substructure complete as per drawings and technical specification Clauses 802, 804, 805, 806, 807, 1202 ans 1204 (Coping - PCC M-20 Grade)	Cum	11.68	5745.94	67,112.58
		Superstructure				
11	13.1	Providing and laying reinforced cement concrete in superstructure as per drawing and technical specifications Clauses 800, 1205.4 and 1205.5 RCC M-30 Grade	Cum	4.38	7973.01	34,921.78
12	13.2	Supplying, fitting, and placing HYSD bar reinforcement in superstructure complete as per drawing and technical specifications Clauses 1002, 1010 and 1202	MT	0.38	67941.37	25,817.72

[illegible]

Cost of	1 No BOX CULVERT Size (2 m x 2 m) . =	₹	7,69,078.67
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MUKHYA MANTRI GRAM SAMPRAK YOJNA, AWASHES (NDB)

Name of Road:-- Chandisthan Se Mahadevpur TO Tarapur

Block :- Gurua

District:- Gaya

LENGTH OF ROAD 2.000 Km

Sl No	Item	Unit	Source	Carriage Cost & Lead in Km								Loading & Unloading Cost	Carriage by Road	Total `	Lowest Rate
				Pucka / Surface				Katcha							
1	Stone Metal Gr-II/Via Road	Cum	Mirzapur	$\frac{8.00}{4.59}$	x 7.25	x 40 Km	= Rs 505.45	$\frac{8.00}{4.59}$	x 17.55	x 0 Km	= Rs 0.00	209.22	714.67	714.67	714.67
2	Stone Metal Gr-III / GSB Via Road	Cum	Mirzapur	$\frac{8.00}{4.99}$	x 7.25	x 40 Km	= Rs 464.93	$\frac{8.00}{4.99}$	x 17.55	x 0 Km	= Rs 0.00	209.22	674.15	674.15	674.15
3	Stone Aggregate / Chips Via Road	Cum	Mirzapur	$\frac{8.00}{4.99}$	x 7.25	x 40 Km	= Rs 464.93	$\frac{8.00}{4.99}$	x 17.55	x 0 Km	= Rs 0.00	209.22	674.15	674.15	674.15
4	Stone Boulder /Via Road	Cum	Mirzapur	$\frac{8.00}{4.80}$	x 7.25	x 40 Km	= Rs 483.33	$\frac{8.00}{4.80}$	x 17.55	x 0 Km	= Rs 0.00	209.22	692.55	692.55	692.55
5	Coarse Sand/Via Road	Cum	Sherghati	$\frac{8.00}{4.99}$	x 7.25	x 18 Km	= Rs 209.22	$\frac{8.00}{4.99}$	x 17.55	x 0 Km	= Rs 0.00	112.44	321.66	321.66	321.66
6	Mooram/Via Road	Cum	Mirzapur	$\frac{8.00}{6.00}$	x 7.25	x 40 Km	= Rs 386.67	$\frac{8.00}{6.00}$	x 17.55	x 0 Km	= Rs 0.00	112.44	499.11	499.11	499.11
7	Bitumen Muzaffarpur/Via Road	MT	Belaganj	$\frac{8.00}{8.00}$	x 7.25	x 48 Km	= Rs 348.00	$\frac{8.00}{8.00}$	x 17.55	x 0 Km	= Rs 0.00	397.96	745.96	745.96	745.96
8	Bitumen Emulsion /Via Road	MT	Belaganj	$\frac{8.00}{8.00}$	x 7.25	x 48 Km	= Rs 348.00	$\frac{8.00}{8.00}$	x 17.55	x 0 Km	= Rs 0.00	397.96	745.96	745.96	745.96
9	Local Sand	Cum	LOCAL	$\frac{8.00}{4.99}$	x 7.25	x 2 Km	= Rs 23.25	$\frac{8.00}{4.99}$	x 17.55	x 1 Km	= Rs 28.14	112.44	163.82	163.82	163.82
10	Brick	1000 Nos	LOCAL	$\frac{8.00}{2.00}$	x 7.25	x 7 Km	= Rs 203.00	$\frac{8.00}{2.00}$	x 17.55	x 1 Km	= Rs 70.20	467.66	740.86	740.86	740.86
11	Cement	MT	LOCAL	$\frac{8.00}{8.00}$	x 7.25	x 10 Km	= Rs 72.50	$\frac{8.00}{8.00}$	x 17.55	x 0 Km	= Rs 0.00	355.16	427.66	427.66	427.66
12	Steel	MT	LOCAL	$\frac{8.00}{8.00}$	x 7.25	x 10 Km	= Rs 72.50	$\frac{8.00}{8.00}$	x 17.55	x 0 Km	= Rs 0.00	383.96	456.46	456.46	456.46
13	Hume Pipe (1000 mm)	M	Bankebazar	$\frac{8.00}{10.00}$	x 7.25	x 24 Km	= Rs 139.20	$\frac{8.00}{10.00}$	x 17.55	x 0 Km	= Rs 0.00	68.02	207.22	207.22	207.22
14	Hume Pipe (600 mm)	M	Bankebazar	$\frac{8.00}{25.00}$	x 7.25	x 24 Km	= Rs 55.68	$\frac{8.00}{25.00}$	x 17.55	x 0 Km	= Rs 0.00	29.15	84.83	84.83	84.83
15	Hume Pipe (300 mm)	M	Bankebazar	$\frac{8.00}{60.00}$	x 7.25	x 24.00 Km	= Rs 23.20	$\frac{8.00}{60.00}$	x 27.10	x 0 Km	= Rs 0.00	29.15	52.35	52.35	52.35

Cost of Haulage Excluding Loading & Unloading as per SOR

Type of Road	` Per Ton. Km by Tipper	` Per Ton. Km by Truck
For Surface Road	11.20	7.25
For Un Surface Road	13.50	8.72
For Kachha Road	27.10	17.55

*** Subjected to Verification of Lead**

**JE
RWD**

**AE
RWD**

**EE
RWD**

**BASIC RATES
(A) Labour**

Sl. No.	Description of Labour	Unit	Rate (Rs.)
L-01	Bhisti	day	412.00
L-02	Bitumen Sprayer	day	433.00
L-03	Head Blacksmith	day	553.00
L-04	Blaster	day	680.00
L-05	Carpenter 1st Class	day	553.00
L-06	Chips spreader	day	519.00
L-07	Chiseller	day	636.00
L-08	Dresser (Skilled)	day	521.00
L-09	Driller	day	428.00
L-10	Electrician	day	553.00
L-11	Fitter	day	494.00
L-12	Mason (1st class)	day	553.00
L-13	Mason (2nd Class)	day	494.00
L-14	Mate	day	437.00
L-15	Mazdoor (Unskilled)	day	412.00
L-16	Mazdoor (Semi skilled)	day	428.00
L-17	Mazdoor (Skilled)	day	521.00
L-18	Painter (1st class)	day	523.00
L-19	Plumber	day	523.00
L-20	Surveyor	day	499.00
L-21	White Washer	day	521.00

**BASIC RATES
(B) Material**

Sl. No.	SOR Code	Description	Unit	Basic Rate as per SOR
1	2	3	4	5
M-001	M-056	AC pipe 100 mm	m	47.15
M-002	M-031	Aggregate - For 37.5 mm Maximum size - 22.4 mm to 5.6 mm	cum	913.48
M-003	M-033	Aggregate - For 37.5 mm Maximum size - 45 mm to 22.5 mm	cum	1,115.24
M-004	M-029	Aggregate - For 37.5 mm Maximum size - Below 5.6 mm	cum	434.45
M-005	M-031	Aggregate - For 53 mm Maximum size - 22.5 mm to 5.6 mm	cum	913.48
M-006	M-037	Aggregate - For 53 mm Maximum size - 63 mm to 45 mm	cum	1,005.81
M-007	M-029	Aggregate - For 53 mm Maximum size - Below 5.6 mm	cum	774.85
M-008	M-039	Aggregate - Grading I (40 mm nominal Size) 10 mm - 5 mm	cum	602.28
M-009	M-045	Aggregate - Grading I (40 mm nominal Size) 25 mm – 10 mm	cum	913.48
M-010	M-048	Aggregate - Grading I (40 mm nominal Size) 37.25 mm - 25 mm	cum	1,115.24
M-011	M-029	Aggregate - Grading I (40 mm nominal Size) 5 mm and below	cum	434.45
M-012	M-039	Aggregate - Grading II (19 mm nominal Size) 10 mm - 5 mm	cum	602.28
M-013	M-045	Aggregate - Grading II (19 mm nominal Size) 25 mm – 10 mm	cum	913.48
M-014	M-029	Aggregate - Grading II (19 mm nominal Size) 5 mm and below	cum	434.45
M-015	M-050	Aggregate 10 mm	cum	602.28
M-016	M-052	Aggregate 20 mm	cum	1,224.68
M-017	M-054	Aggregate 40 mm	cum	1,005.81
M-018	M-007	Aggregate- Crushable type such as moorum or Gravel for Grading I	cum	162.88
M-019	M-007	Aggregate- Crushable type such as moorum or Gravel for Grading II	cum	162.88
M-020	M-007	Aggregate- Crushable type such as moorum or Gravel for Grading III	cum	162.88
M-021	M-038	Aggregate-Grading I 90 mm to 45 mm	cum	1,005.81
M-022	M-037	Aggregate-Grading II 63 mm to 45 mm	cum	1,005.81
M-023	M-035	Aggregate-Grading III 53 mm to 22.4 mm	cum	1,115.24

Sl. No.	SOR Code	Description	Unit	Basic Rate as per SOR
M-024	M-030	Aggregates 22.4 mm to 2.36 mm for wet mix macadam	cum	697.86
M-025	M-033	Aggregates 45 mm to 22.4 mm for wet mix macadam	cum	1,115.24
M-026	M-059	Aluminium sheeting (1.5 mm thick)	sqm	8,941.03
M-027	M-062	Aluminium Studs 100 mm x 100 mm fitted with lense reflectors	Nos.	209.95
M-028		Bamboo (1st Class) 85 mm - 100 mm dia, 2.0 m long	No.	23.52
M-029		Bamboo (1st Class) 85 mm - 100 mm dia, 2.5 m long	No.	23.52
M-029		Bamboo (1st Class) 85 mm - 100 mm dia, 3.0 m long	No.	23.52
M-030		Bamboo (1st Class) 85 mm - 100 mm dia, 4.5 m - 5.5 m long	No.	23.52
M-029		Bamboo (2nd Class) 75mm dia, 1.8 m - 2.5 m long	No.	22.03
M-030		Bamboo (2nd Class) 75mm dia, 2.1 m - 3.0 m long	No.	22.03
M-031	M-063	Barbed wire	kg	79.75
M-032	M-007	Binding Material (Moorum)	cum	162.88
M-033	M-072	Binding wire	kg	48.30
M-034	M-078	Bitumen (Crumb Rubber Modified)	tonne	62,040.00
M-035		Bitumen (Natural Rubber Modified)	tonne	41,271.30
M-036		Bitumen (Polymer Modified)	tonne	
M-037	M-074	Bitumen (S-65)/VG-30 (Excluding The Cost Of Empty Drum @ Rs. 1051.40/ Per MT) (Gaya)	Tonne	56,202.60
M-038	M-075	Bitumen (S-90)/VG-10 (Excluding The Cost Of Empty Drum @ Rs. 1051.40/ Per MT)	Tonne	54,402.60
M-039	M-077	Bitumen Emulsion (RS-1)(Excluding The Cost Of Empty Drum @ Rs. 850.65/ Per MT)(Gaya)	Tonne	53,071.35
M-040	M-077	Bitumen Emulsion (SS-1) (Excluding The Cost Of Empty Drum @ Rs 850.65/ Per MT)	Tonne	54,204.35
M-041	M-119	Bituminous sealant	litre	30.54
M-042	M-147	Randum Rubble Stone	kg	694.61
M-043	M-104	Blasting material	kg	162.88
M-044	M-182	Bond stone (400 mm x 150 mm x 150 mm)	No.	10.80

Sl. No.	SOR Code	Description	Unit	Basic Rate as per SOR
M-045	M-079	Brick 1st Class	No.	6.120
M-046		Cement (OPC - 43 Grade) (Excluding The Cost Of Empty Bag @ Rs. 3.58 / Per Bag) (OPC 43 Grade)	t	5,254.40
M-047	M-097	Cement Primer	litre	125.53
M-048		Chlorprene Elastomer or Closed Cell Foam Sealing Element	m	24,867.70
M-049	M-164	Selected earth (Including royalty) @ 33.0 per cum & compensation @ 1.81 per cum)	cum	35.25
M-050	M-085	Compressible Fibre Board	sqm	1,383.88
M-051	M-087	Copper plate	kg	553.35
M-052		Corbelling Stones (300 mm x 150 mm x 150 mm)	No.	
M-053	M-088	Corrosion Resistant Structural Steel Grating	kg	77.41
M-054	M-090	Credit for excavated rock found suitable for use	cum	112.08
M-055		Crow bars 40 mm dia (hire charges)	hour	5.00
M-056	M-020	Crushed Sand or Grit Passing 2.36 mm and retained on 180 micron	cum	266.62
M-057	M-167	Crushed Slag	cum	729.73
M-058	M-025	Crushed Stone Aggregate 26.5 mm to 75 micron	cum	913.48
M-059	M-051	Crushed Stone chipping 13.2 mm nominal size	cum	602.28
M-060	M-049	Crushed Stone Chipping 6.7 mm size 100% passing 11.2 mm and retained on 2.36 mm	cum	434.45
M-061	M-049	Crushed Stone Chipping 6.7 mm size 100% passing 9.5 mm and retained on 2.36 mm	cum	434.45
M-062	M-050	Crushed Stone chipping 9.5 mm nominal size	cum	602.28
M-063	M-034	Crushed Stone Coarse Aggregate Passing 53 mm and retained on 2.8 mm	cum	774.85
M-064	M-009	Curing compound	litre	38.00
M-065		Debonding strips	m	49.91
M-066		Edge Stone (450 mm x 350 mm x 100 mm)	No.	
M-067		Edge Stone (450 mm x 350 mm x 200 mm)	No.	
M-068		Elastomeric bearing assembly	No.	24,867.70

Sl. No.	SOR Code	Description	Unit	Basic Rate as per SOR
M-069	M-092	Electric Detonator	each	568.80
M-070	M-095	Epoxy Paint	litre	482.35
M-071	M-097	Epoxy Primer	litre	105.24
M-072	M-168	Farmyard manure	cum	552.10
M-073		Fevicol adhesive	kg	125.00
M-074	M-011	Filter media	cum	697.86
M-075	M-021	Fine aggregate/Crushed sand 2.36 mm to 75 micron	cum	266.62
M-076	M-103	Galvanised angle	kg	57.02
M-077	M-103	Galvanised angle Section 100 mm x 100 mm of 12 mm thickness	kg	112.84
M-078	M-104	Gelatine 80 per cent	kg	806.85
M-079	M-114	GI Pipe 100 mm dia	m	647.73
M-080	M-115	GI Pipe 50 mm dia	m	211.02
M-081	M-102	GI wires	kg	96.39
M-082	M-015	Graded stone aggregate	cum	689.23
M-083	M-009	Granular material (Natural occurring, soil gravel mixture / quarry waste, kankar, laterite, dhandla	cum	168.37
M-084	M-054	Hand Broken Metal 40 mm size	cum	1,005.81
M-085		Indigo	kg	416.00
M-086		Interlocking Blocks with 60 mm thickness	sqm	416.00
M-087		Interlocking Blocks with 80 mm thickness	sqm	416.00
M-088	M-140	Joint filler board	sqm	1,064.18
M-089	M-120	Jute netting, open weave 25 mm square opening	sqm	41.26
M-090	M-120	Jute rope 12 mm dia	m	697.86
M-091	M-030	Key Aggregates passing 22.4 mm and retained on 2.8 mm	cum	697.86
M-092	M-190	Lime	t	3,150.00

Sl. No.	SOR Code	Description	Unit	Basic Rate as per SOR
M-093	M-190	Lime putty	t	3,000.00
M-094	M-196	Local Wood Piles (1st Class) 150-200 mm dia ,6m long	No.	193.50
M-095	M-187	Local Wood Piles (1st Class) 100 mm x 75 mm	cum	20,775.00
M-096	M-002	Loose stone	cum	206.33
M-097	M-101	MS clamps	Nos.	84.83
M-098	M-181	MS Flat / Structural Steel	t	55,450.00
M-099	M-103	MS Sheet Tube (47 mm x 47 mm x 12 SWG Sheet)	kg	44.93
M-100		MS Sheet 1.5 mm thick	sqm	416.00
M-101		MS Sheet 2 mm thick	sqm	832.00
M-102	M-129	Nuts, Bolts and Rivets	t	80.28
M-103	M-130	Paint (Synthetic Enamel)	litre	283.74
M-104	M-182	Plasticizer	litre	30.45
M-105	M-137	Polythene sheet (125 micron)	sqm	16.20
M-106	M-137	Polythene Sheething	Nos.	17.81
M-107	M-002	Quarried Stone 150-200 mm size	cum	694.61
M-108	M-149	RCC Pipe NP3 (1200 mm dia)	m	6,953.28
M-109	M-148	RCC Pipe NP3 (1000 mm dia)	m	5,949.27
M-110		RCC Pipe NP3 (750 mm dia)	m	996.02
M-111		RCC Pipe NP3 (600 mm dia)	m	2,510.02
M-112		RCC Pipe NP3 (500 mm dia)	m	-
		RCC Pipe NP3 (300 mm dia)	m	568.48
M-113	M-147	RCC Pipe NP4 (1200 mm dia)	m	6,953.28
M-114	M-148	RCC Pipe NP4 (1000 mm dia)	m	5,949.27
M-115		RCC Pipe NP4 (750 mm dia)	m	

Sl. No.	SOR Code	Description	Unit	Basic Rate as per SOR
M-116	M-151	RCC Pipe NP4 (600 mm dia)	m	2,510.02
M-117	M-152	RCC Pipe NP4 (300 mm dia)	m	568.48
M-118		Red-oxide Primer	litre	246.65
M-119	M-131	Road marking paint	litre	283.74
M-120	M-005	Sand (Coarse)	cum	584.64
M-121	M-006	Sand (Fine)	cum	145.87
M-122	M-163	Seeds	kg	42.95
M-123	M-176	Steel Pipe 50 mm dia	m	272.10
M-124		Steel Reinforcement (HYSD Bars) 12 mm	t	51,837.50
M-125		Steel Reinforcement (MS Round Bars) 6 mm	t	51,837.50
M-126		Steel Reinforcement (TMT Bars) 8 mm	t	51,837.50
M-127	M-001	Stone Boulder of size 150 mm and below	cum	694.61
M-128	M-051	Stone Chips 12 mm size	cum	602.28
M-129	M-042	Stone Chips 13.2 mm to 5.6 mm	cum	602.28
M-130	M-040	Stone Crushed Aggregate 11.2 mm to 0.09 mm	cum	434.45
M-131		Stone for Coarse Rubble Masonry 1st Sort	cum	686.03
M-132		Stone for Coarse Rubble Masonry 2nd Sort	cum	
M-133	M-147	Stone for Random Rubble Masonry	cum	694.61
M-134		Stone for Stone Set Pavement (300 mm x 200 mm x 150 mm)	No.	340.55
M-135	M-041	Stone Screening - Type A 13.2 mm for Grading-1	cum	434.45
M-136	M-041	Stone Screening - Type A 13.2 mm for Grading-2	cum	434.45
M-137	M-040	Stone Screening - Type B 11.2 mm for Grading-2	cum	434.45
M-138	M-040	Stone Screening - Type B 11.2 mm for Grading-3	cum	434.45
M-139	M-001	Stone spall	cum	363.47

Sl. No.	SOR Code	Description	Unit	Basic Rate as per SOR
M-140		Traffic cones	No.	441.78
M-141	M-189	Water	kl	61.40
M-142	M-021	Well graded Granular Base Material - Grading A 2.36 mm below	cum	266.62
M-143	M-025	Well graded Granular Base Material - Grading A 26.5 mm to 4.75 mm	cum	913.48
M-144	M-028	Well graded Granular Base Material - Grading A 53 mm to 26.5 mm	cum	1,115.24
M-145	M-021	Well graded Granular Base Material - Grading B 2.36 mm below	cum	266.62
M-146	M-025	Well graded Granular Base Material - Grading B 26.5 mm to 4.75 mm	cum	913.48
M-147	M-021	Well graded Granular Base Material - Grading C 2.36 mm below	cum	266.62
M-148	M-015	Well graded Granular Base Material - Grading C 9.5 mm to 4.75 mm	cum	602.28
M-149	M-021	Well Graded Material for Sub-Base - Grading I 2.36 mm below	cum	266.62
M-150	M-012	Well Graded Material for Sub-Base - Grading I 53 mm to 9.5 mm	cum	1,115.24
M-151	M-016	Well Graded Material for Sub-Base - Grading I 9.5 mm to 2.36 mm	cum	434.45
M-152	M-021	Well Graded Material for Sub-Base - Grading II 2.36 mm below	cum	266.62
M-153	M-026	Well Graded Material for Sub-Base - Grading II 26.5 mm to 9.5 mm	cum	913.48
M-154	M-016	Well Graded Material for Sub-Base - Grading II 9.5 mm to 2.36 mm	cum	434.45
M-155	M-021	Well Graded Material for Sub-Base - Grading III 2.36 mm below	cum	266.62
M-156	M-017	Well Graded Material for Sub-Base - Grading III 4.75 mm to 2.36 mm	cum	266.62
M-157	M-015	Well Graded Material for Sub-Base - Grading III 9.5 mm to 4.75 mm	cum	602.28
M-158		Wooden sleepers (250 mm x 250 mm x 125 mm) (hire charges)	No.	5.00
RCD				
M-159	M-117	Hot applied thermoplastic compound (Sp. Gravity - 2.10)	litre	210.99
M-160	M-153	Reflectorising glass beads	kg	80.71
M-161		Stone crushed aggregates 13.2 mm to 0.09 mm	cum	523.37
M-162	M-077	Slow-curing bitumen emulsion	kg	43.00
M-163	M-161	Sapling 2 m high 25 mm dia	each	28.64
M-164	M-135	Pesticide	Kg	89.55

Sl. No.	SOR Code	Description	Unit	Basic Rate as per SOR
M-165	M-092	Delineators from ISI certified firm as per the standard drawing given in IRC - 79	each	600.00
M-011	M-292	Waste Plastic as per IRC:SP:98-2013	tonne	16974.00

Final Rate
9
47.15
913.48
1,115.24
434.45
913.48
1,005.81
774.85
602.28
913.48
1,115.24
434.45
602.28
913.48
434.45
602.28
1,224.68
1,005.81
162.88
162.88
162.88
1,005.81
1,005.81
1,115.24

Final Rate
697.86
1,115.24
8,941.03
209.95
23.52
23.52
23.52
23.52
22.03
22.03
79.75
162.88
48.30
62,040.00
41,271.30
-
56,202.60
54,402.60
53,071.35
54,204.35
30.54
694.61
162.88
10.80

Final Rate
6.120
5,254.40
125.53
24,867.70
35.25
1,383.88
553.35
-
77.41
112.08
5.00
266.62
729.73
913.48
602.28
434.45
434.45
602.28
774.85
38.00
49.91
-
-
24,867.70

Final Rate
568.80
482.35
105.24
552.10
125.00
697.86
266.62
57.02
112.84
806.85
647.73
211.02
96.39
689.23
168.37
1,005.81
416.00
416.00
416.00
1,064.18
41.26
697.86
697.86
3,150.00

Final Rate
3,000.00
193.50
20,775.00
206.33
84.83
55,450.00
44.93
416.00
832.00
80.28
283.74
30.45
16.20
17.81
694.61
6,953.28
5,949.27
996.02
2,510.02
-
568.48
6,953.28
5,949.27
-

Final Rate
2,510.02
568.48
246.65
283.74
584.64
145.87
42.95
272.10
51,837.50
51,837.50
51,837.50
694.61
602.28
602.28
434.45
686.03
-
694.61
340.55
434.45
434.45
434.45
434.45
363.47

Final Rate
441.78
61.40
266.62
913.48
1,115.24
266.62
913.48
266.62
602.28
266.62
1,115.24
434.45
266.62
913.48
434.45
266.62
266.62
602.28
5.00
-
210.99
80.71
523.37
43.00
28.64
89.55

Final Rate
600.00
16,974.00

BASIC RATES
(C) USAGE RATES OF PLANT & MACHINERY

Sr. No.	SOR Code	Description of		Output of Machine		Usage Rates in Rs.	
		Machine	Activity	Unit	Output	Unit	Rate
PM-001	P&M-001	Air Compressor 210 cfm	Supplying compressed air	cfm	210.00	per hour	455.00
PM-002	P&M-024	HMP 30-40 TPH	BM, DBM, SDBC, PM	Cum/h	17.00	per hour	31,459.00
PM-003	P&M-002	Batch mix Plant 30 cum capacity	Concrete mixing	Cum/h	20.00	per hour	31,459.00
PM-004	P&M-005	Bitumen boiler oil fired	Bitumen Spraying				
		200 litre		litre / h	400.00	per hour	563.00
		1000 litre		litre / h	2000.00	per hour	563.00
PM-005	P&M-004	Bitumen pressure distributor	Applying bitumen tack coat	sqm/h	1750.00	per hour	1,362.00
PM-006	P&M-009	Concrete mixer 0.28/0.4 cum	Mixing of ingredients	cum/h	2.50	per hour	351.00
PM-007	P&M-012	Crane upto 3.5T	Lifting of materials			per hour	822.00
PM-008	P&M-015	Dozer D 50	Dozing/cutting/ Clearing	cum/h	200.00	per hour	4,342.00
				cum/h	100.00		3,014.00
PM-009	P&M-018	Electric generator set, 125 KVA	Electricity generation	KVA	100.00	per hour	1,646.00
PM-010	P&M-016	Emulsion Sprayer with Tractor	Spraying of Emulsion			per hour	1,362.00
PM-011	P&M-017	Front end-loader 1 cum bucket capacity @ 45 cum/hour	Loading Aggregates	cum/h	45.00	per hour	1,432.00
			Loading Soil	cum/h	100.00		1,432.00
PM-012	P&M-031	Hydraulic broom with tractor	Surface cleaning	sqm/h	1250.00	per hour	807.00
PM-013	P&M-026	Hydraulic Excavator 0.9 cum	Excavation	cum/h	100.00	per hour	2,288.00
PM-014	P&M-025	Hydraulic self propelled chip spreader	Surface Dressing	sqm/h	1500.00	per hour	1,689.00
PM-015	P&M-084	Jack Hammer with tractor	Pavement breaking & rock drilling	cum/h	05. to 1	per hour	1,289.30
PM-016	P&M-083	Joint Cutting Machine with 2-3 blades	Cutting of Joints	h		per hour	357.00
PM-017		Mixall 6-10 t capacity	Mixing of bituminous materials	t/h	8.00	per hour	3,702.00
PM-018	P&M-032	Motor Grader	Scarifier & levelling	cum/h	200.00	per hour	4,479.00
	P&M-053	Tractor Mounted Grader			100.00		693.00
PM-019		Needle vibrator	Vibrating cement concrete mix	cum/h	3.50	per hour	405.00
PM-020	P&M-035	Paver finisher	Laying/spreading	t/h	75.00	per hour	2,157.00
PM-021	P&M-086	Plate compactor	Compaction	cum/h		per hour	415.00
PM-022	P&M-086	Plate vibrator	Compaction	cum/h		per hour	396.00
PM-023		Screed vibrator	Compaction	cum/h		per hour	102.65
PM-024	P&M-044	Smooth wheeled 80-100 kN tandem roller	Compaction of Sub-base/ Asphalt	cum/h	30.00	per hour	2,072.00
PM-025	P&M-028	Stone crusher (Integrated) of 200 TPH	Crushing of Spalls	t/h	200.00	per hour	13,800.00
PM-026	P&M-044	Three wheel 80-100 kN Static Roller	Compaction/ Rolling				1,612.00
			Earth:- Embankment or sub-grade	cum/h	80/70		1,612.00

Sr. No.	SOR Code	Description of		Output of Machine		Usage Rates in Rs.	
		Machine	Activity	Unit	Output	Unit	Rate
			Sub-base G-I	cum/h	10.00	per hour	1,612.00
			Sub-base G-II/G-III	cum/h	8.00		1,612.00
			WMM	cum/h	16.00		1,612.00
			BUSG	cum/h	10.00		1,612.00
			BM 50/75 mm	cum/h	12.00		1,612.00
			Premix 20 mm	sqm/h	250.00		1,612.00
			Seal Coat	sqm/h	500.00		1,612.00
			Surface Dressing 1st Coat	sqm/h	400.00		1,612.00
			Surface Dressing 2ndCoat	sqm/h	500.00		1,612.00
PM-027	P&M-048	Tipper 5.5 cum/10 t	Carriage	cum/trip	5.50	per hour	1,441.00
PM-028	P&M-053	Tractor with Disc Harrows	Pulverisation of soil	cum/h	80.00	per hour	688.00
PM-029	P&M-055	Tractor with ripper @ 60 cum per hour	Ripping Pavements, uprooting trees	cum/h	60.00	per hour	697.00
PM-030	P&M-053	Tractor with trolley/with Grading equipment	Transportation of materials	t/trip	3 to 5	per hour	688.00
PM-031	P&M-054	Tractor with Rotavator	Scarifier	cum/h	25.00	per hour	705.00
PM-032	P&M-057	Truck 10 t capacity	Carriage	cum/trip	5.50	per hour	934.30
PM-033	P&M-059	Vibratory roller 80-100 kN	Compaction of soil WMM	cum/h	100.00	per hour	2,072.00
			Compaction of BM	cum/h	60.00		2,072.00
PM-034	P&M-060	Water tanker 6 kl capacity (Truck Mounted)	Carriage of water	litre / h	12000.00	per hour	764.00
PM-035	P&M-062	Wet mix plant (Pug Mill)	Wet Mix	cum/h	25.00	per hour	694.00
RCD							
PM-036	P&M-043	Road marking machine	Road marking	Sqm/h	100.00	per hour	1,423.00
PM-037		Mini Hot Mix Plant		Cum/h	2.70	per hour	51,313.00
PM-038	P&M-043	Vibratory Earth Compactor		Cum /h			2,082.00
PM-039	P&M-047	Tipper - 5 cum	Transportation of soil, GSB, WMM, Hotmix etc.	Capacity in cum	5.50	tonne.km	9.89
	P&M-081	250 KVA Generator Set	Generation of Electric Energy	KVA	200.00	per hour	3,134.00
		Tipper 10 Cum	Transportation of Soil, GSB, WMM, Hotmix etc.	Capacity in Cum	10.00	Tonne.Km	1,954.00
		transit truck agiator				Tonne.Km	10.75
		Texture Curing Machine upto 9 m		hrs			3,426.00
		transit Mixer 6 cum					10.85
		Batching and Mixing Plant - 120 cum Capacity					3,684.00
P&M-042	P&M-046	Mastic Cooker	Mastic Wearing coat	capacity in tonne	1.00	per hour	514.00
PM74001		Tipper 10 Cum (Surface Road)	Loading/Unloading	Capacity in Cum	10.00	Tonne.Km	7.10
PM29002	P&M-035	Paver finisher (170 HP)	Laying/spreading	t/h	170.00	per hour	6,427.00
	PM10001	Pneumatic Tyre Roller				per hour	2,077.00
		Front End loader 3.1 cum bucket capacity				per hour	3,519.00

Chapter 1

LOADING, UNLOADING, CARRIAGE CRUSHING OF MATERIALS AND SETTING OUT

Notes:

- 1 Rates are for net quantities after deduction of voids.
- 2 Part of km beyond 1 km will be payable for the full km.

Sr. No.	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
1.2		Loading and Unloading Lime, Aggregate, Stone Boulder, Brick Aggregate, Kankar, Building Rubbish, Crushed Slag, Stone for Masonry Work by Mechanical Means (i) Loading of Lime, Aggregate, Stone Boulder, Brick Aggregate, Kankar, Building Rubbish, Crushed Slag, Stone for Masonry Work by mechanical means including a lead upto 30 m Placing tipper at loading point, loading with front end loader excluding time for haulage and return trip. Unit = cum Taking output = 5.5 cum Time required for i) Positioning of tipper at loading point ii) Loading by front end loader 1 cum bucket capacity @ 45 cum per hour iii) Waiting time, unforeseen contingencies, etc. Total a) Machinery (i) Tipper 10 t capacity (ii) Front end-loader 1 cum bucket capacity @ 45 cum per hour b) Overheads & Contractor's profit @ 12.5 % on (a) c) Contractor's Profit @ 0% on (a+b) Cost for 5.5 cum = a+b	Min	1		
			Min	7.33		
			Min	2		
		Total	Min	10.33		
		(i) Tipper 10 t capacity	hour	0.172	1,441.00	247.85
		(ii) Front end-loader 1 cum bucket capacity @ 45 cum per hour	hour	0.122	1,432.00	174.70
		b) Overheads & Contractor's profit @ 12.5 % on (a)				52.82
		c) Contractor's Profit @ 0% on (a+b)				-
		Cost for 5.5 cum = a+b				475.38
		Rate per cum = (a+b) /5.5				86.43
		(ii) Loading of Earth, Sand, Moorum, Manure, Flyash by mechanical means including a lead upto 30 m. Placing tipper at loading point, loading with front end loader excluding time for haulage and return trip. Unit = cum Taking output = 5.5 cum Time required for i) Positioning of tipper at loading point ii) Loading by front end loader 1 cum bucket capacity @ 100 cum per hour iii) Waiting time, unforeseen contingencies, etc. Total a) Machinery (i) Tipper 10 t capacity (ii) Front end-loader 1 cum bucket capacity @ 100 cum per hour b) Overheads & Contractor's profit @ 12.5 % on (a) c) Contractor's Profit @ 0% on (a+b) Cost for 5.5 cum = a+b+c	Min	1.00		
			Min	3.30		
			Min	2.00		
		Total	Min	6.30		
		(i) Tipper 10 t capacity	hour	0.105	1,441.00	151.31
		(ii) Front end-loader 1 cum bucket capacity @ 100 cum per hour	hour	0.055	1,432.00	78.76
		b) Overheads & Contractor's profit @ 12.5 % on (a)				28.76
		c) Contractor's Profit @ 0% on (a+b)				-
		Cost for 5.5 cum = a+b+c				258.83
		Rate per cum = (a+b+c)/5.5				47.06

Sr. No.	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
		(iii) Unloading of Earth, Sand, Lime, Moorum, Aggregate, Stone Boulder, Brick Aggregate, Kankar, Building Rubbish, Manure, Crushed Slag, Flyash, Stone for Masonry Work by mechanical means. Unit = cum Taking output = 5.5 cum Placing tipper at unloading point excluding time for haulage and return trip Time required for i) Positioning of tipper at unloading point ii) Manoeuvring, reversing, dumping and turning for return iii) Waiting time, unforeseen contingencies, etc. Total a) Machinery Tipper 10 t capacity b) Overheads & Contractor's profit @ 12.5 % on (a) c) Contractor's Profit @ 0% on (a+b) Cost for 5.5 cum = a+b+c	Min Min Min Min hour	1.00 2.00 2.00 5.00 0.08	 1,441.00	 115.28 14.41 - 129.69
Rate per cum = (a+b+c)/5.5						23.58
CALCULATION BY TIPPER						
1.10		Haulage excluding Loading & Unloading Haulage of materials by tipper excluding cost of loading, unloading and stacking. Unit = t.km Taking output 10 t load and lead 10 km = 100 t.km Case-I : Surfaced Road Speed with load: 25 km per hour Speed while returning empty: 35 km per hour a) Machinery Tipper 10 t capacity Haulage with load Empty return trip b) Overheads & Contractor's profit @ 12.5 % on (a) c) Contractor's Profit @ 0% on (a+b) Cost for 100 t.km = a+b+c	hour hour	0.40 0.29	1,441.00 1,441.00	576.40 417.89 124.29 - 1,118.58
Rate per t.km = (a+b+c)/100						11.20
	Note:	In case of carriage of Hume pipes, output of truck be taken as 8 t and the rate for t is to be divided by number of pipes of different Case-II: Unsurfaced Gravel Road Speed with load: 20 km/hour Speed for empty return trip: 30 km/hour a) Machinery Tipper 10 t capacity Haulage with load Empty return trip b) Overheads & Contractor's profit @ 12.5 % on (a) c) Contractor's Profit @ 0% on (a+b) Cost for 100 t.km = a+b+c	hour hour	0.50 0.33	1,441.00 1,441.00	720.50 475.53 149.50 - 1,345.53
Rate per t.km = (a+b+c)/100						13.50

Sr. No.	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
	Note:	In case of carriage of Hume pipes, output of truck be taken as 8 t and the rate per t is to be divided by number of pipes of different				
		Case-III: Katcha Track and Track in River Bed/Nallah Bed and Choe Bed				
		Speed with load: 10 km per hour				
		Speed while returning empty: 15 km per hour				
	a) Machinery					
	i) Tipper 10 t capacity					
		Haulage with load	hour	1.00	1,441.00	1,441.00
		Empty return trip	hour	0.67	1,441.00	965.47
	b) Overheads & Contractor's profit @ 12.5 % on (a)					300.81
	c) Contractor's Profit @ 0% on (a+b)					-
		Cost for 100 t.km = a+b+c				2,707.28
Rate per t.km = (a+b+c)/100						27.10
	Note:	In case of carriage of Hume pipes, output of truck be taken as 8 t and the cost for 8 t is to be divided by number of pipes of different				
CALCULATION BY TRUCK						
1.10		Haulage excluding Loading & Unloading				
		Haulage of materials by tipper excluding cost of loading, unloading and stacking.				
		Unit = t.km				
		Taking output 10 t load and lead 10 km = 100 t.km				
		Case-I : Surfaced Road				
		Speed with load: 25 km per hour				
		Speed while returning empty: 35 km per hour				
	a) Machinery					
	Truck 10 t capacity					
		Haulage with load	hour	0.40	934.30	373.72
		Empty return trip	hour	0.29	934.30	270.95
	b) Overheads & Contractor's profit @ 12.5 % on (a)					80.58
	c) Contractor's Profit @ 0% on (a+b)					-
		Cost for 100 t.km = a+b+c				725.25
Rate per t.km = (a+b+c)/100						7.25
	Note:	In case of carriage of Hume pipes, output of truck be taken as 8 t and the rate for t is to be divided by number of pipes of different				
		Case-II: Unsurfaced Gravel Road				
		Speed with load: 20 km/hour				
		Speed for empty return trip: 30 km/hour				
	a) Machinery					
	Truck 10 t capacity					
		Haulage with load	hour	0.50	934.30	467.15
		Empty return trip	hour	0.33	934.30	308.32
	b) Overheads & Contractor's profit @ 12.5 % on (a)					96.93
	c) Contractor's Profit @ 10.0% on (a+b)					-
		Cost for 100 t.km = a+b+c				872.40
Rate per t.km = (a+b+c)/100						8.72

Sr. No.	Reference to MORD Specifications	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
	Note:	In case of carriage of Hume pipes, output of truck be taken as 8 t and the rate per t is to be divided by number of pipes of different				
		Case-III: Katcha Track and Track in River Bed/Nallah Bed and Choe Bed				
		Speed with load: 10 km per hour				
		Speed while returning empty: 15 km per hour				
	a) Machinery					
	i) Truck 10 t capacity					
		Haulage with load	hour	1.00	934.30	934.30
		Empty return trip	hour	0.67	934.30	625.98
	b) Overheads & Contractor's profit @ 12.5 % on (a)					195.04
	c) Contractor's Profit @ 0% on (a+b)					-
		Cost for 100 t.km = a+b+c				1,755.32
Rate per t.km = (a+b+c)/100						17.55
TEC	Note:	In case of carriage of Hume pipes, output of truck be taken as 8 t and the cost for 8 t is to be divided by number of pipes of different				
		Brick Flat Soling				
		Laying brick soling layer on prepared sub-grade with brick on lines, graded and cross-section shown on the drawing filling joints with sand and earth as per Technical Specification Clause 412				
		Unit = sqm				
		Taking output = 9.30 sqm				
	a) Labour					
		Mazdoor (Unskilled)	day	1.00	412.00	412.00
		Mason 2nd class	day	0.50	494.00	247.00
	b) Sundries					1.60
	c) Material					
		Brick 1st Class New	No.	300.00	6.12	1,836.00
		Fine Sand	cum	0.142	145.87	20.71
	d) Overheads & Contractor's profit @ 12.5 % on (a)					314.66
	e) Contractor's Profit @ 0% on (a+b+c+d)					0.00
		Cost for 9.30sqm = a+b+c+d+e				2,831.97
Rate per sqm = (a+b+c+d+e)/9.3						304.51

Analysis of Rates (FORMAT F8)

Sl. No.	SDB Sl. No.	MORD Ref No.	DESCRIPTION	Unit	Quantity	Rate	Amount in Rs
1	1.1	(i)	Loading of Lime, Aggregate, Stone Boulder, Brick Aggregate, Kankar, Building Rubbish, Crushed Slag, Stone for Masonry Work by manual means including a lead upto 30 m Unit = cum Taking output = 5.5 cum				
		a)	Labour				
			Mate	day	0.02	437.00	8.74
			Mazdoor (Unskilled)	day	0.50	412.00	206.00
		b)	Machinery				
			Truck	hour	0.50	934.30	467.15
		c)	Overheads & Contractor's profit @ 12.5 % on (a+b)				85.24
		d)	Contractor's profit @ 0% on (a+b+c)				0.00
			Cost for 5.5 cum = a+b+c+d				767.13
			Rate per cum = (a+b+c+d) /5.5				139.48
			Total Cost	Cum			139.48
2		(ii)	Loading of Earth, Sand, Moorum, Manure, Flyash by manual means including a lead upto 30 m. Unit = cum Taking output = 5.5 cum				
		a)	Labour				
			Mate	day	0.01	437.00	4.37
			Mazdoor (Unskilled)	day	0.25	412.00	103.00
		b)	Machinery				
			Truck	hour	0.25	934.30	233.58
		c)	Overheads & Contractor's profit @ 12.5 % on (a+b)				42.62
		d)	Contractor's profit @ 0% on (a+b+c)				0.00
			Cost for 5.5 cum = a+b+c+d				383.56
			Rate per cum = (a+b+c+d) /5.5				69.74
			Total Cost	Cum			69.74
3		(iii)	Unloading of Lime, Aggregate, Stone Boulder, Brick Aggregate, Kankar, Building Rubbish, Crushed Slag, Stone for Masonry Work by mechanical means including a lead upto 30 m Unit = cum Taking output = 5.5 cum				
		a)	Labour				
			Mate	day	0.01	437.00	4.37
			Mazdoor (Unskilled)	day	0.25	412.00	103.00
		b)	Machinery				
			Truck	hour	0.25	934.30	233.58
		c)	Overheads & Contractor's profit @ 12.5 % on (a+b)				42.62
		d)	Contractor's profit @ 0% on (a+b+c)				0.00
			Cost for 5.5 cum = a+b+c+d				383.56
			Rate per cum = (a+b+c+d) /5.5				69.74
			Total Cost	Cum			69.74
			Total Loding & Unloading of Stone Aggregate	Cum	= 139.48 + 69.74 =		209.22
4		(iv)	Unloading of Earth, Sand, Moorum, Manure, Flyash by manual means including a lead upto 30 m. Unit = cum Taking output = 5.5 cum				
		a)	Labour				
			Mate	day	0.01	437.00	2.19
			Mazdoor (Unskilled)	day	0.13	412.00	51.50
		b)	Machinery				
			Truck	hour	0.166	934.30	155.09
		c)	Overheads & Contractor's profit @ 12.5 % on (a+b)				26.10
		d)	Contractor's profit @ 0% on (a+b+c)				0.00
			Cost for 5.5 cum = a+b+c+d				234.88
			Rate per cum = (a+b+c+d) /5.5				42.70
			Total Cost	Cum			42.70
			Total Loding & Unloading of Sand / Moorum	Cum	= 69.74 + 42.7 =		112.44

Analysis of Rates (FORMAT F8)

Sl. No.	SDB Sl. No.	MORD Ref No.	DESCRIPTION	Unit	Quantity	Rate	Amount in Rs
5	1.3		Loading, Unloading and Stacking of Bricks by Manual Means (i) Loading of Bricks by manual means including a lead upto 30 m Unit = 1000 Nos. Taking output = 2000 Nos. a) Labour Mate Mazdoor (Unskilled) b) Machinery Truck c) Overheads & Contractor's profit @ 12.5 % on (a+b) d) Contractor's profit @ 0% on (a+b+c) Cost for 2000 Nos. = a+b+c+d Rate for 1000 bricks = (a+b+c+d)/2				
				day	0.01	437.00	4.37
				day	0.25	412.00	103.00
				hour	0.33	934.30	308.32
							51.96
							0.00
							467.65
							233.83
			Total Cost	no.			233.83
6		(ii)	Unloading and Stacking of Bricks by manual means including a lead upto 30 m Unit = 1000 Nos. Taking output = 2000 Nos. a) Labour Mate Mazdoor (Unskilled) b) Machinery Truck c) Overheads & Contractor's profit @ 12.5 % on (a+b) d) Contractor's profit @ 0% on (a+b+c) Cost for 2000 Nos. = a+b+c+d Rate for 1000 bricks = (a+b+c+d)/2				
				day	0.01	437.00	4.37
				day	0.25	412.00	103.00
				hour	0.33	934.30	308.32
							51.96
							0.00
							467.65
							233.83
			Total Cost	no.			233.83
			Total Loding & Unloading of Brick Per 1000 = 233.83 + 233.83 =				467.66
7		(i)	Loading and Unloading of Cement by Manual Means Loading of Cement by manual means including a lead upto 30 m Unit = t Taking output = 10 t a) Labour Mate Mazdoor (Unskilled) b) Machinery Truck c) Overheads & Contractor's profit @ 12.5 % on (a+b) d) Contractor's profit @ 0% on (a+b+c) Cost for 10 t = a+b+c+d Rate per tonnes = (a+b+c+d)/10				
				day	0.06	437.00	26.22
				day	1.50	412.00	618.00
				hour	1.00	934.30	934.30
							197.32
							0.00
							1775.84
							177.58
			Total Cost	t			177.58
8		(ii)	Unloading of Cement by manual means including a lead upto 30 m Unit = t Taking output = 10 t a) Labour Mate Mazdoor (Unskilled) b) Machinery Truck c) Overheads & Contractor's profit @ 12.5 % on (a+b) d) Contractor's profit @ 0% on (a+b+c) Cost for 10 t = a+b+c+d Rate per tonne = (a+b+c+d)/10				
				day	0.06	437.00	26.22
				day	1.50	412.00	618.00
				hour	1.00	934.30	934.30
							197.32
							0.00
							1775.84
							177.58
			Total Cost	t			177.58

Analysis of Rates (FORMAT F8)

Sl. No.	SDB Sl. No.	MORD Ref No.	DESCRIPTION	Unit	Quantity	Rate	Amount in Rs
			Total Loding & Unloading of Cement	t	= 177.58 + 177.58 =		355.16
9	1.5		Loading and Unloading of Structural Steel and Steel Bars by manual means				
		(i)	Loading of Structural Steel, Steel Bars by manual means including a lead upto 30 m Unit = t Taking output = 10 t				
		a)	Labour				
			Mate	day	0.07	437.00	30.59
			Mazdoor (Unskilled)	day	1.80	412.00	741.60
		b)	Machinery				
			Truck	hour	1.00	934.30	934.30
		c)	Overheads & Contractor's profit @ 12.5 % on (a+b)				213.31
		d)	Contractor's profit @ 0% on (a+b+c)				0.00
			Cost for 10 t = a+b+c+d				1919.80
			Rate per tonnes = (a+b+c+d)/10				191.98
			Total Cost	t			191.98
10		(ii)	Unloading of Structural Steel, Steel Bars by manual means including a lead upto 30 m Unit = t Taking output = 10 t				
		a)	Labour				
			Mate	day	0.07	437.00	30.59
			Mazdoor (Unskilled)	day	1.80	412.00	741.60
		b)	Machinery				
			Truck	hour	1.00	934.30	934.30
		c)	Overheads & Contractor's profit @ 12.5 % on (a+b)				213.31
		d)	Contractor's profit @ 0% on (a+b+c)				0.00
			Cost for 10 t = a+b+c+d				1919.80
			Rate per t = (a+b+c+d)/10				191.98
			Total Cost	t			191.98
			Total Loding & Unloading of Steel	t	= 191.98 + 191.98 =		383.96
11	1.6		Loading and Unloading of Bitumen Drums by Manual Means				
		(i)	Loading of Bitumen Drums by manual means including a lead upto 30 m Unit = t Taking output = 10 t				
		a)	Labour				
			Mate	day	0.06	437.00	26.22
			Mazdoor (Unskilled)	day	1.60	412.00	659.20
		b)	Machinery				
			Truck	hour	1.25	934.30	1167.88
		c)	Overheads & Contractor's profit @ 12.5 % on (a+b)				231.66
		d)	Contractor's profit @ 0% on (a+b+c)				0.00
			Cost for 10 t = a+b+c+d				2084.96
			Rate per tonnes = (a+b+c+d)/10				208.50
			Total Cost	t			208.50
12		(ii)	Unloading of Bitumen Drums by Manual Means including a lead upto 30 m Unit = t Taking output = 10 t				
		a)	Labour				
			Mate	day	0.05	437.00	21.85
			Mazdoor (Unskilled)	day	1.20	412.00	494.40
		b)	Machinery				
			Truck	hour	1.25	934.30	1167.88
		c)	Overheads & Contractor's profit @ 12.5 % on (a+b)				210.52
		d)	Contractor's profit @ 0% on (a+b+c)				0.00
			Cost for 10 t = a+b+c+d				1894.64
			Rate per t = (a+b+c+d)/10				189.46
		Note :-	The rate is inclusive of the self weight of drum				
			Total Cost	t			189.46

Analysis of Rates (FORMAT F8)

Sl. No.	SDB Sl. No.	MORD Ref No.	DESCRIPTION	Unit	Quantity	Rate	Amount in Rs
			Total Loding & Unloading of Bitumen Drums	t	= 208.5 + 189.46 =		397.96
13	1.9		Loading and Unloading of Hume Pipes				
		(i)	Loading of RCC Hume pipes by mechanical means including a lead upto 30 m				
		A.	1000 / 1200 mm dia Hume pipe				
			Unit = per pipe				
			Taking output = 9 pipes				
		a)	Labour				
			Mate	day	0.02	437.00	8.74
			Mazdoor (Unskilled)	day	0.50	412.00	206.00
		b)	Machinery				
			Truck	hour	0.33	934.30	308.32
			Crane	hour	0.33	822.00	271.26
		c)	Overheads & Contractor's profit @ 12.5 % on (a+b)				99.29
		d)	Contractor's profit @ 0% on (a+b+c)				0.00
			Cost for 9 pipes = a+b+c+d				893.61
			Rate per pipe = (a+b+c+d)/9				99.29
			Total Cost	per p			99.29
14		C.	600/450 mm dia Hume pipe				
			Unit = per pipe				
			Taking output = 21 pipe				
		a)	Labour				
			Mate	day	0.02	437.00	8.74
			Mazdoor (Unskilled)	day	0.50	412.00	206.00
		b)	Machinery				
			Truck	hour	0.33	934.30	308.32
			Crane	hour	0.33	822.00	271.26
		c)	Overheads & Contractor's profit @ 12.5 % on (a+b)				99.29
		d)	Contractor's profit @ 0% on (a+b+c)				0.00
			Cost for 21 pipes = a+b+c+d				893.61
			Rate per pipe = (a+b+c+d)/21				42.55
			Total Cost	per p			42.55
15		(ii)	Unloading of RCC Hume pipe by mechanical means including a lead upto 30 m				
		A.	1000/1200 mm dia RCC Hume pipes				
			Unit = per pipe				
			Taking output = 9 pipes				
		a)	Labour				
			Mate	day	0.02	437.00	8.74
			Mazdoor (Unskilled)	day	0.50	412.00	206.00
		b)	Machinery				
			Truck	hour	0.20	934.30	186.86
			Crane	hour	0.20	822.00	164.40
		c)	Overheads & Contractor's profit @ 12.5 % on (a+b)				70.75
		d)	Contractor's profit @ 0% on (a+b+c)				0.00
			Cost for 9 pipes = a+b+c+d				636.75
			Rate per pipe = (a+b+c+d)/9				70.75
			Total Cost	per p			70.75
			Total Loding & Unloading of RCC Hume Pipe per Pipe		= 99.29 + 70.75 =		170.04
			Total Loding & Unloading of RCC Hume Pipe	m	= 170.04 / 2.50 =		68.02
16		C.	600/450 mm dia Hume pipe				
			Unit = per pipe				
			Taking output = 21 pipes				
		a)	Labour				
			Mate	day	0.02	437.00	8.74
			Mazdoor (Unskilled)	day	0.50	412.00	206.00
		b)	Machinery				
			Truck	hour	0.20	934.30	186.86
			Crane	hour	0.20	822.00	164.40
		c)	Overheads & Contractor's profit @ 12.5 % on (a+b)				70.75
		d)	Contractor's profit @ 0% on (a+b+c)				0.00
			Cost for 21 pipes = a+b+c+d				636.75
			Rate per pipe = (a+b+c+d)/21				30.32

Analysis of Rates (FORMAT F8)

Sl. No.	SDB Sl. No.	MORD Ref No.	DESCRIPTION	Unit	Quantity	Rate	Amount in Rs
			Total Cost	per p			30.32
			Total Loding & Unloading of RCC Hume Pipe	per Pipe	= 42.55 + 30.32 =		72.87
			Total Loding & Unloading of RCC Hume Pipe	m	= 72.87 / 2.50 =		29.15
17	1.16	100	Setting Out Pillars Unit = 1 No. Analysis of rates per pillar shall account for following : Typical Benchmark 1 no. as per Dwg no. 200.1 of MORD Data Book (Page 1-18) The rate analysis for a typical benchmark as per dwg. 1. Excavation 2. P.C.C. grade M 10 3. Brick Masonry in CM 1:4 4. Plastering with CM 1:4 , 15 mm thick cement plaster on Brick work. Add 5 per cent cost of items No.1 to 4 for white washing, Sub Total	cum cum cum sqm NO	0.325 0.100 0.475 2.630	386.53 5117.64 6619.29 190.12	125.62 511.76 3144.16 500.01 214.08 4495.64
			A Total 6 Nos. of Pillars required for 1 Km.	NO	2	4495.64	8991.28
18	1.16	100	Setting Out Pillars Unit = 1 No. Analysis of rates per pillar shall account for following : Reference Pillar 1 no. as per Dwg no. 200.2 of MORD Data Book (Page 1-18) The rate analysis for a typical benchmark as per dwg. 1. Excavation 2. P.C.C. grade M 10 3. Brick Masonry in CM 1:4 4. Plastering with CM 1:4 , 15 mm thick cement plaster on Brick work. Add 5 per cent cost of items No.1 to 4 for white washing, Sub Total	cum cum cum sqm NO	0.192 0.060 0.193 1.500	386.53 5117.64 6619.29 190.12	74.21 307.06 1277.52 285.18 97.20 2041.17
			B Total 2 Nos. of reference pillars required for 1 Km.	NO	6	2041.17	12247.02
			Cost of Setting out	Km	A + B		2654.790
			Total Cost including 1 % Labour Cess	Km			2681.34
19	2.2 (I)	201	Clearing and Grubbing Road Land Clearing and Grubbing Road Land including uprooting wild vegetation , grass,bushes,shurbs,saplins and trees of girth upto 300mm, removal of stumps of such trees cut earlier and unseviceable 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(clause201.1) By Manual Means (A) In area of non-thorny jungle a) Labour Mate Mazdoor (Unskilled) b) Machinery Tractor with trolley c) Overheads & Contractor's profit @ 12.5 % on (a+b) d) Contractor's profit @ 0% on (a+b+c) Rate per hectare = a+b+c+d=	day day hour	6.00 150.00 1.00	437.00 412.00 688.00	2622.00 61800.00 688.00 8138.75 0.00 73248.75
			Total Cost	Ha.			73248.75
20	2.5	202	Dismantling of Structures Dismantling of existing structures like culverts, bridges, retaining walls and other structure comprising of masonry, cement concrete, wood work, steel work, including T&P and scaffolding wherever necessary, sorting the dismantled material, disposal of unserviceable material and stacking the serviceable material with all lifts and lead of 1000 m as per Technical Specification Clause 202. Unit = cum Taking output = 1.25 cum (I) By Manual Means (C) Reinforced Cement Concrete a) Labour Mate	day	0.04	437.00	17.48

Analysis of Rates (FORMAT F8)

Sl. No.	SDB Sl. No.	MORD Ref No.	DESCRIPTION	Unit	Quantity	Rate	Amount in Rs
			Mazdoor (Unskilled)	day	1.00	412.00	412.00
			Machinery				
		b)	Tractor with trolley	hour	0.27	688.00	185.76
		c)	Overheads & Contractor's profit @ 12.5 % on (a+b)				76.91
		d)	Contractor's profit @ 0% on (a+b+c)				0.00
			Cost for 1.25 cum = a+b+c+d				692.15
			Rate per cum = (a+b+c+d)/1.25				553.72
			Total Cost	cum			553.72
21	2.6- D	202	Dismantling of existing structures , like culverts, bridge,retaining wall and other structures comprising of brick masonry including unserviceable material and stacking the serviceable material with all lift and lead of 1000m as per technical specification clause 202. (Dismantling of dry brick pitching or Brick Soling,Masonry work)				
		a)	Labour				
			Mate	day	0.014	437.00	6.12
			Mazdoor (Unskilled)	day	0.35	412.00	144.20
		b)	Machinery				
			Tractor with trolley	hour	0.27	688.00	185.76
		c)	Overheads & Contractor's profit @ 12.5 % on (a+b)				42.01
		d)	Contractor's profit @ 0% on (a+b+c)				0.00
			Cost for 1.25 cum = a+b+c+d				378.09
			Rate per cum = (a+b+c+d)/1.25=				302.47
			Total Cost	cum			302.47
22	2.13	202.1	Removing all types of Hume pipe and stacking Removing all types of Hume pipes and stacking within a lead of 1000 m including Earthwork and Dismantling of Masonry Works as per Technical Specification Clause 202.				
		(A)	Upto 600 mm dia Hume pipe				
		a)	Labour				
			Mate	day	0.02	437.00	8.74
			Mazdoor (Unskilled)	day	0.52	412.00	214.24
		b)	Overheads & Contractor's profit @ 12.5 % on (a)				27.87
		c)	Contractor's profit @ 0% on (a+b)				0.00
			Rate per m = a+b+c				250.85
			Total Cost	m			250.85
		(B)	Above 600 mm to 900 mm dia Hume pipe				
		a)	Labour				
			Mate	day	0.03	437.00	13.11
			Mazdoor (Unskilled)	day	0.70	412.00	288.40
		b)	Overheads & Contractor's profit @ 12.5 % on (a)				37.69
		c)	Contractor's profit @ 0% on (a+b)				0.00
			Rate per m = a+b+c=				339.20
			Total Cost	m			339.20
		(C)	Above 900 mm dia Hume pipe				
		a)	Labour				
			Mate	day	0.05	437.00	21.85
			Mazdoor (Unskilled)	day	1.20	412.00	494.40
		b)	Overheads & Contractor's profit @ 12.5 % on (a)				64.53
		c)	Contractor's profit @ 0% on (a+b)				0.00
			Rate per m = a+b+c				580.78
			Total Cost	m			580.78
			EARTHWORK				
23	3.3	301.5	Construction of embankment with material obtained from road way cutting Construction of embankment with approved materials deposited at site and obtained from roadway cutting and excavation from drain and foundation of other structures graded and compacted to meet requirement of Tables 300.1 and 300.2 as per Technical Specification Clause 301.5 Unit = cum Taking output = 100 cum				
		a)	Labour				
			Mate	day	0.02	437.00	8.74
			Mazdoor (Unskilled)	day	0.50	412.00	206.00
		b)	Machinery				
			Tractor mounted grader arrangement for grading @ 100 cum per hour	hour	1.00	693.00	693.00
			Water tanker 6 kl capacity	hour	2.00	764.00	1528.00
			Three wheel 80-100 kN Static Roller	hour	1.25	1,612.00	2015.00

Analysis of Rates (FORMAT F8)

Sl. No.	SDB Sl. No.	MORD Ref No.	DESCRIPTION	Unit	Quantity	Rate	Amount in Rs
		c)	Material				
			Water	kl	12.00	61.40	736.80
		d)	Overheads & Contractor's profit @ 12.5 % on (a+b+c)				648.44
		e)	Contractor's profit @ 0% on (a+b+c+d)				0.00
			Rate for 100 cum = a+b+c+d+e				5835.98
			Rate per cum = (a+b+c+d+e)/100=				58.36
			Total Cost	CUM			58.36
24	3.5	(iii)	Excavation in Soil using Hydraulic Excavator and Tippers with disposal upto 1000 m Excavation for roadwork in soil with hydraulic excavator of 0.9 cum bucket capacity including cutting and loading in tippers, trimming bottom and side slopes, in accordance with requirements of lines, grades and cross-sections, and transporting to the embankment location with a lift upto 1.5 m and lead upto 1000 m as per Technical Specification Clause 302.3 Unit = cum Taking output = 360 cum				
		a)	Labour				
			Mate	day	0.08	437.00	34.96
			Mazdoor (Unskilled)	day	2.00	412.00	824.00
		b)	Machinery				
			Hydraulic excavator 0.9 cum bucket capacity @ 100 cum per hour	hour	3.60	2,288.00	8236.80
			Tipper 5.5 cum capacity, 4 trips per hour	hour	15.00	1,441.00	21615.00
		c)	Overheads & Contractor's profit @ 12.5 % on (a+b)				3838.85
		d)	Contractor's profit @ 0% on (a+b+c)				0.00
			Cost for 360 cum = a+b+c+d				34549.61
			Rate per cum = (a+b+c+d)/360				95.97
			Total Cost	CUM			95.97
25	3.4	301.5 (A)	Construction of Embankment with Material Obtained from Borrow Pits Construction of embankment with approved material obtained from borrow pits with a lift upto 1.5 m, transporting to site, spreading, grading to required slope and compacting to meet requirement of Tables 300.1 and 300.2 with a lead upto 1000 m as per Technical Specification Clause 301.5 Unit = cum Taking output = 100 cum				
		a)	Labour				
			Mate	day	0.04	437.00	17.48
			Mazdoor (Unskilled)	day	1.00	412.00	412.00
		b)	Machinery				
			Hydraulic Excavator 0.9 cum bucket capacity @ 60 cum per hour	hour	1.67	2288.00	3820.96
			Tipper 5.5 cum with 10 t capacity	hour	4.50	1,441.00	6484.50
			Add 10 % of the cost of carriage by tipper				648.45
			Dozer D-50 for spreading @ 100 cum per hour	hour	0.50	3,014.00	1507.00
			Tractor mounted grader arrangement for grading @ 100 cum per hour	hour	1.00	693.00	693.00
			Water tanker 6 kl capacity	hour	2.00	764.00	1528.00
			Three wheel 80-100 kN Static Roller @ 80 cum per hour	hour	1.43	1,612.00	2305.16
		c)	Material				
			Water	kl	12.00	61.40	736.80
			Compensation for earth taken from private land	cum	100.00	35.25	3525.00
		d)	Overheads & Contractor's profit @ 12.5 % on (a+b+c)				2709.79
		e)	Contractor's profit @ 0% on (a+b+c+d)				0.00
			Cost for 100 cum = a+b+c+d+e				24388.14
			Rate per cum = (a+b+c+d+e)/100=				243.88
			Total Cost	CUM			243.88
	3.4 (II)	301.5 (ii)	Construction of Embankment with Material Obtained from Borrow Pits Construction of embankment with approved material obtained from borrow pits with a lift upto 1.5 m, transporting to site, spreading, grading to required slope and compacting to meet requirement of Tables 300.1 and 300.2 with a lead upto 100 m as per Technical Specification Clause 301.5 Unit = cum				
		A	Excavation Part Taking output = 180 cum				
		a)	Labour				
			Mate	day	0.08	437.00	34.96
			Mazdoor (Unskilled)	day	2.00	412.00	824.00
		b)	Machinery				

Analysis of Rates (FORMAT F8)

Sl. No.	SDB Sl. No.	MORD Ref No.	DESCRIPTION	Unit	Quantity	Rate	Amount in Rs
		C)	Dozar D-50 cum per hour (cutting with pushing)	hour	3.60	3,014.00	10850.40
		C)	Overheads & Contractor's profit @ 12.5 % on (a+b+c)				1463.67
		C)	Contractor's profit @ 0% on (a+b+c+d)				0.00
			Cost of 180 cum = a+b+C				13173.03
			Rate per cum = (a+b)/180=				73.18
			Rate Adopted in DPR				73.18
			Total Cost	CUM			73.18
	B		Compaction Part				
			Unit = cum				
			Taking output = 100 cum				
		a)	Labour				
			Mate	day	0.04	437.00	17.48
			Mazdoor (Unskilled)	day	1.00	412.00	412.00
		b)	Machinery				
			Tractor mounted grader arrangement for grading @ 100 cum per hour	hour	1.00	693.00	693.00
			Water tanker 6 kl capacity	hour	2.00	764.00	1528.00
			Three wheel 80-100 kN Static Roller	hour	1.25	1,612.00	2015.00
		c)	Material				
			Water	kl	12.00	61.40	736.80
			Compensation for earth taken from private land	cum	100.00	35.25	3525.00
		d)	Overheads & Contractor's profit @ 12.5 % on (a+b+c)				1115.91
		e)	Contractor's profit @ 0% on (a+b+c+d)				0.00
			Rate for 100 cum = (a+b+c+d+e)				10043.19
			Rate per cum = (a+b+c+d+e)/100	cum			100.43
			Total Cost	CUM			173.61
26	3.14	303.1	Construction of Subgrade and Earthen Shoulders				
			Construction of subgrade and earthen shoulders with approved material obtained from borrow pits with all lifts and leads, transporting to site, spreading, grading to required slope and compacted to meet requirement of Table 300.2 with lead upto 1000 m as per Technical Specification Clause 303.1.				
			Unit = cum				
			Taking output = 100 cum				
		a)	Labour				
			Mate	day	0.04	437.00	17.48
			Mazdoor (Unskilled)	day	1.00	412.00	412.00
		b)	Machinery				
			Hydraulic excavator 0.9 cum bucket capacity @ 100 cum per hour	hour	1.67	2288.00	3820.96
			Tipper 5.5 cum capacity, 4 trips per hour	hour	4.50	1441.00	6484.50
			Add 10 % of the cost of carriage to cover loading & unloading	cum			648.45
			Dozer D-50 for spreading @ 100 cum per hour	hour	0.50	3014.00	1507.00
			Tractor mounted grader arrangement for grading @ 100 cum per hour	hour	1.00	693.00	693.00
			Water tanker with 6 kl capacity	hour	2.00	764.00	1528.00
			Three wheel 80-100 kN Static Roller @ 70 cum per hour	hour	1.43	1,612.00	2305.16
		c)	Material				
			Water	kl	12.00	61.40	736.80
			Compensation for earth taken from private land	cum	100.00	35.25	3525.00
		d)	Overheads & Contractor's profit @ 12.5 % on (a+b+c)				2709.79
		e)	Contractor's profit @ 0% on (a+b+c+d)				0.00
			Cost for 100 cum = a+b+c+d+e				24388.14
			Rate per cum = (a+b+c+d+e)/100				243.88
			Total Cost	sqm			243.88
			PAVEMENT CRUST LAYERS				
27	4.1	401	Granular Sub-base with Well Graded Material (Table 400.1)				
			(By mix in place method) For Grading I Material				
			Construction of granular sub-base by providing well graded material, spreading in uniform layers with motor grader on prepared surface, mixing by mix in place method with rotavator at OMC, and compacting with smooth wheel roller to achieve the desired density, complete as per Technical Specification Clause 401.				
		(i)	For Grading II Material				
			Unit = cum				
			Taking output = 300 cum				
		a)	Labour				
			Mate	day	0.48	437.00	209.76

Analysis of Rates (FORMAT F8)

Sl. No.	SDB Sl. No.	MORD Ref No.	DESCRIPTION	Unit	Quantity	Rate	Amount in Rs
			Mazdoor (Skilled)	day	2.00	521.00	1042.00
			Mazdoor (Unskilled)	day	10.00	412.00	4120.00
		b)	Machinery				
			Tractor mounted grader for grading @ 25 cum per hour	hour	12.00	693.00	8316.00
			Three wheel 80-100 kN static roller @ 10 cum per hour	hour	30.00	1612.00	48360.00
			Tractor with Rotavator 25 cum per hour	hour	12.00	705.00	8460.00
			Water tanker 6 kl capacity	hour	5.00	764.00	3820.00
		c)	Material				
			For well graded granular sub-base material as per Table 400.1				
			26.5 mm to 9.5 mm @ 35 per cent	cum	126.00	913.48	115098.48
			9.5 mm to 2.36 mm @ 25 per cent	cum	90.00	434.45	39100.50
			2.36 mm below @ 40 per cent -(Coarse Sand)	cum	144.00	584.64	84188.16
			Water	kl	30.00	61.40	1842.00
		d)	Overheads & Contractor's profit @ 12.5 % on (a+b+c)				39319.61
			Cost of GSB without carriage				353876.51
		A)	Cost of GSB without carriage per cum	cum			1179.59
		f)	Carriage Cost				
			26.5 mm to 9.5 mm @ 35 per cent	cum	0.420	674.15	283.14
			9.5 mm to 2.36 mm @ 25 per cent	cum	0.300	674.15	202.25
			2.36 mm below @ 40 per cent -(Coarse Sand)	cum	0.480	321.66	154.40
			Rate per cum with carriage	cum			1819.37
			Total Cost	CUM			1819.37
28	4.8 (2-A)	405	Water Bound Macadam with Crushable Screenings (Moorum) Gr - II				
			WBM Grading 2				
			Providing, laying, spreading and compacting stone aggregates of specific sizes to water bound macadam specification including spreading in uniform thickness, hand packing, rolling with three wheel 80-100 kN static roller in stages to proper grade and camber, applying and brooming, crushable screening to fill-up the interstices of coarse aggregate, watering and compacting to the required density Grading 2 as per Technical Specification Clause 405.				
		(A)	By Machnical Means, Unit = cum				
			Taking output = 360 cum				
		a)	Labour				
			Mate	day	0.68	437.00	297.16
			Mazdoor (Skilled)	day	2.00	521.00	1042.00
			Mazdoor (Unskilled)	day	15.00	412.00	6180.00
		b)	Machinery				
			Motor grader 110 HP @ 50 cum per hour for spreading	hour	14.40	693.00	9979.20
			Three wheel 80-100 kN static roller @ 8 cum per hour	hour	45.00	1612.00	72540.00
			Water tanker 6 kl capacity	hour	24.00	764.00	18336.00
		c)	Material (Refer Tables 400.7, 8, 9 and 10)				
			Aggregate				
			Grading 2 63 mm to 45 mm @ 0.91 cum per 10 sqm for compacted thickness of 75 mm	cum	435.60	1005.81	438130.84
			Stone Screening				
			Type B 11.2 mm for Grading 2 @ 0.20 cum per 10 sqm	cum	96.01	434.45	41711.54
			Binding Material				
			Binding Material @ 0.06 cum per 10 sqm for Grading 2 material	cum	28.80	162.88	4690.94
			Water	kl	144.00	61.40	8841.60
		d)	Overheads & Contractor's profit @ 12.5% on (a+b+c)				75218.66
			Cost for 360 cum = a+b+c+d+e				676967.95
			Rate per cum = (a+b+c+d+e)/360				1880.47
		f)	CARRIAGE				
			Stone material Grading 2 63 mm to 45 mm	Cum	1.21	714.67	864.75
			Stone Screening Type B 11.2 mm for Grading 2 @ 0.20 cum per 10 sqm	cum	0.27	674.15	179.79
			Crushable type such as Moorum	Cum	0.08	499.11	39.93
			Rate per cum with carriage				2964.94
			Total Cost including	cum			2964.94
29	4.9	406	Wet Mix Macadam				

Analysis of Rates (FORMAT F8)

Sl. No.	SDB Sl. No.	MORD Ref No.	DESCRIPTION	Unit	Quantity	Rate	Amount in Rs
			Providing, laying, spreading and compacting graded stone aggregate to wet mix macadam specification including premixing the material with water at OMC in mechanical mixer (Pug Mill), carriage of mixed material by tipper to site, laying in uniform layers in sub-base/base course on a well prepared sub-base and compacting with smooth wheel roller of 80 to 100kN weight to achieve the desired density including lighting, barricading and maintenance of diversion, etc as per Tables 400.11 & 400.12 and Technical Specification Clause 406.				
		(A)	By Mechanical Means with 1 km lead				
			Unit = cum				
			Taking output = 100 cum				
		a)	Labour				
			Mate	day	0.40	437.00	174.80
			Dresser (Skilled) for alignment	day	8.00	521.00	4168.00
			Mazdoor (Skilled)	day	2.00	521.00	1042.00
		b)	Machinery				
			Front end loader 1 cum capacity	hour	4.00	1432.00	5728.00
			Wet mix plant (Pug Mill)	hour	4.00	694.00	2776.00
			Tipper/Dumper (10-t) capacity	hour	5.00	1441.00	7205.00
			Tractor Mounted grader for grading @ 100 cum per hour	hour	4.00	688.00	2752.00
			Water tanker 6 kl capacity	hour	1.33	764.00	1016.12
			Three wheel 80-100 kN static roller @ 16 cum per hour	hour	6.25	1612.00	10075.00
		c)	Material (Refer Tables 400.7, 8, 9 and 10)				
			Aggregate				
			Coarse aggregate 45 mm to 22.4 mm @ 30 per cent	cum	39.90	1115.24	44498.08
			Aggregates 22.4 mm to 2.36 mm @ 40 per cent	cum	53.20	697.86	37126.15
			Fine aggregate/Crushed sand 2.36 mm to 75 micron @ 30 per cent	cum	39.90	266.62	10638.14
			Water	kl	8.00	61.40	491.20
		d)	Overheads & CP @ 12.5% on (a+b+c)				15961.31
			Cost for 100 cum = a+b+c+d				143651.80
			Rate per cum = (a+b+c+d)/100				1436.52
		e)	CARRIAGE				
			Coarse aggregate 45 mm to 22.4 mm @ 30 per cent	Cum	0.40	674.15	268.99
			Aggregates 22.4 mm to 2.36 mm @ 40 per cent	Cum	0.53	674.15	358.65
			Fine aggregate/Crushed sand 2.36 mm to 75 micron @ 30 per cent	Cum	0.40	321.66	128.34
			Rate per cum with carriage				2192.50
			Total Cost	cum			2,192.50
			BITUMINOUS ITEMS				
29	5.1 (I)	502	Prime Coat (Low Porosity)				
			Providing and applying primer coat with bitumen emulsion (SS-1) on prepared surface of granular base including cleaning of road surface and spraying primer at the rate of 0.70-1.0 kg/sqm using mechanical means as per Technical Specification Clause 502				
			Unit = sqm				
			Taking output = 1750 sqm				
		a)	Labour				
			Mate	day	0.04	437.00	17.48
			Mazdoor (Unskilled)	day	1.00	412.00	412.00
		b)	Machinery				
			Hydraulic broom @ 1250 sqm per hour	hour	1.40	807.00	1129.80
			Air compressor 210 cfm	hour	1.40	455.00	637.00
			Bitumen emulsion pressure distributor @ 1750 sqm per hour	hour	1.00	1,362.00	1362.00
			Water tanker 6 kl capacity 1 trip per hour	hour	0.50	764.00	382.00
		c)	Material				
			Bitumen emulsion (SS-1) @ 0.85 kg per sqm	t	1.48	54,204.35	80222.44
			Water	kl	3.00	61.40	184.20
		d)	Overheads & Contractor's profit @ 12.5 % on (a+b+c)				10543.36
		e)	Contractor's profit @ 0% on (a+b+c+d)				0.00
			Cost of 1750 sqm = a+b+c+d+e				94890.28
			Rate per sqm = (a+b+c+d+e)/1750				54.22
		f)	Carriage Cost				
			Bitumen Emulsion	ton	0.00085	745.96	0.63
			Rate per sqm with carriage				54.85
			Total Cost	sqm			54.85
30	5.2	503	Tack Coat				

Analysis of Rates (FORMAT F8)

Sl. No.	SDB Sl. No.	MORD Ref No.	DESCRIPTION	Unit	Quantity	Rate	Amount in Rs
	(III)		Providing and applying tack coat with bitumen emulsion using emulsion pressure distributor at the rate of 0.25 to 0.30 kg per sqm on the prepared granular surface treated with Primer and cleaned with hydriloc broom as per technical specification clause 503. Unit = sqm Taking output = 1750 sqm				
		a)	Labour				
			Mate	day	0.04	437.00	17.48
			Mazdoor (Unskilled)	day	1.00	412.00	412.00
		b)	Machinery				
			Hydraulic broom @ 1250 sqm per hour	hour	1.40	807.00	1129.80
			Air compressor 210 cfm	hour	1.40	455.00	637.00
			Emulsion pressure distributor @1750 sqm per hour	hour	1.00	1,362.00	1362.00
		c)	Material				
			Bitumen emulsion (RS-1) @ 0.275 kg per sqm	t	0.48	53,071.35	25474.25
		d)	Overheads & Contractor's profit @ 12.5 % on (a+b+c)				3629.07
		e)	Contractor's profit @ 0% on (a+b+c+d)				0.00
			Cost of 1750 sqm = a+b+c+d+e				32661.59
			Rate per sqm = (a+b+c+d+e)/1750				18.66
			<u>Carriage Cost</u>				
			Bitumen Emulsion	ton	0.000274	745.96	0.20
			Rate per sqm with carriage				18.87
			Total Cost	sqm			18.87
31	5.11	509	Mix Seal Surfacing with Waste Plastic(Type B) Bituminous (S-65) By Mechanical Means Providing, laying and rolling of close-graded premix surfacing material of 20 mm thickness composed of 11.2 mm to 0.9 mm (Type-A) or 13.2 mm to 0.9 mm (Type-B) aggregates using penetration grade bitumen to required line, grade and level to serve as wearing course on a previously prepared base, including mixing in a suitable plant, laying and rolling with a three wheel 8-10 kN static roller and finishing to required level and grades as per Technical Specification Clause 509.				
		(B)	Case - II By Mechanical Means				
			(i) Bitumen (S-90)				
			Unit = sqm				
			Taking output = 4000 sqm (80 cum)				
		a)	Labour				
			Mate	day	0.52	437.00	227.24
			Mazdoor (Unskilled)	day	10.00	412.00	4120.00
			Mazdoor (Unskilled) for Waste Plastic	day	2.00	412.00	824.00
			Mazdoor (Skilled)	day	3.00	521.00	1563.00
		b)	Machinery				
			HMP of appropriate capacity	hour	3.00	51,313.00	153939.00
			Electric generator set 125 KVA	hour	6.00	1,646.00	9876.00
			Front end loader 1 cum bucket capacity	hour	6.00	1,432.00	8592.00
			Tipper 5.5 10 t capacity	tonne.km	176 x L	9.89	1,740.64
			Add 10 per cent of cost of carriage to cover cost of loading and unloading				174.06
			Paver finisher	hour	6.00	2,157.00	12942.00
			Three wheel 80-100 kN static roller	hour	6.00	1,612.00	9672.00
		c)	Material				
			Bitumen (S-65) @ 19 kg per 10 sqm replaced by 7% by Waste Plastic i.e.	t	7.068	56,202.60	397239.98
			Processed Waste Plastic/Bitumen i.e 7% of 19 kg bitumen =	t	0.532	16,974.00	9030.17
			Stone crushed aggregates 13.2 mm to 0.09 mm @ 0.27 cum per 10 sqm	cum	108.00	434.45	46920.60
		d)	Overheads & Contractor's profit @ 12.5 % on (a+b+c)				82107.59
			Contractor's profit @ 0% on (a+b+c+d)				0.00
			Cost of 4000 sqm = a+b+c+d				738968.27
			Rate per sqm = (a+b+c+d)/4000				184.74
			<u>Carriage Cost</u>				
			Bitumen S-65	ton	0.0019	745.96	1.42
			Stone crushed aggregates 13.2 mm to 0.09 mm	cum	0.027	674.15	18.20
			Rate per sqm with carriage				204.36
			Total Cost	sqm			204.36
32	5.70	508	Semi-Dense Bituminous Concrete				

Analysis of Rates (FORMAT F8)

Sl. No.	SDB Sl. No.	MORD Ref No.	DESCRIPTION	Unit	Quantity	Rate	Amount in Rs
		RCD	Providing and laying semi dense bituminous concrete with 100-120 TPH batch type HMP producing an average output of 75 tonnes per hour using crushed aggregates of specified grading, premixed with bituminous binder @ 4.5 to 5 per cent of mix and filler, transporting the hot mix to work site, laying with a hydrostatic paver finisher with sensor control to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MoRTH specification clause No. 508 complete in all				
			Unit = cum Taking output = 195 cum (450 tonnes)				
		a) Labour					
		Mate		day	0.84	437.00	367.08
		Mazdoor working with HMP, mechanical broom, paver, roller, asphalt cutter and assistance for setting out lines, levels and layout of construction		day	16.00	412.00	6592.00
		Mazdoor skilled for Waste Plastic		day	2.00	437.00	874.00
		Skilled mazdoor for checking line & levels		day	5.00	521.00	2605.00
		b) Machinery					
		Batch mix HMP @ 75 tonne per hour		hour	6.00	51313.00	307878.00
		Paver Finisher		hour	6.00	2157.00	12942.00
		Generator 250 KVA		hour	6.00	3134.00	18804.00
		Front end loader 1 cum bucket capacity		hour	6.00	1432.00	8592.00
		Tipper 10 tonne capacity		tonne.km	450.00	9.89	4450.50
		Add 10 per cent of cost of carriage to cover cost of loading and unloading					445.05
		Smooth wheeled roller 8-10 tonnes for initial break down rolling		hour	6.00x0.65*	1612.00	6286.80
		Vibratory roller 8 tonnes for intermediate rolling.		tonne.km	6.00x0.65*	2072.00	8080.80
		Finish rolling with 6-8 tonnes smooth wheeled tandem roller.		tonne.km	6.00x0.65*	1612.00	6286.80
		c) Material					
		Bitumen @ 5 per cent of weight of mix		t	20.93	56202.60	1176039.41
		Processed Waste Plastic i.e. 7% weight of mix = 450 tonne		t	1.575	16974.00	26734.05
		Aggregate					
		Total weight of mix = 450 tonnes					
		Weight of bitumen = 22.5 tonnes					
		Weight of aggregate = 450 - 22.50 = 427.50 tonnes					
		Taking density of aggregate = 1.5 ton/cum					
		Volume of aggregate = 285 cum					
		Grading II: 10 mm (Nominal Size)					
		9.5 - 4.75 mm @ 57 per cent		Cum	162.45	602.28	97840.39
		4.75 and below @ 41 per cent		Cum	116.85	434.45	50765.48
		Filler @ 2 per cent of weight of aggregates		t	8.62	3150.00	27153.00
		d) Overheads & CP @ 12.5% on (a+b+c)					220342.04
		Cost for 195 cum = a+b+c+d+e					1983078.40
		Rate per cum = (a+b+c+d+e)/195 (For Grading-II)					10169.63
		f) Carriage Cost					
		Bitumen (S-90)		t	0.11	745.96	80.05
		Stone chips		cum	1.43	674.15	965.59
		Rate per Cum with carriage					11215.27
		Total Cost		cum			11215.27
31	5.9 (II)	508	Premix Carpet Providing, laying and rolling of open-graded premix carpet of 20 mm thickness composed of 13.2 mm to 5.6 mm aggregates either using penetration grade bitumen or emulsion to required line, grade and level to serve as wearing course on a previously prepared base, including mixing in a suitable plant, laying and rolling with a three wheel 80-100 kN static roller capacity, finished to required level and grades to be followed by seal coat of either Type A or Type B or Type C as per Technical Specification Clause 508.				
		(I) Case - I By Manual Means					
		Bitumen (S-90)					
		Unit = sqm					
		Taking output = 500 sqm (10 cum)					

Analysis of Rates (FORMAT F8)

Sl. No.	SDB Sl. No.	MORD Ref No.	DESCRIPTION	Unit	Quantity	Rate	Amount in Rs
		a)	Labour				
			Mate	day	1.08	437.00	471.96
			Mazdoor (Unskilled)	day	21.00	412.00	8652.00
			Mazdoor (Semi-Skilled)	day	6.00	428.00	2568.00
		b)	Machinery				
			Mixall 6/10 t capacity	hour	4.00	3,702.00	14808.00
			Bitumen boiler oil fired 1000 litre capacity fitted with spray set	hour	4.00	563.00	2252.00
			Three wheel 80-100 kN static roller	hour	2.00	1,612.00	3224.00
		c)	Material				
			Bitumen (S-90) @ 14.60 kg per 10 sqm	t	0.73	54,402.60	39713.90
			Crushed stone chipping, 13.2 mm to 5.6 mm @ 0.27 cum per 10 sqm	cum	13.50	602.28	8130.78
		d)	Overheads & Contractor's profit @ 10 % on (a+b+c)				7982.06
		e)	Contractor's profit @ 10% on (a+b+c+d)				8780.27
			Cost of 500 sqm = a+b+c+d+e				96582.97
			Rate per sqm = (a+b+c+d+e)/500				193.17
			<u>Carriage Cost</u>				
			Bitumen (S-90)	ton	0.00146	869.21	1.27
			Stone chips	cum	0.02700	1187.36	32.06
			Rate per sqm with carriage				226.49
			Total Cost including 1 % LABOUR CESS	sqm			228.76
32	5.9 (II)	508	Premix Carpet				
			Providing, laying and rolling of open-graded premix carpet of 20 mm thickness composed of 13.2 mm to 5.6 mm aggregates either using penetration grade bitumen or emulsion to required line, grade and level to serve as wearing course on a previously prepared base, including mixing in a suitable plant, laying and rolling with a three wheel 80-100 kN static roller capacity, finished to required level and grades to be followed by seal coat of either Type A or Type B or Type C as per Technical Specification Clause 508.				
			Case - II By Mechanical Means				
		(I)	Bitumen (S-90)				
			Unit = sqm				
			Taking output = 4000 sqm (80 cum)				
		a)	Labour				
			Mate	day	0.52	437.00	227.24
			Mazdoor (Unskilled)	day	10.00	412.00	4120.00
			Mazdoor (Skilled)	day	3.00	521.00	1563.00
		b)	Machinery				
			HMP 30/40 t per hour	hour	6.00	31,459.00	188754.00
			Electric generator set 125 KVA	hour	6.00	1,646.00	9876.00
			Front end loader 1 cum bucket capacity	hour	6.00	1,432.00	8592.00
			Tipper 5.5 10 t capacity	hour	3.64	1,441.00	5245.24
			Paver finisher	hour	6.00	2,157.00	12942.00
			Three wheel 80-100 kN static roller	hour	16.00	1,612.00	25792.00
		c)	Material				
			Bitumen (S-90) @ 14.60 kg per 10 sqm	t	5.84	54,402.60	317711.18
			Crushed stone chipping, 13.2 mm to 5.6 mm @ 0.27 cum per 10 sqm	cum	108.00	602.28	65046.24
		d)	Overheads & Contractor's profit @ 10 % on (a+b+c)				63986.89
		e)	Contractor's profit @ 10% on (a+b+c+d)				70385.58
			Cost of 4000 sqm = a+b+c+d+e				774241.37
			Rate per sqm = (a+b+c+d+e)/4000				193.56
			<u>Carriage Cost</u>				
			Bitumen (S-90)	ton	0.00146	869.21	1.27
			Stone chips	cum	0.02700	1187.36	32.06
			Rate per sqm with carriage				226.89
			Total Cost including 1 % LABOUR CESS	sqm			229.16
32	5.12	510	Seal Coat				
			Providing and laying seal coat sealing the voids in a bituminous surface laid to the specified levels, grade and cross fall using Type B, as per Technical Specification Clause 510				
		A.	By Manual Means				
			Case - I : Type B				
		(I)	Bitumen (S-90)				
			Unit = sqm				
			Taking output = 1250 sqm				
		a)	Labour				

Analysis of Rates (FORMAT F8)

Sl. No.	SDB Sl. No.	MORD Ref No.	DESCRIPTION	Unit	Quantity	Rate	Amount in Rs
			Mate	day	0.85	437.00	371.45
			Mazdoor (Unskilled)	day	15.00	412.00	6180.00
			Mazdoor (Semi-Skilled)	day	2.00	428.00	856.00
		b)	Machinery				
			Mixal 6/10 t capacity	hour	2.50	3702.00	9255.00
			Bitumen boiler oil fired, capacity 1000 litre fitted with spray set	hour	2.50	563.00	1407.50
			Three wheel 80-100 kN static roller	hour	2.50	1612.00	4030.00
		c)	Material				
			Bitumen (S-90) @ 9.80 kg per 10 sqm	t	0.85	54402.60	46242.21
			Crushed sand or grit as passing 2.36 mm sieve and retained on 180 micron sieve applied @ 0.06 cum per 10 sqm	cum	7.50	266.62	1999.65
		d)	Overheads & Contractor's profit @ 10 % on (a+b+c)				7034.18
		e)	Contractor's profit @ 10% on (a+b+c+d)				7737.60
			Cost of 1250 sqm = a+b+c+d+e				85113.59
			Rate per sqm = (a+b+c+d+e)/1250				68.09
		f)	<u>Carriage Cost</u>				
			i) Bitumen	t	0.00068	869.21	0.59
			ii) Crushed sand	cum	0.00600	399.73	2.40
			Rate per sqm = (a+b+c+d+e+f)/1250				71.08
			Total Cost including 1 % LABOUR CESS	cum			71.79
			CC PAVEMENT				
32	6.4	1500	Cement Concrete Pavement				
			Construction of un-reinforced, plain cement concrete pavement, thickness as per design, over a prepared sub base, with 43 grade cement or any other type as per Clause 1501.2.2 M30 (Grade), coarse and fine aggregates conforming to IS:383, maximum size of coarse aggregate not exceeding 25 mm, mixed in a concrete mixer of not less than 0.2 cum capacity and appropriate weigh batcher using approved mix design, laid in approved fixed side formwork (steel channel, laying and fixing of 125 micron thick polythene film, wedges, steel plates including levelling the formwork as per drawing), spreading the concrete with shovels, rakes, compacted using needle, screed and plate vibrators and finished in continuous operation including provision of contraction and expansion, construction joints, applying debonding strips, primer, sealant, dowel bars, near approaches to bridge/culvert and construction joints, admixtures as approved, curing of concrete slabs for 14-days, using curing compound (where specified) and water finishing to lines and grade as per drawing and Technical Specification Clause 1501.				
			Unit = cum				
			Taking output = 75 cum (172.50 t)				
			(100 x 3.75 x 0.200)				
		a)	Labour				
			Mate	day	7.00	437.00	3059.00
			Mason (1st class)	day	5.00	553.00	2765.00
			Mason (2nd class)	day	5.00	494.00	2470.00
			Mazdoor (Unskilled)	day	129.00	412.00	53148.00
			Mazdoor (Skilled)	day	6.00	521.00	3126.00
			Surveyor	day	2.00	499.00	998.00
			Mazdoor (Semi-Skilled)	day	6.00	428.00	2568.00
			Bhisti	day	14.00	412.00	5768.00
		b)	Blacksmith for cutting of dowel bars including removal of burrs, fabrications & fixing of dowel bars.	day	1.00	553.00	0.00
			Machinery				
			Concrete mixer 0.28 / 0.4 cum capacity (6 mixers) with weigh batcher and suitable capacity calibrated water tank	hour	36.00	351.00	12636.00
			Needle vibrator	hour	9.00	405.00	3645.00
			Screed vibrator	hour	9.00	102.65	923.85
			Plate vibrator	hour	9.00	396.00	3564.00
			Concrete joint cutting machine for initial & final cuts	hour	4.00	357.00	1428.00
			Water tanker 6 kl capacity	hour	5.00	764.00	3820.00
			Air Compressor (1 hour initial + 1 hour final)	hour	2.00	455.00	910.00
		c)	Material				
		(i)	Crushed stone coarse aggregates, grading will be as per Clause 1501.2.4.1 (Table 1500.1) of specifications @ 0.90 cum/cum of concrete	cum	67.50	913.48	61659.90
		(ii)	Sand as per IS:383 and conforming to Clause 1500.2.4.2 @ 0.45 cum/cum of concrete	cum	33.75	584.64	19731.60
		(iii)	Cement @ 350 kg/cum of concrete	t	26.25	5,254.40	137928.00
		(iv)	Polythene sheet 125 micron	sqm	412.50	16.20	6682.50

Analysis of Rates (FORMAT F8)

Sl. No.	SDB Sl. No.	MORD Ref No.	DESCRIPTION	Unit	Quantity	Rate	Amount in Rs
		(v)	Mild steel dowel bar 25 mm dia of grade S 240. 500 mm long 20 Nos. at culvert/bridge slab and at construction joint including 5 per cent wastage. (4 x 20 x 0.500) + 5 per cent wastage = 42 m @ 2.80 kg per m = 117.6 kg.	kg	117.60	51.84	0.00
			Bitumen primer @ 200 ml per joint for 23 joints	t	0.005	54,204.35	271.02
			Bituminous sealant 800 ml per joint for 23 joints	litre	19.00	30.54	580.26
			Jute rope 12 mm dia including 5 per cent wastage	m	90.00	697.86	62807.40
			Debonding strips 3.75 m (length) x 10 mm (width) x 5 mm (thick) cut-	m	90.00	49.91	0.00
			Polythene sheathing, covering 2/3rd dowel bars (20x23) and tight fit	No.	483.00	16.20	0.00
			Plasticizer 0.5 per cent by weight of cement	litre	122.00	30.45	3714.90
			Curing compound (if used) @ 0.33 litre per sqm	litre	131.25	38.00	0.00
			Water for curing	kl	18.00	61.40	1105.20
			Joint filler board 20 mm thick as per IS:1838 (4 x 3.75 x 0.200 = 3 sqm)	sqm	3.00	1,064.18	3192.54
		d)	Formwork @ 3% of (a+b+c)				11955.07
		e)	Overheads & Contractor's profit @ 12.5 % on (a+b+c+d)				51307.15
		f)	Contractor's profit @ 0% on (a+b+c+d+e)				0.00
			Rate per cum = (a+b+c+d+e+f)/75				6156.86
			<u>Carriage Cost</u>				
			Carriage stone aggregate	cum	0.90	1187.36	1068.62
			Carriage sand	cum	0.45	399.73	179.88
			carriage cement	ton	0.35	427.66	149.68
			carriage steel	kg	1.568	0.456	0.00
			carriage bitumen	ton	0.000067	869.21	0.06
			Cost for 75 cum = a+b+c+d+e				7555.10
			Rate per cum = (a+b+c+d+e)/75				7555.10
			Total Cost	cum			7555.10
1	6.02	602	Cement Concrete Pavement (PQC)				
			Construction of un-reinforced, plain cement concrete pavement (M35 Grade) over a prepared sub base with 43 grade cement @ 400 kg per cum, coarse and fine aggregate conforming to IS 383, maximum size of coarse aggregate not exceeding 25 mm, mixed in a batching and mixing plant as per approved mix design, transported to site, laid with a fixed form paver, spread, compacted and finished in a continuous operation including provision of 0.5 x 0.5 panel, joint filler, separation membrane, sealant primer, joint sealant, debonding strip as approved, curing compound, finishing to lines and grades as per drawing .				
			Unit = cum				
			Taking output =900				
			a) Labour				
			Mate	day	0.440	437.00	192.28
			Mazdoor skilled	day	5.000	521.00	2605.00
			Mazdoor Semi-skilled (For panel cutting)	day	5.000	428.00	2140.00
			Bhisti (For panel cutting)	day	7.000	412.00	2884.00
			Mazdoor	day	6.000	412.00	2472.00
			b) Machinery				
			Mechanical Broom @ 1250 sqm per hour	hour	0.893	807.00	720.65
			Air Compressor	hour	0.893	455.00	406.32
			Paver finisher Concrete with 118HP Motor	hour	11.250	2157.00	24266.25
			For Transporter transit truck agiator 6cum capacity	t.km	2070xL1	10.85	22459.50
			For unloading time	hour	11.250	1954.00	21982.50
			concrete joint cutting machine (For panel cutting)	hour	101.587	357.00	36266.56
			Water tanker 6 kl capacity	hour	8.75xL1+ 42	764.00	38773.00
			Generator Set KVA (For panel cutting)	hour	10.000	3134.00	31340.00
			c) Material				
			Using Batching Plant 120cum capacity	cum	900.000	3442.03	3097828.74
			Separation Membrane of impermeable plastic sheeting 125 micron thick	sqm	3150.000	16.20	51030.00
			joint sealant	kg	609.524	30.54	18614.86
			Sealant primer	kg	100.003	30.54	3054.09
			Curing compound	liter	600.000	38.00	22800.00
			Cost of water	KL	472.500	61.40	29011.50

Analysis of Rates (FORMAT F8)

Sl. No.	SDB Sl. No.	MORD Ref No.	DESCRIPTION	Unit	Quantity	Rate	Amount in Rs
			Add 1 per cent of material for cost of miscellaneous materials like tarpauline, Hessian cloth, metal cap, cotton / compressible sponge and cradle for dowel bars, work bridges for men to approach concrete surface without walking over it, cutting blades and bites, minor equipments like scabbling machine, threads, ropes, guide wires and any other unforeseen items.				32223.39
			d) Overhead charges & Contractor's profit @ 12.5% on (a+b+c)				430133.83
			Cost for 900cum = a+b+c+d+e				3871204.48
			Rate per cum = (a+b+c+d+e)/900				4301.34
			Carriage				
			Carriage stone aggregate	cum	0.90	674.15	606.74
			Carriage sand	cum	0.45	321.66	144.75
			carriage cement	ton	0.40	427.66	171.06
			Rate per cum including carriage				5223.88

Analysis of Rates (FORMAT F8)

Sl. No.	SDB Sl. No.	MORD Ref No.	DESCRIPTION	Unit	Quantity	Rate	Amount in Rs
2	21.19	602	PQC M35 Grade using Batching Plant-120 cum capacity				
			Unit-cum				
			Taking Output=900cum				
		a)	Material				
			Cement @400 kg/cum of concrete	tonne	360.00	5254.40	1891584.00
			Coarse Sand	cum	405.00	584.64	236779.20
			Crushed Stone Of 25 mm & 12.5 mm nominal size	cum	810.00	913.48	739918.80
			Admixture @ 0.5 % of Cement	kg	1800.00	30.45	54810.00
			Cost of Water	kl	144.00	61.40	8841.60
		b)	Labour				
			Mate	day	0.16	437.00	69.92
			Skilled Mazdoor	day	1.00	521.00	521.00
			Mazdoor	day	3.00	412.00	1236.00
		c)	Machinery				
			Batching plant of capacity 120 cum/hour	hour	10.00	3684.00	36840.00
			Generator 250kva	hour	10.00	3134.00	31340.00
			loader 3.1 cum capacity	hour	21.696	3519.00	76348.22
			Trasit Truck agiator for loading & Unloading	hour	10.00	1954.00	19540.00
			Per Cum Basic Cost (a+b+c)/900				3442.03
			Rate per cum = (a+b+c+d+e)/900				3442.03
1	16.13		Edging with 1st Class Bricks, Lald Dry Length wise.				
			Edging with 1st class bricks, laid dry lengthwise, including excavation, refilling, consolidation, with a hand packing and spreading nearly surplus earth within a lead of 50 metres				
			Unit = meter				
			Taking ouput = 10 m				
		(a)	Labour				
			Mate	day	0.004	437.00	1.75
			Mason 1st Class	day	0.100	553.00	55.30
			Mazdoor (Unskilled)	day	0.100	412.00	41.20
		(b)	Material				
			Brick 1st Class including Carriage	No.	100.00	6.861	686.09
		(c)	Overheads & Contractor's profit @ 12.5 % on (a+b+c)				98.04
			Cost for 10m = a+b+c				97.06
			1.00	m			97.06
33	4.18	412	Brick Soling (With New Brick)				
			Laying brick soling layer on prepared sub-grade with brick on end edging according to lines, graded and cross-section shown on the drawing filling joints with sand and earth, spreading 25 mm thick layer of earth over brick soling, watering and rolliing the same with three wheel road roller 80-100 kN as per Technical Specification Clause 412.				
			Unit = sqm				
			Taking ouput = 150 sqm				
		a)	Labour				
			Mate	day	0.52	437.00	227.24
			Mazdoor (Unskilled)	day	10.00	412.00	4120.00
			Mason 1st Class	day	3.00	553.00	1659.00
		b)	Machinery				
			Three wheel 80-100 kN static roller	hour	1.00	1612.00	1612.00
			Water tanker	hour	1.00	764.00	764.00
		c)	Material				
			Brick 1st Class	No.	8160.00	6.12	49939.20
			Brick 1st Class on edging	No.	1100.00	6.12	6732.00
			Fine Sand	cum	5.66	145.87	825.62
			Water	kl	6.00	61.40	368.40
		d)	Overheads & Contractor's profit @ 12.5 % on (a+b+c)				8280.93
		e)	Contractor's profit @ 0% on (a+b+c+d)				0.00
			Cost for 150 sqm = a+b+c+d+e+f				496.86
		f)	Carriage Cost				
			Brick 1st Class	No.	61.73333	0.74086	45.74
			Fine Sand	cum	0.04	163.83	6.18
			Rate per sqm = (a+b+c+d+e+f)				548.77
			Total Cost	cum			548.77
34	10.5	1700	Painting Two Coats on New Concrete Surfaces				

Analysis of Rates (FORMAT F8)

Sl. No.	SDB Sl. No.	MORD Ref No.	DESCRIPTION	Unit	Quantity	Rate	Amount in Rs
			Painting two coats including primer coat after filling the surface with synthetic enamel paint in all shades on new, plastered / concrete surfaces as per drawing and Technical Specification Clause 1701				
			Unit = sqm				
			Taking output = 40 sqm				
		a)	Labour				
			Mate	day	0.20	437.00	87.40
			Painter (1st Class)	day	3.00	523.00	1569.00
			Mazdoor (Unskilled)	day	2.00	412.00	824.00
		b)	Material				
			Cement Primer as per specifications	litre	3.00	125.53	376.59
			Paint conforming to requirement of Clause 1701.3.8	litre	6.00	283.74	1702.44
			Add for scaffolding @ 1 per cent of labour cost where required				20.79
		c)	Overheads & Contractor's profit @ 12.5 % on (a+b)				572.53
		d)	Contractor's profit @ 0% on (a+b+c)				0.00
			Cost for 40 sqm = a+b+c+d				5152.75
			Rate per sqm = (a+b+c+d)/40				128.82
			Total Cost				128.82
35	10.10	1700	Kilometre stone				
			Reinforced cement concrete M15 grade kilometre stone/local stone of standard design as per IRC:8 fixing in position				
		i)	5th KILOMETRE STONE (precast)				
			Unit = each				
			Taking output = 6 Nos.				
		a)	M-15 grade of concrete	cum	2.35	4,981.13	11705.66
			As per item No.12.5 of Chapter 12				
		b)	Steel reinforcement @ 5 kg per sqm	kg	22.08	66.47	1467.66
			As per item No.12.6 of Chapter 12				
		c)	Excavation in soil for foundation	cum	1.68	386.53	649.37
			As per item No.11.1 of Chapter 11				
		d)	Painting two coats on concrete surface	sqm	9.85	128.82	1268.88
			As per item No.10.5 of Chapter 10				
		e)	lettering on km post (average 30 letters of 10 cm height each)	per cm	1,800.00	0.73	1314.00
			As per item No.10.1 of Chapter 10	high per			
			Transportation and fixing				
		f)	Labour				
			Mate	day	0.26	437.00	113.62
			Mason (1st Class)	day	0.60	553.00	331.80
			Mazdoor (Unskilled)	day	6.00	412.00	2472.00
		g)	Machinery				
			50 HP Tractor with trolley	hour	6.00	688.00	4128.00
		h)	Overheads & Contractor's profit @ 12.5 % on (a+b+c+d+e+f+g)				2931.37
		i)	Contractor's profit @ 0% on (a+b+c+d+e+f+g+h)				0.00
			Cost for 6 Nos. 5th km stone = a+b+c+d+e+f+g+h+i				26382.35
			Rate for each 5th km stone = (a+b+c+d+e+f+g+h+i)/6	no.			4397.06
		II)	KM STONE				
		ii)	Ordinary Kilometer Stone (Precast)				
			Unit = each				
			Taking output = 14 Nos.				
		a)	M15 grade of concrete	cum	3.77	4,981.13	18778.86
			As per item No.12.5 of Chapter 12				
		b)	Steel reinforcement @ 5 kg per sqm	kg	26.32	66.47	1749.49
			As per item No.12.6 of Chapter 12				
		c)	Excavation in soil for foundation	cum	2.77	386.53	1070.69
			As per item No.11.1 of Chapter 11				
		d)	Painting two coats on concrete surface	sqm	11.41	128.82	1469.84
			As per item No.10.5 of Chapter 10				
		e)	lettering on km post (average 12 letters of 10 cm height each)	per cm	1,680.00	0.73	1226.40
			As per item No.10.1 of Chapter 10	high per letter			
			Transportation and fixing				
		f)	Labour				

Analysis of Rates (FORMAT F8)

Sl. No.	SDB Sl. No.	MORD Ref No.	DESCRIPTION	Unit	Quantity	Rate	Amount in Rs
			Mate	day	0.32	437.00	139.84
			Mason (1st Class)	day	1.00	553.00	553.00
			Mazdoor (Unskilled)	day	7.00	412.00	2884.00
		g)	Machinery				
			50 HP Tractor with trolley	hour	6.00	688.00	4128.00
		h)	Overheads & Contractor's profit @ 12.5 % on (f+g)				963.11
		i)	Contractor's profit @ 0% on (f+g+h)				0.00
			Cost for 14 Nos. ordinary km stone = (a+b+c+d+e+f+g+h+i)				32963.22
			Rate for each ordinary km stone = (a+b+c+d+e+f+g+h+i)/14=				2354.52
			Rate for each ordinary km stone = (a+b+c+d+e+f+g+h+i)/14=				2354.52
		iii)	200 m STONE				
			200 m stone (precast)				
			Unit = each				
			Taking output = 33 Nos.				
		a)	M15 grade of concrete				
			As per item No.12.5 of Chapter 12	cum	1.58	4,981.13	7870.19
		b)	Steel reinforcement @ 5 kg per sqm				
			As per item No.12.6 of Chapter 12	kg	66.00	66.47	4387.02
		c)	Excavation in soil for foundation				
			As per item No.11.1 of Chapter 11	cum	1.39	386.53	537.28
		d)	Painting two coats on concrete surface				
			As per item No.10.5 of Chapter 10	sqm	6.27	128.82	807.70
		e)	lettering on km post (average 1 letter of 10 cm height each)				
			As per item No. 10.1 of Chapter 10	per cm	330.00	0.73	240.90
			Transportation and fixing				
		f)	Labour				
			Mate	day	0.34	437.00	148.58
			Mason (1st Class)	day	1.50	553.00	829.50
			Mazdoor (Unskilled)	day	7.00	412.00	2884.00
		g)	Machinery				
			50 HP Tractor with trolley	hour	6.00	688.00	4128.00
		h)	Overheads & Contractor's profit @ 12.5 % on (f+g)				998.76
		i)	Contractor's profit @ 0% on (f+g+h)				0.00
			Cost for 33 Nos. 200 m stone = (a+b+c+d+e+f+g+h)				22831.92
			Rate for each 200 m stone = (a+b+c+d+e+f+g+h)/33				691.88
			Rate for each 200 m stone = (a+b+c+d+e+f+g+h)/33				691.88
36	10.2	1700.3, 800	Retro-reflectorised Traffic Signs				
			Providing and fixing of retro-reflectorised cautionary, mandatory and informatory sign as per IRC:67 made of encapsulated lens type reflective sheeting vide Clause 1701.2.3 fixed over aluminium sheeting, 1.5 mm thick supported on a mild steel angle iron post 75 mm x 75 mm x 6 mm firmly fixed to the ground by means of properly designed foundation with M15 grade cement concrete 450 mm x 450 mm x 600 mm, 600 mm below ground level as per drawings and Technical Specification Clause 801				
			Unit = Each				
			Taking output = one traffic sign				
		(i)	Excavation foundations				
			As per Item No. 1 to 11.1 of Chapter 11	cum	0.126	386.53	48.70
		(ii)	Cement concrete M-15 Grade				
			As per item no. 11.4 of Chapter 11	cum	0.126	4,981.13	627.62
		(iii)	Painting Angle Iron Post with Primer and two coats of Epoxy Paint as per specifications				
			As per item no 10.7 of Chapter 11	sqm	0.46	152.53	70.16
		a)	Labour (For fixing at site)				
			Mate	day	0.01	437.00	4.37
			Mazdoor (Unskilled)	day	0.25	412.00	103.00
		b)	Material				
			Mild steel angle iron 75 x 75 x 6 mm	kg	20.00	55.45	1109.00
			3050 mm long				
			Aluminium sheeting fixed with encapsulated lens type reflective sheeting of size including lettering and signs as applicable background with epoxy paint	sqm	0.350	8,941.03	3129.36
			Add 3% cost of MS Sheet tube 12 SWG and angle irons towards the cost of fabrication, drilling holes, nuts and bolts etc.				127.15
		i)	900 mm equilateral & triangle , OR	sqm	0.35		

Analysis of Rates (FORMAT F8)

Sl. No.	SDB Sl. No.	MORD Ref No.	DESCRIPTION	Unit	Quantity	Rate	Amount in Rs
		ii)	600 mm equilateral & triangle, OR	sqm	0.156		
		iii)	600 mm circular , OR	sqm	0.283		
		iv)	800 mm x 600 mm rectangular, OR	sqm	0.48		
		v)	600 mm x 450 mm rectangular, OR	sqm	0.27		
		vi)	600 mm x 600 mm, OR	sqm	0.36		
		vii)	900 mm side octagon, OR	sqm	0.672		
		c)	Machinery Tractor with Trolley	hour	0.08	688.00	55.04
		d)	Overheads & Contractor's profit @ 12.5 % on (a+b+c)				565.99
		i)	Contractor's profit @ 0% on (a+b+c+d)				0.00
			Rate per traffic sign = (i+ii+iii+a+b+c+d+i)				5840.40
			Cost of Retro-reflectorised Traffic Signs as per above Analysis				
		i)	900 mm equilateral & triangle , OR				5840.40
		ii)	600 mm equilateral & triangle, OR				3830.48
		iii)	600 mm circular , OR				5146.25
		iv)	800 mm x 600 mm rectangular, OR				7187.25
		v)	600 mm x 450 mm rectangular, OR				5011.57
		vi)	600 mm x 600 mm, OR				5944.00
		vii)	900 mm side octagon, OR				9176.46
37	10.3 (B)	1700.3	Direction sign				
		800	Direction and place identification signs up to 0.9 sqm size board Providing and erecting direction and place identifications of semi reflective sign boards as per IRC:67 made of 2 mm thick M.S. Sheet duly stove enameled paint in white colour in front and grey colour on back with red reflective border of 70 mm width and required message, letters, figures with reflective engineering grade tape as per MORD specifications of required shade and colour. Supported and welded on 47 mm x 47mm of 12 SWG Square tube of 3050 mm height duly strengthened by 25 mm x 5 mm M/s flat iron on edges on back firmly fixed to the ground by means of properly designed foundations with M-15 grade cement concrete 450 mm x 450 mm x 600 mm, 600 mm below ground level as per approved drawing and Technical Specification Clause 1701 Unit = each Take Output = 0.9 sqm				
		(i)	Excavation for foundations As per Item No. 11.1 of Chapter 11	cum	0.126	386.53	48.70
		(ii)	Cement Concrete M-15 grade As per Item No. 11.4 of Chapter 11	cum	0.126	4,981.13	627.62
		(iii)	Painting on M.S. tube post with primer and two coat of epoxy paint as per specifications As per item No.10.7 of Chapter 10	sqm	0.59	152.53	89.99
		a)	Labour (For fixing at site) Mate	day	0.01	437.00	4.37
			Mazdoor (Unskilled)	day	0.25	412.00	103.00
		b)	Materials				
		i)	Support of MS sheet tube 47 mm x 47 mm of 12 SWG sheet 3050 mm long	kg	12.40	44.93	557.13
		ii)	Angle iron 50 x 50 x 6 mm for lugs including 5% wastage	kg	1.06	28.91	30.64
		iii)	2 mm thick MS sheet strengthened by 25 mm x 5 mm MS flat iron & painted with stove enameled paint including lettering, signs, message, Add 3% cost of MS sheet angle iron towards the cost of fabrications, drilling, holes, nuts, bolts, etc.	sqm	0.90	832.00	748.80
		c)	Machinery Tractor with Trolley	hour	0.08	688.00	55.04
		d)	Overheads & Contractor's profit @ 12.5 % on (a+b+c) Cost for 0.9 sqm = (i+ii+iii+a+b+c+d)				192.39
			Rate per sqm = (i+ii+iii+a+b+c+d) / 0.9				2497.78
			Total Cost	SQM			2775.31
38	10.16	1,700	Providing and Fixing 'Logo' of PMGSY / MMGSY Project				
			Providing and fixing of typical PMGSY/ MMGSY informatory sign board with Logo as per MORD specifications and drawing. Three MS Plates of 1.6 mm thick, top and middle plate duly welded with MS flat iron 25mm x 5m size on back on edges. The lower plate will be welded with MS angle iron frame of 25mm x 25mm x 5mm. The angle iron frame of the lower most plate and flat iron frame of middle plate will be welded to 2 nos. 75mm x 75 mm of 12 SWG sheet tubes posts duly embedded in cement concrete M-15 grade blocks of 450mm x 450mm x 600mm, 600mm below ground level. The top most diamond plate will be welded to middle plate by 47mm x 47mm of 12 SWG steel plate tube. All M.S. will be stove enameled on both sides. Lettering and printing arrows, border etc. will be painted with ready mixed synthetic enamel paint of superior quality in required shade and colour. All sections of framed posts and steel tube will be painted with primer and two coats of epoxy paint as per drawing Clause 1701 and Annexure 1700.1				

Analysis of Rates (FORMAT F8)

Sl. No.	SDB Sl. No.	MORD Ref No.	DESCRIPTION	Unit	Quantity	Rate	Amount in Rs
			Unit = Each Taking out put = one typical board				
		a)	Excavation for foundations As per item No. 11.1 of Chapter 11	cum	0.252	386.530	97.41
			Cement Concrete M15 grade As per item No. 11.4 of Chapter 11	cum	0.252	4,981.130	1255.24
			Painting on MS Steel tubes with primer and two coats of epoxy 2x2.05x.30 = 1.23 1x1.10x188 = 0.21 As per item no. 10.7 of Chapter 10 Printing new letters and figures of any shade with synthetic enamel paint black or any other approved colour to give an even shade.	sqm	1.80	152.53	274.55
			Logo Border 60x4x5 = 1200 per cm height per letter Figure 60x10 = 600 per cm height per letter Middle plate words 28x5 = 140 per cm height per letter Bottom plate border 150x2x5 = 1500 per cm height per letter Bottom plate border 60x2x5 = 600 per cm height per letter Words 101x2.5 = 252.5 Words 80x3 = 240.00 Total=4532.5 per cm height per letter As per item No.10.1 of Chapter 10 Labour (for fixing at site)	per cm height per litre	4532.50	0.73	3308.73
			Mate	day	0.03	437.00	13.11
			Mazdoor (Unskilled)	day	0.75	412.00	309.00
		b)	Material 2 nos. MS tubes 75mx75mm of 12 SWG sheet 2650 mm long	kg	63.15	44.93	2837.33
			1 No. MS tube 47mm x 47mm of 12 SWG 1100 mm long	kg	4.47	44.93	200.84
			Angle iron 50mm x 50mm x 5 mm for lugs	kg	2.12	28.91	61.28
			1.6 mm thick MS sheet strengthened by 25mm x 5 MS flat iron on logo and middle plate angle iron 25mm x 25mm x 5mm on bottom plate painting with stove enameled paint on both sides as per MORD	sqm	1.44	832.00	1198.08
			Add 3% cost of MS tube and angle iron towards the cost of fabrications, drilling holes, nuts, bolts, etc.				128.93
		c)	Machinery Tractor with trolley	hour	0.24	688.00	165.12
		d)	Overheads & Contractor's profit @ 12.5 % on (a+b+c)				614.21
		i)	Contractor's profit @ 0% on (a+b+c+d)				0.00
			COST OF ONE BOARD=				10463.82
			Total Cost	Nos.			10463.82
39	8.13 RCD	803	Road Marking with Hot Applied Thermoplastic Compound with Reflectorising Glass Beads on Bituminous Surface Providing and laying of hot applied thermoplastic compound 2.5 mm thick including reflectorising glass beads @ 250 gms per sqm area, thickness of 2.5 mm is exclusive of surface applied glass beads as per IRC:35 .The finished surface to be level, uniform and free from streaks and holes. <i>Unit = sqm</i> <i>Taking output = 640 sqm</i>				
		a)	Labour Mate	day	0.500	437.00	218.50
			Mazdoor	day	2.000	412.00	824.00
		b)	Machinery Road marking machine @ 80 sqm per hour	hour	8.000	1423.00	11384.00
			Tractor-trolley	hour	8.000	688.00	5504.00
		c)	Material Hot applied thermoplastic compound	Litre	2000.000	210.99	421980.00
			Reflectorising glass beads	kg	200.000	80.71	16142.00
		d)	Overheads & Contractor's profit @ 12.5 % on (a+b+c)				57006.56
		e)	Contractor's profit @ 0% on (a+b+c+d)				0.00
			Cost for 640 sqm = a+b+c+d+e				513059.06
			Rate per sqm = a+b+c+d+e)/640				801.65
			Total Cost	sqm			801.65
40	14.16 RCD	800	Painting on concrete surface Providing and applying 2 coats of water based cement paint to unplastered concrete surface after cleaning the surface of dirt, dust, oil, grease, efflorescence and applying paint @ of 1 litre for 2 sqm.				

Analysis of Rates (FORMAT F8)

Sl. No.	SDB Sl. No.	MORD Ref No.	DESCRIPTION	Unit	Quantity	Rate	Amount in Rs
			Unit = sqm Taking output = 10 sqm				
		a)	Labour				
			Mate	day	0.01	437.00	4.37
			Painter	day	0.25	523.00	130.75
			Mazdoor	day	0.25	521.00	130.25
		b)	Material				
			Water based paint of approved quality for cement concrete surface	Litres	5.00	125.53	627.65
		c)	Overheads & Contractor's profit @ 12.5 % on (a+b)				111.63
		d)	Contractor's profit @ 0% on (a+b+c)				0.00
			Cost for 10 sqm (a+b+c+d)				1004.65
			Rate per sqm (a+b+c+d)/10				100.46
			Total Cost	sqm			100.46
			SUB HEAD : ANALYSIS OF CULVERT/ MINOR BRIDGES ITEMS				
41	8.13 RCD	803	Road Marking with Hot Applied Thermoplastic Compound with Reflectorising Glass Beads on Concrete Surface Providing and laying of hot applied thermoplastic compound 2.5 mm thick including reflectorising glass beads @ 250 gms per sqm area, thickness of 2.5 mm is exclusive of surface applied glass beads as per IRC:35 .The finished surface to be level, uniform and free from streaks and holes. <i>Unit = sqm</i> <i>Taking output = 640 sqm</i>				
		a)	Labour				
			Mate	day	0.500	437.00	218.50
			Mazdoor	day	2.000	412.00	824.00
		b)	Machinery				
			Road marking machine @ 80 sqm per hour	hour	8.000	1423.00	11384.00
			Tractor-trolley	hour	8.000	688.00	5504.00
		c)	Material				
			Hot applied thermoplastic compound	Litre	2000.000	210.99	421980.00
			Reflectorising glass beads	kg	200.000	80.71	16142.00
		d)	Overheads & Contractor's profit @ 12.5 % on (a+b+c)				57006.56
		e)	Contractor's profit @ 0% on (a+b+c+d)				0.00
			Cost for 640 sqm = a+b+c+d+e				513059.06
			Rate per sqm = a+b+c+d+e)/640				801.65
			Total Cost	sqm			801.65
			Total Cost	Cum	= 100.46 + 801.65 =		902.11
			SUB HEAD : ANALYSIS OF CULVERT/ MINOR BRIDGES ITEMS				
42	11.1	300	Excavation for Structures Earthwork in excavation for structures as per drawing and technical				
		I.	Ordinary soil				
		(i)	Upto 3 m depth Unit = cum Taking output = 10 cum				
		a)	Labour				
			Mate	day	0.32	437.00	139.84
			Mazdoor (Unskilled)	day	8.00	412.00	3296.00
		b)	Overheads & Contractor's profit @ 12.5 % on (a)				429.48
		c)	Contractor's profit @ 0% on (a+b)				0.00
			Cost for 10 cum = a+b				386.53
			Total Cost	cum			386.53
		NOTE:-					
		1	Cost of dewatering may be added, where required, up to 10 per cent of labour cost. Assessment for dewatering shall be made as per site conditions.				
		2	The excavated earth if found suitable, can be used partly for backfilling in trenches & partly for road work. Hence cost of disposal has not been added except for marshy soil. This note is common to all cases of item 11.1 excluding 11.1 V				
43	9.2 (I)	1100 & 800	Type B (First Class) Bedding Laying (First Class) bedding on well compacted sand, moorum or approved granular material as per Clause 1105 (ii) Fillling in foundation trenches as per drawing and technical specification Clause 305.3.9				

Analysis of Rates (FORMAT F8)

Sl. No.	SDB Sl. No.	MORD Ref No.	DESCRIPTION	Unit	Quantity	Rate	Amount in Rs
		I.	Sand filling Unit = cum				
		a)	Labour Mate	day	0.01	437.00	4.37
			Mazdoor (Unskilled)	day	0.30	412.00	123.60
		b)	Material Sand (assuming 20 per cent voids)	cum	1.20	145.87	175.04
		c)	Overheads & Contractor's profit @ 12.5 % on (a+b)				37.88
		d)	Contractor's profit @ 0% on (a+b+c)				0.00
			<u>CARRIAGE COST</u> sand	Cum	1.2	321.66	385.99
			Rate per cum = a+b+c				726.88
			Total Cost	CUM			726.88
44 (I)	9.3	1100	Providing and Laying Reinforced Cement Concrete Pipe NP3 as per design in Single Row Providing and laying reinforced cement concrete pipe NP3 for culverts on first class bedding of granular material in single row including fixing collar with cement mortar 1:2 but excluding excavation, protection works, backfilling, concrete and masonry works in head walls and parapets Clause 1106.				
		A.	600 MM DIA Unit =m Taking output =7.5 m (3 pipes of 2.5 m length each)				
		a)	Material i) Sand at site	cum	0.024	309.70	7.43
			ii) Cement at site	ton	0.018	5682.06	102.28
			iii) RCC pipe NP 3 pipe including collar at site	m	7.50	2594.85	19461.38
		b)	Labour Mate	day	0.04	437.00	17.48
			Mason (1st class)	day	0.12	553.00	66.36
			Mazdoor (Unskilled)	day	0.96	412.00	395.52
		c)	Overheads & Contractor's profit @ 12.5 % on (a+b)				2506.31
		d)	Contractor's profit @ 0% on (a+b+c)				0.00
			Cost for 7.5m = (a+b+c)				22556.75
			Rate per m =(a+b+c)/7.5				3007.57
			Total Cost	M			3007.57
44 (II)	9.3	1100	Providing and Laying Reinforced Cement Concrete Pipe NP4 as per design in Single Row Providing and laying reinforced cement concrete pipe NP3 for culverts on first class bedding of granular material in single row including fixing collar with cement mortar 1:2 but excluding excavation, protection works, backfilling, concrete and masonry works in head walls and parapets Clause 1106.				
		B.	1000 MM DIA Unit =m Taking output =7.5 m (3 pipes of 2.5 m length each)				
		a)	Material i) Sand at site	cum	0.04	309.70	12.39
			ii) Cement at site	ton	0.03	5682.06	170.46
			iii) RCC pipe NP 3 pipe including collar at site	m	7.50	6156.49	46173.68
		b)	Labour Mate	day	0.09	437.00	39.33
			Mason (1st class)	day	0.25	553.00	138.25
			Mazdoor (Unskilled)	day	2.00	412.00	824.00
		c)	Overheads & Contractor's profit @ 12.5 % on (a+b)				5919.76
		d)	Contractor's profit @ 0% on (a+b+c)				0.00
			Cost for 7.5m = (a+b+c+d)				53277.87
			Rate per m =(a+b+c+d)/7.5				7103.72
			Total Cost	m			7103.72
44 (III)	9.5 (C)	1100	Providing and Laying Reinforced Cement Concrete Pipe NP3 as per Design in Double Row Providing and laying reinforced cement concrete pipe NP3 for culverts on first class bedding of granular material in double row including fixing collar with cement mortar 1:2 but excluding excavation, protection works, backfilling, concrete and masonry works in head walls and parapets as per Clause 1106.				
		C.	2 X 1000 MM DIA Unit =m Taking output =7.5 m (6 pipes of 2.5 m length each in two rows)				
		a)	Material				

Analysis of Rates (FORMAT F8)

Sl. No.	SDB Sl. No.	MORD Ref No.	DESCRIPTION	Unit	Quantity	Rate	Amount in Rs
			i) Sand at site	cum	0.08	309.70	24.78
			ii) Cement at site	ton	0.06	5682.06	340.92
			iii) RCC pipe NP 3 pipe including collar at site	m	15.00	6156.49	92347.35
		b)	Labour				
			Mate	day	0.22	437.00	96.14
			Mason (1st class)	day	0.6	553.00	331.80
			Mazdoor (Unskilled)	day	4.80	412.00	1977.60
		c)	Overheads & Contractor's profit @ 12.5 % on (a+b)				11889.82
		d)	Contractor's profit @ 0% on (a+b+c)				0.00
			Cost for 7.5m = (a+b+c)				107008.41
			Rate per m =(a+b+c)/7.5				14267.79
			Total Cost	M			14,267.79
45	11.4	800 & 1200	Providing concrete for plain/reinforced <u>concrete in open foundations</u> complete as per drawings and technical specifications Clause 802, 803, 1202 & 1203				
		I.	P.C.C grade M 10				
		(i)	Nominal mix 1:3:6				
			Unit = cum				
		a)	Material				
			Cement	t	0.250	5,254.40	1313.60
			Coarse sand	cum	0.48	584.64	280.63
			40 mm aggregate	cum	0.576	1,005.81	579.35
			20 mm aggregate	cum	0.288	1,224.68	352.71
			10 mm aggregate	cum	0.096	602.28	57.82
		b)	Labour				
			Mate	day	0.08	437.00	34.96
			Mason (1st Class)	day	0.10	553.00	55.30
			Mazdoor (Unskilled)	day	1.63	412.00	671.56
			Bhisti	day	0.27	412.00	111.24
		c)	Machinery				
			Mechanical concrete mixer 0.4/0.28 cum capacity fitted with water measuring device and preferably also with load cell.	hour	0.40	351.00	140.40
		d)	Formwork @ 4% on cost of material, labour and machinery (a+b+c)				143.90
		e)	Overheads & Contractor's profit @ 12.5 % on (a+b+c+d)				467.68
		f)	Contractor's profit @ 0% on (a+b+c+d+e)				0.00
			Rate per cum =(a+b+c+d+e+f)				4209.15
			Carrige cost:-				
			Cement	t	0.250	427.66	106.92
			Coarse sand	cum	0.48	321.66	154.40
			Aggregate	cum	0.960	674.15	647.18
			Rate per cum including Carrige				5117.64
			Rate per cum = a+b+c+d+e+f= (Total Cost)	cum			5,117.64
		II.	P.C.C grade M 15				
		(i)	Nominal mix (1:2.5:5)				
			Unit = cum				
		a)	Material				
			Cement	t	0.275	5,254.40	1444.96
			Coarse sand	cum	0.48	584.64	280.63
			40 mm aggregate	cum	0.48	1,005.81	482.79
			20 mm aggregate	cum	0.24	1,224.68	293.92
			10 mm aggregate	cum	0.08	602.28	48.18
		b)	Labour				
			Mate	day	0.08	437.00	34.96
			Mason (1st Class)	day	0.10	553.00	55.30
			Mazdoor (Unskilled)	day	1.63	412.00	671.56
			Bhisti	day	0.27	412.00	111.24
		c)	Machinery				
			Concrete mixer 0.4/0.28 cum capacity	hour	0.40	351.00	140.40
		d)	Formwork @ 4% on cost of material, labour and machinery (a+b+c)				142.56
		e)	Overheads & Contractor's profit @ 12.5 % on (a+b+c+d)				463.31
		f)	Contractor's profit @ 0% on (a+b+c+d+e)				0.00
			Rate per cum =(a+b+c+d+e+f)				4169.81
			Carrige cost:-				
			Cement	t	0.275	427.66	117.61
			Coarse sand	cum	0.48	321.66	154.40

Analysis of Rates (FORMAT F8)

Sl. No.	SDB Sl. No.	MORD Ref No.	DESCRIPTION	Unit	Quantity	Rate	Amount in Rs
			Aggregate	cum	0.80	674.15	539.32
			Rate per cum including Carriage				4981.13
			Rate per cum = a+b+c+d+e+f= (Total Cost)	cum			4,981.13
	(i)	III.	P.C.C. grade M 20 Nominal mix (1:2:4) Unit = cum				
		a)	Material				
			Cement	t	0.33	5,254.40	1733.95
			Sand	cum	0.45	584.64	263.09
			40 mm aggregate	cum	0.36	1,005.81	362.09
			20 mm aggregate	cum	0.36	1,224.68	440.88
			10 mm aggregate	cum	0.18	602.28	108.41
		b)	Labour				
			Mate	day	0.08	437.00	34.96
			Mason (1st Class)	day	0.10	553.00	55.30
			Mazdoor (Unskilled)	day	1.63	412.00	671.56
			Bhisti	day	0.27	412.00	111.24
		c)	Machinery				
			Concrete mixer 0.4/0.28 cum capacity	hour	0.40	351.00	140.40
		d)	Formwork @ 4% on (a+b+c)				156.88
		e)	Overheads & Contractor's profit @ 12.5 % on (a+b+c+d)				509.85
		f)	Contractor's profit @ 0% on (a+b+c+d+e)				0.00
			Rate per cum =(a+b+c+d+e+f)				4588.61
			Carriage cost:-				
			Cement	t	0.33	427.66	141.13
			Coarse sand	cum	0.45	321.66	144.75
			Aggregate	cum	0.90	674.15	606.74
			Rate per cum including Carriage				5481.22
			Rate per cum = a+b+c+d+e+f= (Total Cost)	cum			5,481.22
46	12.5	800	Plain/reinforced <u>cement concrete in substructure</u> complete as per drawings and technical specification Clauses 802, 804, 805, 806, 807, 1202 ans 1204 For height upto 5 m Unit = cum				
		II.	P.C.C grade M 15				
		(i)	Nominal mix (1:2.5:5) Unit = cum				
		a)	Material				
			Cement	t	0.275	5,254.40	1,444.96
			Coarse sand	cum	0.48	584.64	280.63
			40 mm aggregate	cum	0.48	1,005.81	482.79
			20 mm aggregate	cum	0.24	1,224.68	293.92
			10 mm aggregate	cum	0.18	602.28	108.41
		b)	Labour				
			Mate	day	0.08	437.00	34.96
			Mason (1st Class)	day	0.10	553.00	55.30
			Mazdoor (Unskilled)	day	1.63	412.00	671.56
			Bhisti	day	0.27	412.00	111.24
		c)	Machinery				
			Concrete mixer 0.4/0.28 cum capacity	hour	0.40	351.00	140.40
		d)	Formwork @ 10% on cost of material, labour and machinery (a+b+c)				362.42
		e)	Overheads & Contractor's profit @ 12.5 % on (a+b+c+d)				498.32
		f)	Contractor's profit @ 0% on (a+b+c+d+e)				0.00
			Rate per cum =(a+b+c+d+e+f)				4484.91
			Carriage cost:-				
			Cement	t	0.275	427.66	117.61
			Coarse sand	cum	0.48	321.66	154.40
			Aggregate	cum	0.90	674.15	606.74
			Rate per cum including Carriage				5,363.65
			Rate per cum = a+b+c+d+e+f= (Total Cost)	cum			5,363.65
46	12.5	800	Plain/reinforced <u>cement concrete in substructure</u> complete as per drawings and technical specification Clauses 802, 804, 805, 806, 807, 1202 ans 1204 For height upto 5 m Unit = cum				
		II.	P.C.C. grade M 20				
		(i)	Nominal mix (1:2:4)				

Analysis of Rates (FORMAT F8)

Sl. No.	SDB Sl. No.	MORD Ref No.	DESCRIPTION	Unit	Quantity	Rate	Amount in Rs
			Unit = cum				
		a)	Material				
			Cement	t	0.33	5,254.40	1733.95
			Sand	cum	0.45	584.64	263.09
			40 mm aggregate	cum	0.36	1,005.81	362.09
			20 mm aggregate	cum	0.36	1,224.68	440.88
			10 mm aggregate	cum	0.18	602.28	108.41
		b)	Labour				
			Mate	day	0.08	437.00	34.96
			Mason (1st Class)	day	0.10	553.00	55.30
			Mazdoor (Unskilled)	day	1.63	412.00	671.56
			Bhisti	day	0.27	412.00	111.24
		c)	Machinery				
			Concrete mixer 0.4/0.28 cum capacity	hour	0.40	351.00	140.40
		d)	Formwork @ 10% on (a+b+c)				392.19
		e)	Overheads & Contractor's profit @ 12.5 % on (a+b+c+d)				539.26
		f)	Contractor's profit @ 0% on (a+b+c+d+e)				0.00
			Rate per cum =(a+b+c+d+e+f)				4853.33
			Carrige cost:-				
			Cement	t	0.330	427.66	141.13
			Coarse sand	cum	0.450	321.66	144.75
			Aggregate	cum	0.900	674.15	606.74
			Rate per cum including Carrige				5745.94
			Rate per cum = a+b+c+d+e (Total Cost)	cum			5,745.94
		IV.	R.C.C. grade M 25				
			Unit = cum				
		a)	Material				
			Cement	t	0.404	5,254.40	2122.78
			Coarse sand	cum	0.45	584.64	263.09
			20 mm aggregate	cum	0.54	1,224.68	661.33
			10 mm aggregate	cum	0.36	602.28	216.82
		b)	Labour				
			Mate	day	0.08	437.00	34.96
			Mason (1st Class)	day	0.12	553.00	66.36
			Mazdoor (Unskilled)	day	1.73	412.00	712.76
			Bhisti	day	0.27	412.00	111.24
		c)	Machinery				
			Concrete mixer 0.4/0.28 cum capacity	hour	0.40	351.00	140.40
		d)	Formwork @ 10% on (a+b+c)				432.97
		e)	Overheads & Contractor's profit @ 12.5 % on (a+b+c+d)				595.34
		f)	Contractor's profit @ 0% on (a+b+c+d+e)				0.00
			Rate per cum =(a+b+c+d+e+f)				5358.05
			Carrige cost:-				
			Cement	t	0.40	427.66	172.77
			Coarse sand	cum	0.45	321.66	144.75
			Aggregate	cum	0.90	674.15	606.74
			Rate per cum including Carrige				6282.30
			Rate per cum = a+b+c+d+e+f= (Total Cost)	cum			6,282.30

Analysis of Rates (FORMAT F8)

Sl. No.	SDB Sl. No.	MORD Ref No.	DESCRIPTION	Unit	Quantity	Rate	Amount in Rs
		NOTE :					
		1	For height above 5 m upto 10 m same as above with following changes:				
		a.	Add 2 per cent of cost of material, labour and machinery to cater for extra lift.				
		b.	The provision of formwork shall be 12 per cent instead of 10 per cent of cost of material, labour and machinery				
		2	The cost of formwork has been increased for more height to account for cost of side support to formwork.				
		3	Extra expenditure on structures which are more than 5 m height is to cater for cost involved for approaching the work spot by providing ramp for use by labour.				
47	13.1	800	Providing and laying reinforced cement concrete in superstructure as per drawing and technical specifications Clauses 800, 1205.4 and 1205.5				
		II. R.C.C M 25					
		Unit =cum					
		a) Material					
		Cement	t	0.40	5,254.40	2101.76	
		Coarse sand	cum	0.45	584.64	263.09	
		20 mm aggregate	cum	0.54	1,224.68	661.33	
		10 mm aggregate	cum	0.36	602.28	216.82	
		b) Labour					
		Mate	day	0.08	437.00	34.96	
		Mason (1st Class)	day	0.12	553.00	66.36	
		Mazdoor (Unskilled)	day	1.73	412.00	712.76	
		Bhisti	day	0.27	412.00	111.24	
		e) Machinery					
		Concrete mixer 0.4/0.28 cum capacity	hour	0.40	351.00	140.40	
		d) For formwork and staging 20%of a+b					861.74
		e) Overheads & Contractor's profit @ 12.5 % on (a+b+c+d)					646.31
		f) Contractor's profit @ 0% on (a+b+c+d+e)					0.00
		Rate per cum =(a+b+c+d+e+f)					5816.77
		Carriage cost:-					
		Cement	t	0.40	427.66	171.06	
		Coarse sand	cum	0.45	321.66	144.75	
		Aggregate	cum	0.90	674.15	606.74	
		Rate per cum including Carriage					6739.31
			Rate per cum = a+b+c+d+e+f= (Total Cost)	cum			6,739.31
		II. R.C.C M 30					
		Unit =cum					
		a) Material					
		Cement	t	0.43	5,254.40	2,259.39	
		Coarse sand	cum	0.45	584.64	263.09	
		20 mm aggregate	cum	0.54	1,224.68	661.33	
		10 mm aggregate	cum	0.36	602.28	216.82	
		b) Labour					
		Mate	day	0.08	437.00	34.96	
		Mason (1st Class)	day	0.12	553.00	66.36	
		Mazdoor (Unskilled)	day	1.73	412.00	712.76	
		Bhisti	day	0.27	412.00	111.24	
		e) Machinery					
		Concrete mixer 0.4/0.28 cum capacity	hour	0.40	351.00	140.40	
		d) For formwork and staging 20%of a+b					865.19
		e) Overheads & Contractor's profit @ 20 % on (a+b+c+d)					1066.31
		f) Contractor's profit @ 10% on (a+b+c+d+e)					639.78
		Rate per cum =(a+b+c+d+e+f)					7037.63
		Carriage cost:-					
		Cement	t	0.43	427.66	183.89	
		Coarse sand	cum	0.45	321.66	144.75	
		Aggregate	cum	0.90	674.15	606.74	
		Rate per cum including Carriage					7,973.01
			Rate per cum = a+b+c+d+e+f Cost	cum			7,973.01
			<i>This analysis will hold good for concrete of nominal mix 1:1½:3 also</i>				
48	11.5	600 & 1200	Brick masonry work in cement mortar in foundation complete excluding pointing and plastering as per drawing and technical specifications Clauses 600, 1202 & 1203				
		I) 1 : 3 Cement Mortar					

Analysis of Rates (FORMAT F8)

Sl. No.	SDB Sl. No.	MORD Ref No.	DESCRIPTION	Unit	Quantity	Rate	Amount in Rs
		I.	Unit = cum				
		a)	Brick masonry in 1:3 cement mortar				
			Material				
			Brick	Nos.	500.00	6.12	3060.00
			Cement mortar 1:3	cum	0.24	3,714.86	891.57
			(Rate as per Sub-analysis)				
		b)	Labour				
			Mate	day	0.09	437.00	39.33
			Mason (1st Class)	day	0.80	553.00	442.40
			Mazdoor (Unskilled)	day	1.60	412.00	659.20
			Bhisti	day	0.20	412.00	82.40
		c)	Overheads & Contractor's profit @ 12.5 % on (a+b)				646.86
		d)	Contractor's profit @ 0% on (a+b+c)				0.00
			Rate per cum =(a+b+c+d)				5821.76
			<u>Carriage Cost</u>				
			carriage brick	no.	500.00	0.74	370.43
			carriage cement	t	0.11	427.66	48.11
			carriage sand	cum	0.25	321.66	81.06
			Rate per cum including Carriage				6321.36
			Rate per cum = a+b+c	cum			6321.36
			Sub-analysis				
			Cement mortar 1:3 (1 cement : 3 sand)				
			Unit = cum				
		a)	Material				
			Cement	t	0.51	5,254.40	2679.74
			Sand	cum	1.05	584.64	613.87
		b)	Labour				
			Mate	day	0.04	437.00	17.48
			Mazdoor (Unskilled)	day	0.90	412.00	370.80
			Bhisti	day	0.08	412.00	32.96
			Rate per cum =(a+b+c+d)				3714.86
			<u>Carriage Cost</u>				
			carriage cement	t	0.51	427.66	0.00
			carriage sand	cum	1.05	321.66	0.00
			Rate per cum including Carriage				3714.86
			Total material and labour = (a+b)	cum			3714.86
		III.	In 1:5 cement mortar				
			Unit = cum				
		a)	Material				
			Bricks 1st class	Nos.	500.00	6.12	3060.00
			Cement mortar	cum	0.24	3236.44	776.75
		b)	Labour				
			Mate	day	0.09	437.00	39.33
			Mason 1st Class	day	0.80	553.00	442.40
			Mazdoor (Unskilled)	day	1.60	412.00	659.20
			Bhisti	day	0.20	412.00	82.40
			Add for scaffolding @ 5 per cent of cost of materials and labour				253.00
		c)	Overheads & Contractor's profit @20 % on (a+b)				1062.62
		d)	Contractor's profit @ 10% on (a+b+c)				637.57
			Rate per cum = a+b+c+d=				7013.26
			Total Cost including 1 % LABOUR CESS	cum			7083.40
48			Sub-analysis				
			Cement mortar 1:6(1 cement, 6 sand)				
		a)	Material				
			Cement	t	0.288	5254.40	1513.27
			Sand	cum	1.337	584.64	781.66
		b)	Labour				
			Mate	day	0.040	437.00	17.48
			Mazdoor (Unskilled)	day	0.900	412.00	370.80
		c)	Carriage cost				
			Cement	t	0.288	427.66	123.17
			Sand	cum	1.337	321.66	430.06
			Total Cost				3236.44
			Total material and labour = (a+b)	cum			3236.44

Analysis of Rates (FORMAT F8)

Sl. No.	SDB Sl. No.	MORD Ref No.	DESCRIPTION	Unit	Quantity	Rate	Amount in Rs
49	11.7	1000 & 1200	Supplying, fitting and placing <u>HYSD bar reinforcement in foundation</u> complete as per drawings and technical specifications Clauses 1000 and 1202 Unit = t				
		a)	Material				
			HYSD bars including 5 per cent for overlaps and wastage	t	1.05	51,837.50	54429.38
			Binding wire	kg	6.00	48.30	289.80
		b)	Labour for cutting, bending, shifting to site, tying and placing in position				
			Mate	day	0.40	437.00	174.80
			Blacksmith	day	2.00	553.00	1106.00
			Mazdoor (Unskilled)	day	6.00	412.00	2472.00
		c)	Overheads & Contractor's profit @ 12.5 % on (a+b)				7309.00
		d)	Contractor's profit @ 0% on (a+b+c)				0.00
			Rate per t = a+b+c+d				65780.97
			<u>CARRIAGE</u>				
			Reinforcement	t	1.05	456.46	479.28
			Rate per t including Carriage				66260.25
			Rate per t = a+b+c= (Total Cost)	t			66260.25
48	12.6	1000	Supplying, fitting and placing <u>HYSD bar reinforcement (Fe 415) in substructure</u> complete as per drawings and technical specification Clauses 1002, 1005, 1010 & 1202 Unit = t				
		a)	Material				
			HYSD bars including 5 per cent overlaps and wastage	t	1.05	51,837.50	54429.38
			Binding wire	kg	6.00	48.30	289.80
		b)	Labour for cutting, bending, shifting to site, tying, and placing in position				
			Mate	day	0.34	437.00	148.58
			Blacksmith	day	2.00	553.00	1106.00
			Mazdoor (Unskilled)	day	6.50	412.00	2678.00
		c)	Overheads & Contractor's profit @ 12.5 % on (a+b)				7331.47
		d)	Contractor's profit @ 0% on (a+b+c)				0.00
			Rate per t = a+b+c+d				65983.22
			<u>CARRIAGE</u>				
			Reinforcement	t	1.05	456.46	479.28
			Binding wire		0.01	456.46	2.74
			Total Cost per t including Carriage				66465.25
			Rate per t = a+b+c+d= (Total Cost)	t			66465.25
49	13.2	1000	Supplying, fitting, and placing <u>HYSD bar reinforcement in superstructure</u> complete as per drawing and technical Unit = t				
		a)	Material				
			HYSD bars including 5 per cent for laps and wastage	t	1.05	51,837.50	54429.38
			Binding wire	kg	8.00	48.30	386.40
		b)	Labour for cutting, bending, tying and placing in position				
			Mate	day	0.44	437.00	192.28
			Blacksmith	day	3.00	553.00	1659.00
			Mazdoor (Unskilled)	day	8.00	412.00	3296.00
		c)	Overheads & Contractor's profit @ 12.5 % on (a+b)				7495.38
		d)	Contractor's profit @ 0% on (a+b+c)				0.00
			Rate per t = a+b+c+d				67458.44
			<u>CARRIAGE</u>				
			Reinforcement	t	1.05	456.46	479.28
			Binding wire		0.0080	456.46	3.65
			Total Cost per t including Carriage				67941.37
			Rate per t = a+b+c+d= (Total Cost)	t			67941.37
50	13.10	1200	<u>Drainage spouts</u> complete as per drawing and technical specifications Clause 1209 Unit = 1 No				
		a)	Material				
		i)	Corrosion resistant structural steel grating including 5 per cent wastage	kg	4.00	77.41	309.64
		ii)	G I pipe 100 mm dia	m	1.00	647.73	647.73
		b)	Labour				
			For fabrication				
			Mate	day	0.02	437.00	8.74
			Blacksmith, Welder etc. (Skilled)	day	0.02	553.00	11.06

Analysis of Rates (FORMAT F8)

Sl. No.	SDB Sl. No.	MORD Ref No.	DESCRIPTION	Unit	Quantity	Rate	Amount in Rs
			Mazdoor (Unskilled)	day	0.20	412.00	82.40
			For fixing in position				
			Mate	day	0.01	437.00	4.37
			Mason (1st Class)	day	0.01	553.00	5.53
			Mazdoor (Unskilled)	day	0.20	412.00	82.40
			Add @ 5 per cent of cost of material and labour (a+b) for electrodes, gas cutting, sealant, anti-corrosive bituminous paint, mild steel grating etc.				57.59
		c)	Overheads & Contractor's profit @ 12.5 % on (a+b)				151.18
		d)	Contractor's profit @ 0% on (a+b+c)				0.00
			Total Cost				1360.65
			Rate per cum = a+b+c= (Total Cost)	cum			1360.65
51	13.16 IV)	1200	Filler Joint Providing and filling joint sealing compound as per drawings and technical specifications with coarse sand and 6 per cent bitumen by weight. Unit = Running m Taking output = 7.5 m 7.5 m long x 100 mm wide x 10 mm deep recess				
		a)	Material				
			Sand	cum	0.008	584.64	4.68
			Volume = 7.5 x 0.1 x 0.01 = 0.008 cum Weight = 0.008 x 1400 = 11.2 kg				
			Bitumen-11.2 x 0.06 = 0.672 kg	t	0.0007	56,202.60	39.34
		b)	Labour				
			Mate	day	0.02	437.00	8.74
			Mazdoor (Skilled)	day	0.50	521.00	260.50
			Mazdoor (Unskilled)	day	0.10	412.00	41.20
		c)	Overheads & Contractor's profit @ 12.5 % on (a+b)				44.31
		d)	Contractor's profit @ 0% on (a+b+c)				0.00
			Cost for 7.5 m with 10 mm depth =a+b+c+d				398.77
			Rate per m 1 cm depth = (a+b+c+d)/7.5				53.17
			Rate per m = a+b+c= (Total Cost)	no.			53.17
		Note:	For arriving at the final rate for filler joints per m length and per cm depth of joint filling compound, the rates of Sr. Nos (i), (ii), (iii) and (iv) shall be added.				
52	12.10	1200	Backfilling behind abutment, wing wall and return wall complete as per drawings & technical specification Clause 1204.3.8 Unit = cum Taking output = 10 cum				
		I)	Granular material				
		a)	Material				
			Granular material	cum	12.00	168.37	2020.44
		b)	Labour				
			Mate	day	0.28	437.00	122.36
			Mazdoor (Unskilled)	day	10.00	412.00	4120.00
			Bhisti	day	0.40	412.00	164.80
		c)	Overheads & Contractor's profit @ 12.5 % on (a+b)				803.45
		d)	Contractor's profit @ 0% on (a+b+c)				0.00
			Carriage cost:-				
			Granular Material	cum	12.00	674.15	8089.80
			Cost for 10 cum of granular backfill = a+b+c				15320.85
			Rate per cum = (a+b+c+d)/10				1532.09
		II)	Sandy material				
			Unit = cum Taking output = 10 cum				
		a)	Material				
			Sand (Local)	cum	12.00	145.87	1750.44
		b)	Labour				
			Mate	day	0.40	437.00	174.80
			Mazdoor (Unskilled)	day	10.00	412.00	4120.00
			Bhisti	day	0.40	412.00	164.80
		c)	Overheads & Contractor's profit @ 12.5 % on (a+b)				776.26
		d)	Contractor's profit @ 0% on (a+b+c)				0.00
			Cost for per cum of sand backfill = (a+b+c+d)/10				698.63

Analysis of Rates (FORMAT F8)

Sl. No.	SDB Sl. No.	MORD Ref No.	DESCRIPTION	Unit	Quantity	Rate	Amount in Rs
			Carriage cost:- Sand Cost for per cum of sand backfill including carriage	cum	1.20	163.83	196.60 895.23
			Rate per cum = (a+b+c)/10 = (Total Cost)	cum			895.23
53	12.11	1200	Providing and laying filter media with granular crushed aggregates as per specification to a thickness of not less than 600 mm with smaller size towards the soil and bigger size towards the wall and providing over the entire surface behind abutment, wing wall, return wall to the full height, compacted to firm condition complete as per drawing and technical specification Clause 1204.3.8 Unit = cum Taking output = 10 cum				
		a)	Material Filter media as per specification	cum	12.00	697.86	8374.32
		b)	Labour Mate	day	0.40	437.00	174.80
			Mazdoor (Unskilled)	day	9.00	412.00	3708.00
			Mazdoor (Skilled)	day	1.00	521.00	521.00
			Bhisti	day	0.50	412.00	206.00
		c)	Overheads & Contractor's profit @ 12.5 % on (a+b)				1623.02
		d)	Contractor's profit @ 0% on (a+b+c)				0.00
			Cost for per cum = (a+b+c+d)/10				1460.71
			Carriage cost:- Filter Material	cum	1.20	674.15	808.98
			Cost for per cum including carriage				2269.69
			Rate per cum = (a+b+c)/10 (Total Cost)	cum			2269.69
54	12.13	600	Providing PCC M-20 architectural coping on the top of wing wall, return wall etc. complete as per drawing and technical specification Clauses 615, 710 and 1204.3.11 Unit = Running m Taking output = 1 m Assume wall thickness = 345 mm Projection of the coping will be 25 mm wide on both side of the wall = 345 + 50 = 395 mm Quantity = 1 x 0.395 x 0.150 = 0.059 PCC M-20 Grade (1:2:4) Nominal Mix As per item No. 12.5 (II)(i) Add 10 per cent extra of cost of (a) being architectural coping Cost of 1 m = a	cum	0.059	5,745.94	339.01 33.90 372.91
			Rate per cum = (a+b+c)/10 (Total Cost)	cum			372.91
55	12.14	1200	Providing pressure relief pipes 100 mm dia in bottom slab of box cell on a filter media base of 500 mm x 500 mm as per drawing and technical specification Clause 1205.5.7 Unit = Nos				
		a)	Material AC pipe 100 mm dia i/c wastage of 5 per cent 600 mm long upto the bottom of levelling course	m	0.63	47.15	29.70
			Filter media base with stone aggregate 0.5 m x 0.5 m area 1 m deep	cum	0.25	697.86	174.47
		b)	Labour Mate	day	0.031	437.00	13.55
			Mason 1st Class	day	0.016	553.00	8.85
			Mazdoor (Unskilled)	day	0.80	412.00	329.60
		c)	Overheads & Contractor's profit @ 12.5 % on (a+b)				69.52
			Contractor's profit @ 0% on (a+b+c)				0.00
			Total Cost				625.69
			Rate per No = (a+b+c)= (Total Cost)	no.			625.69
			PROTECTION WORK				
56	14.1	1300	Providing and laying boulder apron for bed protection with stone boulders of minimum size and weight as per Table 1300.1, no fragment weighing less than 25 kg laid dry complete as per drawing and technical specifications Clause 1301 Unit = cum				
		a)	Material Stone boulder (25 kg minimum)	cum	1.00	694.61	694.61
			Stone spalls	cum	0.20	694.61	138.92
		b)	Labour Mate	day	0.04	437.00	17.48
			Mason 1st Class	day	0.35	553.00	193.55
			Mazdoor (Unskilled)	day	0.75	412.00	309.00
		c)	Overheads & Contractor's profit @ 12.5 % on (a+b)				169.20

Analysis of Rates (FORMAT F8)

Sl. No.	SDB Sl. No.	MORD Ref No.	DESCRIPTION	Unit	Quantity	Rate	Amount in Rs
		d)	Contractor's profit @ 0% on (a+b+c) Rate per cum = (a+b+c+d) <u>Carriage Cost</u> Stone boulder (25 Kg minimum) Stone spalls				0.00 1522.76 692.55 142.93
			Rate per cum = a+b+c	cum			2358.24
		NOTE :	Nominal excavation required for preparation of bed has been taken into account while making provisions for labour.				
			Total Cost	cum			2358.24
57	14.5	1300	Providing and laying <u>boulder pitching on slopes</u> laid over prepared filter media as per drawing and technical specifications Clause 1302				
		I.	Stone/Boulder Unit = cum				
		a)	Material Stone boulder (25 kg minimum) Stone spalls of minimum 25 mm size	cum cum	1.00 0.20	694.61 694.61	694.61 138.92
		b)	Labour Mate Mason 1st Class Mazdoor (Unskilled)	day day day	0.04 0.35 0.75	437.00 553.00 412.00	17.48 193.55 309.00
		c)	Overheads & Contractor's profit @ 12.5 % on (a+b) Contractor's profit @ 0% on (a+b+c) Rate per cum = (a+b+c+d) <u>Carriage Cost</u> Stone boulder (25 Kg minimum) Stone spalls				169.20 0.00 1522.76 692.55 142.93
			Rate per cum including Carriage	Nos cum	1.00 0.20	692.55 714.67	692.55 142.93
			Total Cost	CUM			2358.24
58	14.6	1300	Providing and laying <u>filter material underneath pitching</u> in slopes complete as per drawing and technical specifications Clause 1302				
		a)	Material Graded stone aggregate of required size	cum	1.20	697.86	837.43
		b)	Labour Mate Mazdoor (Skilled) Mazdoor (Unskilled)	day day day	0.05 0.25 1.02	437.00 521.00 412.00	21.85 130.25 420.24
		c)	Overheads & Contractor's profit @ 12.5 % on (a+b) Contractor's profit @ 0% on (a+b+c) Rate per cum = (a+b+c) <u>Carriage Cost</u> Graded stone aggregate of required size				176.22 0.00 1585.99 692.55
			Rate per cum including Carriage	cum	1.20	692.55	831.06
			Total Cost	Cum			2417.05
59	14.7	1300	Providing and laying flooring laid over cement concrete bedding complete as per drawing and technical specification Clause 1303				
	(III)		Brick on edge laid in cement mortar (1:3) Unit=cum				
		a)	Material Bricks Cement mortar (1:3) [(Rate as in item 11.5 (i)) Cement mortar bedding (1:5) [(Rate as in itm 12.1 (iii))	Nos cum cum	500.00 0.15 0.25	6.12 6299.58 5261.51	3060.00 944.94 1315.38
		b.	Labour Mate Mason 1st Class Mazdoor (Unskilled) Bhisti	day day day day	0.10 0.80 1.60 0.20	437.00 553.00 412.00 412.00	43.70 442.40 659.20 82.40
		c)	Overheads & Contractor's profit @ 12.5 % on (a+b) Contractor's profit @ 0% on (a+b+c) Rate per cum = (a+b+c)				818.50 0.00 7366.52
		d)	Carriage Cost i) Bricks ii) Cement	Nos cum	500.00 0.15	0.74 427.66	370.43 65.86

Analysis of Rates (FORMAT F8)

Sl. No.	SDB Sl. No.	MORD Ref No.	DESCRIPTION	Unit	Quantity	Rate	Amount in Rs
			iii) Sand	cum	0.42	163.83	68.81
			Rate per cum including Carriage = a+b+c+d				7871.61
			Total Cost	cum			7871.61
60	12.9	600	Providing <u>weepholes</u> in brick masonry/stone masonry, plain/reinforced concrete abutment, wing wall, return wall with 100 mm dia AC pipe extending through the full width of the structures with slope of 1(V):20(H) towards drawing face complete as per drawing and technical specification Clauses 614, 709, 1204.3.7 Unit = Nos Taking output = 30 Nos				
		a)	Material AC pipe 100 mm dia including wastage @ 5 per cent. Average length of weep hole is taken as one metre for the purpose of estimating MS clamps Cement mortar 1:3 (For rate refer to item 11.5 I)	m Nos. cum	31.50 30.00 0.05	47.15 84.83 3,714.86	1485.23 2544.90 185.74
		b)	Labour Mate Mason 1st Class Mazdoor (Unskilled)	day day day	0.03 0.50 0.25	437.00 553.00 412.00	13.11 276.50 103.00
		c)	Overheads & Contractor's profit @ 12.5 % on (a+b)				576.06
		d)	Contractor's profit @ 0% on (a+b+c)				0.00
			Cost for 30 Nos = (a+b+c)				5184.54
			Rate per No = (a+b+c)/30= (Total Cost)	no.			172.82
61	11.2	300 & 1200	Filling in foundation trenches as per drawing and technical specification Clause 305.3.9 Sand filling Unit = cum				
		a)	Labour Mate Mazdoor (Unskilled)	day day	0.01 0.30	437.00 412.00	4.37 123.60
		b)	Material Sand (assuming 20 per cent voids)	cum	1.20	145.87	175.04
		c)	Overheads & Contractor's profit @ 12.5 % on (a+b)				37.88
		d)	Contractor's profit @ 0% on (a+b+c)				0.00
			Rate per cum = (a+b+c+d)				340.89
			<u>Carriage Cost</u> Sand (assuming 20 per cent voids)	cum	1.20	163.83	196.60
			Rate per cum = a+b+c+d= (Total Cost)	cum			537.49
62	11.4	800 & 1200 IV.	Providing concrete for plain /reinforced concrete in open foundation complete as per drawings and technical specifications Clause 802,803,1202 & 1203. R.C.C. grade M 20 Unit = cum				
		a)	Material Cement Coarse sand 20 mm aggregate 10 mm aggregate	t cum cum cum	0.35 0.45 0.54 0.36	5,254.40 584.64 1,224.68 602.28	1839.04 263.09 661.33 216.82
		b)	Labour Mate Mason (1st Class) Mazdoor (Unskilled) Bhisti	day day day day	0.08 0.12 1.73 0.27	437.00 553.00 412.00 412.00	34.96 66.36 712.76 111.24
		c)	Machinery Concrete mixer 0.4/0.28 cum capacity	hour	0.40	351.00	140.40
		d)	Formwork @ 4% on (a+b+c)				161.84
		e)	Overheads & Contractor's profit @ 12.5 % on (a+b+c+d)				525.98
		f)	Contractor's profit @ 0% on (a+b+c+d+e)				0.00
			Rate per cum =(a+b+c+d+e+f)				4733.82
			Carriage cost:- Cement Coarse sand Aggregate	t cum cum	0.35 0.45 0.90	427.66 321.66 674.15	149.68 144.75 606.74
			Rate per cum including Carriage				5634.98
			Rate per cum = a+b+c+d+e+f= (Total Cost)	cum			5634.98
63	10.11	1700	Boundary Pillar Reinforced cement concrete M15 grade boundary pillars/local stone of standard design as per IRC:25, fixed in position including finishing and lettering but excluding painting as per drawing and Technical Specification Clause 1704				

Analysis of Rates (FORMAT F8)

Sl. No.	SDB Sl. No.	MORD Ref No.	DESCRIPTION	Unit	Quantity	Rate	Amount in Rs
			Unit = each Taking output = 57 Nos.				
		a)	M-15 grade of Concrete As per Item No. 12.5 of Chapter 12	cum	1.25	5,745.94	7182.43
		b)	Steel reinforcement As per Item No. 12.6 of Chapter 12	kg	79.80	66.47	5303.93
		c)	Excavation in soil As per Item No. 11.1 of Chapter 11	cum	10.72	386.53	4143.60
		d)	lettering, each 10 cm high As per Item No. 10.1 of Chapter 10	per litre	2,280.00	0.73	1664.40
		e)	Transportation and fixing Labour Mate	day	0.57	437.00	249.09
			Mazdoor (Unskilled)	day	14.25	412.00	5871.00
		f)	Machinery Tractor with trolley	hour	6.00	688.00	4128.00
		g)	Material Stone spall	cum	11.97	363.47	4350.74
		h)	Overheads & Contractor's profit @ 12.5 % on (a+b+c+d)				1824.85
		i)	Contractor's profit @ 0% on (a+b+c+d+e+f+g+h)				0.00
			Cost for 57 Nos. boundary pillar = a+b+c+d+e+f+g+h+i				34718.03
			Rate for each boundary pillar = (a+b+c+d+e+f+g+h)/57				609.09
			Rate per cum = a+b+c+d+e= (Total Cost)	cum			609.09
64	2.15	202	Dismantling of Cement Concrete Pavements as per Technical Specification Clause 202. Dismantling of cement concrete pavements by mechanical means using pneumatic tools breaking to pieces not exceeding 0.02 cum in volume and stock piling at designated locations and disposal of dismantled materials upto a lead of 1000 m, stacking serviceable and unserviceable materials separately Unit = cum Taking output = 1 cum				
		a)	Labour Mate	day	0.03	437.00	13.11
			Mazdoor (Semi-skilled)	day	0.50	428.00	214.00
			Mazdoor (Unskilled)	day	0.50	412.00	206.00
		b)	Machinery Air compressor 210 cfm with two leads for pneumatic cutters / hammers @ 1 cum per hour	hour	1.00	455.00	455.00
			Tractor with trolley	hour	0.40	688.00	275.20
			Joint Cutting Machine with 2-3 blades	hour	1.00	357.00	357.00
		c)	Overheads & Contractor's profit @ 12.5 % on (a+b)				190.04
		d)	Contractor's profit @ 0% on (a+b+c)				0.00
			Rate per cum = a+b+c+d				1710.35
			Rate per Cum	Cum			1710.35
65	11.9	307	Planting of Trees and their Maintenance for one Year Planting of trees by the road side (Avenue trees) in 0.60 m dia holes, 1 m deep dug in the ground, mixing the soil with decayed farm yard/sludge manure, planting the saplings, backfilling the trench, watering, fixing the tree guard and maintaining the plants for one year Unit = each Taking output = 10 trees				
		b)	Labour Mate	day	1.70	437.00	742.90
			Mazdoor for planting	day	2.00	412.00	824.00
			Mazdoor for maintenance for one year	day	15.00	412.00	6180.00
		b)	Machinery Water tanker 6 KL capacity	hour	2.00	764.00	1528.00
		c)	Material Sapling 2 m high 25 mm dia	Each	10.00	28.64	286.40
			Farm yard manure	Cum	0.94	552.10	518.97
			Pesticide	Kg	0.50	89.55	44.78
			Cost of water	Kl	12.00	61.40	736.80
		d)	Overheads & Contractor's profit @ 12.5 % on (a+b+c+d)				1357.73
		e)	Contractor's profit @ 0% on (a+b+c+d)				0.00
			Cost for 10 trees = a+b+c+d+e				12219.58
			Rate per trees = (a+b+c+d+e)/10				1221.96
			Rate per tree = a+b+c+d+e=	cum			1221.96

Analysis of Rates (FORMAT F8)

Sl. No.	SDB Sl. No.	MORD Ref No.	DESCRIPTION	Unit	Quantity	Rate	Amount in Rs
66	11.14	New	Half brick circular tree guard, in 2nd class brick, internal diametre 1.25 metres, and height 1.2 metres, above ground and 0.20 metre below ground, bottom two courses laid dry, and top three courses in cement mortar 1:6 (1 cement 6 sand) and the intermediate courses being in dry honey comb masonry, as per design complete Unit = each Taking output =one trees				
		a)	Labour				
			Mate	day	0.050	437.00	21.85
			Mason	day	0.250	553.00	138.25
			Mazdoor	day	0.250	412.00	103.00
		b)	Material				
			Brick 2nd class including carriage	Each	230.00	4.71	1083.76
			Cement mortar 1:6	Cum	0.025	3,236.44	80.91
		c)	Overheads & Contractor's profit @ 12.5 % on (a+b+c+d)				178.47
		d)	Contractor's profit @ 0% on (a+b+c)				0.00
			Rate per tree Guard = a+b+c+d				1606.24
			Rate per tree = a+b+c+d+e=				1606.24
67	2.15	202	Dismantling of Cement Concrete Pavements as per Technical Specification Clause 202. Dismantling of cement concrete pavements by mechanical means using pneumatic tools breaking to pieces not exceeding 0.02 cum in volume and stock piling at designated locations and disposal of dismantled materials upto a lead of 1000 m, stacking serviceable and unserviceable materials separately Unit = cum Taking output = 1 cum				
		a)	Labour				
			Mate	day	0.03	437.00	13.11
			Mazdoor (Semi-skilled)	day	0.50	428.00	214.00
			Mazdoor (Unskilled)	day	0.50	412.00	206.00
		b)	Machinery				
			Air compressor 210 cfm with two leads for pneumatic cutters / hammers @ 1 cum per hour	hour	1.00	455.00	455.00
			Tractor with trolley	hour	0.40	688.00	275.20
			Joint Cutting Machine with 2-3 blades	hour	1.00	357.00	357.00
		c)	Overheads & Contractor's profit @ 12.5 % on (a+b)				190.04
		d)	Contractor's profit @ 0% on (a+b+c)				0.00
			Rate per cum = a+b+c+d				1710.35
			Rate per Cum	Cum			1710.35
68	8.29 RCD		Cable Duct Across the Road Providing and laying of a reinforced cement concrete pipe duct,300 mm dia, across the road (new construction), extending from drain to drain in cuts and toe of slope to toe of slope in fills,constructing head walls at both ends, providing a minimum fill ofgranular material over top and sides of RCC pipe as per IRC:981997,bedded on a 0.3 m thick layer of granular material free of rock pieces, outer to outer distance of pipe at least half dia of pipe subject to minimum 450 mm in case of double and triple row ducts, joints to be made leak proof, invert level of duct to be above higher than ground level to prevent entry of water and dirt, all as per IRC: 98 - 1997 and approved drawings. Unit = Rm Taking output = 20 m				
		a)	Labour				
			Mate	day	0.500	437.00	218.50
			Mazdoor (skilled)	day	0.250	521.00	130.25
			Mazdoor (Unskilled)	day	1.000	412.00	412.00
		b)	Material				
			Reinforced Cement Concrete pipe 300 mm dia	Rm	20.000	613.10	12262.00
			Local Sand for bedding and sides of pipe	Cum	7.200	584.64	4209.41
			Collar for joints 300 mm dia	Each	9.000	118.00	1062.00
			Cement mortar 1:3 for joints	Cum	0.020	3714.86	74.30
		c)	Machinery				
			Tractor-trolley	Hour	0.500	688.00	344.00
		d)	Overheads & Contractor's profit @ 12.5 % on (a+b+c)				2339.06
		e)	Contractor's profit @ 0% on (a+b+c+d)				0.00
			Cost for 20 Rm = a+b+c+d+e				21051.51
			Rate per Rm = a+b+c+d+e)/20 Sub Total				1052.58
			Carriage Cost				
			Local Sand	Cum	0.36000	163.83	58.98
			Rate per Rm = a+b+c+d+e)/20 Final				1111.55
			Total Cost including	Rm			1111.55

F-8 (Rate Maintainance)

Sr. No.	Ref to MORD Sp.	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
15.1	1900	Restoration of Rain Cuts				
		i) Restoration of rain cuts with soil, moorum gravel or a mixture of these, clearing the loose soil, benching for 300mm width laying fresh material in layers not exceeding 250 mm and compaction with plate compactor or power rammer to restore the original alignment, level and slopes as per drawings and technical specifications Clause 1902				
		A. Manual Means				
		Unit = cum				
		Taking output = 10 cum				
		a) Labour				
		Mate	day	0.24	437.00	104.88
		Mazdoor (Unskilled)	day	6.00	412.00	2,472.00
		b) Machinery				
		Plate compactor	hour	3.00	415.00	1,245.00
		c) Materials				
		Compensation for earth Taken from private land	cum	7.50	35.25	264.38
		d) Overheads & Contractor's profit @ 12.5 % on (a+b+c)				510.78
		e) Contractor's profit @ 0% on a+b+c+d				0.00
		Cost for 10 cum = a+b+c+d+e				4,597.04
		Rate per cum = a+b+c+d/10				459.70
			Total Cost	cum		459.70
15.2	1900	1. Maintenance of Earthen shoulder (filling with fresh selected soil)				
		Making up loss of material/irregularities on shoulders to the design level by adding fresh approved selected soil and compacting it with appropriate equipment at OMC upto a lead of 1000 m as per technical specification Clause 1903				
		Unit = sqm				
		Taking output = 100 sqm				
		Assuming average thickness of filling to be 150 mm				
		Quality of fresh material = 15 cum				
		a. Labour				
		Mate	day	0.20	437.00	87.40
		Mazdoor (Unskilled)	day	5.00	412.00	2,060.00
		b. Machinery				
		Hydraulic Excavator 0.9 cum bucket capacity @ 60 cum	hour	0.25	2,288.00	572.00
		Tipper 5.5 cum	hour	0.68	1,441.00	979.88
		Add 10% cost of transportation to cover cost of loading and unloading				97.99
		Plate compactor @ 25 sqm per hour	hour	4.00	415.00	1,660.00
		c. Material				
		Compensation of earth	cum	15.00	35.25	528.75
		d. Overheads & Contractor's profit @ 12.5 % on (a+b+c)				748.25
		e. Contractor's profit @ 0% on a+b+c+d				0.00
		Cost for 100 sqm = a+b+c+d+e				6,734.27
		Rate per sqm = (a+b+c+d+e)/100				67.34
			Total Cost	Sqm		67.34

F-8 (Rate Maintainance)

Sr. No.	Ref to MORD Sp.	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
2. Maintenance of Earthen shoulder (stripping of excess soil) Stripping excess soil from the shoulder surface to achieve the approved level and compacting with plate compactor at OMC as per drawings and Technical Specification Clause 1903 Unit = sqm Taking output = 100 sqm Assuming height of stripping as 75 mm Quantity of earth cutting involved = 7.5 cum						
a. Labour						
		Mate	day	0.10	437.00	43.70
		Mazdoor (Unskilled)	day	2.50	412.00	1,030.00
b. Machinery						
		Plate compactor	hour	4.00	415.00	1,660.00
c. Overheads & Contractor's profit @ 12.5 % on (a+b+c)						341.71
d. Contractor's profit @ 0% on a+b+c+d						0.00
Cost for 100 sqm = a+b+c+d						3,075.41
Rate per sqm = a+b+c+d/100						30.75
Total Cost Sqm						30.75
<i>Note: Earth stripped from earthen shoulders to be used as shoulders or dumped on the side slopes locally for disposal.</i>						
15.3	1900	Maintenace of bituminous surface road				
		i. Repair to pot holes by removal of failed material, trimming the sides to vertical and levelling the bottom, cleaning the same with compressed air or any appropriate method filled with 75mm B.M, applying bitumen emulsion prime coat at the bottom and bitumen emulsion tack coat on sides and on bottom as per technical specifications Clauses 502 and 503. Unit = cum Taking output = $187.5 \times 0.075 = 14.06$ cum = (30.94 Tonne) (5% area of one km)				
		a) Labour				
		Mate	day	0.80	437.00	349.60
		Mazdoor (Unskilled)	day	20.00	412.00	8,240.00
		b) Machinery				
		Jack hammer 25 kg with tractor	hour	4.00	1,289.30	5,157.20
		Compressor 210 cfm with tractor	hour	2.00	455.00	910.00
		Emulsion pressure distributor	hour	4.00	1,362.00	5,448.00
		Mixall 6/10 t capacity / Mini hot mix plant	hour	4.00	3,702.00	14,808.00
		Three wheeled 80-100 kN Static Roller	hour	4.00	1,612.00	6,448.00
		c) Material				
		Primer with bitumen emulsion @ 9 kg/10 sqm 187.5x9 = 168.75 kg.	Tonne	0.168	54,204.35	9,106.33
		Tack coat with bitumen emulsion @ 3.0 kg/ 10 sqm				
		Bottom = 187.5				
		Sides = 28.27	Tonne	0.064	53,071.35	3,396.57
		Total = 215.77				
		Bitumen for BM @ 3.5% by weight of mix = $30.94 \times 3.5 / 100 = 1.082$	Tonne	1.082	54,402.60	58,863.61
		Weight of mix (BM) 14.06 cum = (30.94 tonne)				
		Weight of Bitumen = 1.082				
		Weight of aggregate $30.94 - 1.082 = 29.86$				
		Taking density of aggregate 1.5 t per cum				
		Volume of aggregate $29.86 / 1.5 = 19.90$ cum				
		Grading (1) (40 mm nominal size)				

F-8 (Rate Maintainance)

Sr. No.	Ref to MORD Sp.	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
		37.5 - 25 mm 15%	cum	2.985	1,115.24	3,328.99
		25 - 10 mm 45%	cum	8.96	913.48	8,180.21
		10 - 5 mm 25%	cum	4.975	602.28	2,996.34
		5 mm and below 15%	cum	2.99	434.45	1,296.83
		d) Overheads & Contractor's profit @ 12.5 % on (a+b+c)				16,066.21
		e) Contractor's profit @ 0% on a+b+c+d				0.00
		Cost of 14.06 cum = a+b+c+d+e				144,595.90
		Rate per cum = a+b+c+d+e/14.06				10,284.20
		Carriage Cost				
		Bitumin Emulsion	tonne	0.0165007	869.21	14.34
		Bitumin 80/100	tonne	0.0769559	869.21	66.89
		Aggregate	Cum	1.4153627	1187.36	1680.55
		Rate per cum with carriage				12045.98
		Total Cost	Cun			12,045.98
ii.		Patch repair on already filled pot holes with 75 mm BM with Mix Seal Surfacing as per drawings and technical specification Clause 1904.2				
		Unit = sqm				
		Takign output = 200 sqm				
		a) Labour				
		Mate	day	0.64	437.00	279.68
		Mazdoor (Unskilled)	day	16.00	412.00	6,592.00
		b) Machinery				
		Mixall 6/10 tonne (Mini Hot Mix Plant)	hour	2.00	51,313.00	102,626.00
		Bitumen pressure distributor	hour	1.00	1,362.00	1,362.00
		Three wheeled 80-100 kN Static Roller	hour	4.00	1,612.00	6,448.00
		c) Material				
		Bitumen for Mix Seal Surfacing @ 19 kg/10 sqm	tonne	0.380	54,402.60	20,672.99
		200x19/10 =380 kg				
		Bitumen for tack coat @ 2 kg per 10 sqm 200 x 2 / 10 = 40 kg	tonne	0.04	53,071.35	2,122.85
		Crushed stone aggregate @ 0.27 cum per 10 sqm	cum	5.40	913.48	4,932.79
		= 200 x 0.27 / 10 = 5.4 cum				
		d) Overheads & Contractor's profit @ 12.5 % on (a+b+c)				18,129.54
		e) Contractor's profit @ 0% on a+b+c+d				0.00
		Cost of 200 sqm = a+b+c+d+e				163,165.85
		Rate/sqm = a+b+c+d+e/200				815.83
		Carraige				
		Bitumen Emulsion	Ton	0.0002	869.21	0.17
		Bitumin 80/100	Ton	0.0019	869.21	1.65
		Aggregate	cum	0.027	1187.36	32.06
		Rate per cum with carriage				849.71
		Total Cost	Sqm			849.71

F-8 (Rate Maintainance)

Sr. No.	Ref to MORD Sp.	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
		iii. Repair to pot holes and removal of loose material, trimming of sides, cleaning of surface by providing tack coat, Mix Seal Surfacing specification Clause 1904.2 Unit = sqm Taking output = 200 sqm				
		a) Labour				
		Mate	day	0.80	437.00	349.60
		Mazdoor (Unskilled)	day	20.00	412.00	8,240.00
		b) Machinery				
		Air compressor 210 cfm with tractor	hour	2.00	455.00	910.00
		Bitumen pressure distributor	hour	1.00	1,362.00	1,362.00
		Mixall 6/10t capacity (Mini Hot Mix Plant)	hour	2.00	51,313.00	102,626.00
		Three wheeled 80-100 kN Static Roller	hour	4.00	1,612.00	6,448.00
		c) Material				
		Bitumen for tack coat @ 3kg per 10 sqm 200 x 3 / 10 = 60 kg	tonne	0.060	53,071.35	3,184.28
		Bitumen for Mix Seal Surfacing @ 19 kg per 10 sqm = 200 x 14.6 / 10 = 380 kg	tonne	0.38	54,402.60	20,672.99
		Crushed stone aggregate @ 0.27 cum per 10 sqm = 200 x 0.27 / 10 = 5.4 cum	cum	5.40	913.48	4,932.79
		d) Overheads & Contractor's profit @ 12.5 % on (a+b+c)				18,590.71
		e) Contractor's profit @ 0% on a+b+c+d				0.00
		Cost for 200 sqm = a+b+c+d+e				167,316.37
		Rate per sqm = a+b+c+d+e/200				836.58
		Carriage Cost				
		Bitumin Emulsion	tonne	0.0003	869.21	0.26
		Bitumin 80/100	tonne	0.0019	869.21	1.65
		Aggregate	Cum	0.027	1187.36	32.06
		Rate per cum with carriage				870.55
		Total Cost	Sqm			870.55
15.6	1900	Maintenance of Drains				
		The maintenance of drains include erosion, repair, clearing, cleaning, reshaping, regrading, deepening of side drains as well as catch water drains as per technical specification Clause 1907.				
		Unit - Per Metre				
		Taking output one km = 1000 metre				
		a) Labour				
		Mate	day	0.32	437.00	139.84
		Mazdoor (Unskilled)	day	8.00	412.00	3,296.00
		b) Overheads & Contractor's profit @ 12.5 % on (a)				429.48
		c) Contractor's profit @ 0% on a+b				0.00
		Cost for 1000 metre = a+b+c				3,865.32
		Rate per Metre = a+b+c/1000				3.87
		Total Cost per Metre				3.87

F-8 (Rate Maintainance)

Sr. No.	Ref to MORD Sp.	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
15.7	1900	(I) Maintenance of Culverts Maintenance of Hume pipe Culvert by way of Clearing, Cleaning, Erosion repair, repairs to cracks, parapet wall and protection work as per drawing and technical specification Clause 1908 Unit = One No. Hume pipe (1000 mm dia) Taking output = One No.H.P. Culvert				
		a) Labour				
		Mate	day	0.10	437.00	43.70
		Mazdoor (Unskilled)	day	1.00	412.00	412.00
		Mason 2nd Class	day	1.40	494.00	691.60
		b) Material				
		Cement, Sand, Brick, Boulder etc.	L.S			200.00
		c) Overheads & Contractor's profit @ 12.5 % on (a+b)				168.41
		d) Contractor's profit @ 0% on a+b+c				0.00
		Cost for one No. Hume pipe culvert = a+b+c+d				1,515.71
		Rate per hume pipe Culvert = a+b+c+d				1,515.71
Total Cost Per hume pipe Culvert						1,515.71
		(II) Maintenance of Culverts Slab type Maintenance of Slab type Culverts by way of clearing, Cleaning, Erosion repair, repairs to cracks, parapet walls and Protection works as per drawing and technical specification Clasue 1908 Unit = One No. Culvert (2 m span) Taking output = one No. Slab Culvert				
		a) Labour				
		Mate	day	0.20	437.00	87.40
		Mazdoor (Unskilled)	day	4.00	412.00	1,648.00
		Mason 2nd Class	day	1.00	494.00	494.00
		b) Material				
		Cement, Sand, Bricks, Stone Boulder etc.	L.S			500.00
		c) Overheads & Contractor's profit @ 12.5 % on (a+b)				341.18
		d) Contractor's profit @ 0% on a+b+c				0.00
		Cost for One Slab Culverts =a+b+c+d				3,070.58
		Rate per Culvert = a+b+c+d				3,070.58
Total Cost Per Culvert						3,070.58
15.9	1900	Maintenance of Road Signs Maintenance of road signs by way of cleaning and repainting of mandatory / regulatory / cautionary / informatory and place identifications sign board as perdrawings and technical specification Clause 1910 Unit = 1 km Taking output = one km All types of signs in one Km				
		a) Labour				
		Mate	day	0.09	437.00	39.33
		Mazdoor (Unskilled)	day	2.00	412.00	824.00
		Painter 1st Class	day	0.125	523.00	65.38
		b) Material				
		Synthetic Enamel Paint, Engineering grade tape, welding machine etc. (LS Rs.300)	LS			300.00
		c) Overheads & Contractor's profit @ 12.5 % on (a+b)				153.59
		d) Contractor's profit @ 0% on a+b+c				0.00
		Cost for one Km = a+b+c+d				1,382.29
		Rate per km = a+b+c+d				1,382.29
Total Cost Per Km						1,382.29

F-8 (Rate Maintainance)

Sr. No.	Ref to MORD Sp.	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
15.10	1900	Maintenance of steel and RCC Railing				
		(ii) Repair of RCC railing to bring it to the original shape, cleaning and repainting as per drawings and technical specification Clause 1911				
		RCC Railing				
		Unit = running metre				
		Taking output = 1 metre				
		It is assumed that damage is to the extent of 10%				
		a) Labour				
		Mate	day	0.012	437.00	5.24
		Mazdoor (Unskilled)	day	0.20	412.00	82.40
		Mason 1st Class	day	0.10	553.00	55.30
		b) Materials				
		M 25 grade cement concrete				
		Rate as per item no. 13.1 (III) of Chapter 13	cum	0.10	6,739.31	673.93
		Steel bars reinforcement				
		Rate as per item no.13.2 of Chapter 13	t	0.013	67,941.37	883.24
		c) Overheads & Contractor's profit @ 12.5 % on (a+b)				212.51
		d) Contractor's profit @ 0% on a+b+c				0.00
		Rate per metre = a+b+c+d				1,912.63
Total Cost Per metre						1,912.63
15.11	1900	Maintenance of 200 metre and km stones				
		Maintenance of 200 metre km stone by way of refitting of tilted stones repairing with cement mortar, cleaning, repairing and lettering on 200 metre km stone and 5 th km stone as per drawing and technical specification Clause 1912				
		Unit = 1 km				
		Assuming 1 km stone, 4 nos 200 metre stone and 1/5th 5km stone				
		(i) Painting two coats with synthetic enamel paint				
		200 m stone 4 nos = 0.760 sqm.				
		One km stone = 0.815 sqm.				
		5th km stone 1x1/5 = 0.320 sqm.				
		Total = 1.895 sqm.				
		As per item No. 10.5 of chapter 10	sqm	1.895	128.82	244.11
		(ii) Printing letters and figures of any shade with synthtic enamel paint of any approved colour to give an even shade				
		200 m stone 4 Nos. = 40 per cm height per letter				
		One no km stone = 120 per cm height per letter				
		5th km stones 1/5th = 60 per cm height per letter				
		Total = 220 per cm height per letter				
		Rate as per item no 10.1 of chapter 10	per cm	220.00	0.73	160.60
		a) Labour				
		Mate	day	0.024	437.00	10.49
		Mazdoor	day	0.50	412.00	206.00
		Mason 1st Class	day	0.10	553.00	55.30
		b) Materials				
		Cement, sand, aggregates etc.	LS			100.00
		(LS = Rs.100.00)				
		c) Overheads & Contractor's profit @ 12.5 % on (a+b)				97.06
		d) Contractor's profit @ 0% on a+b+c				0.00
		Cost for one km = (i+ii+a+b+c+d)				873.56
		Rate per/km = (i+ii+a+b+c+d)				873.56
Total Cost Per Km						873.56

F-8 (Rate Maintainance)

Sr. No.	Ref to MORD Sp.	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
15.12	1900	Cutting of branches of trees shrubs and trimming of grass and weeds				
		(i) Cutting of branches of trees and shrubs from the road way or with in R.O.W including disposal of wood and leaves to suitable location as per technical specification Clause 1914 Unit = one tree Taking output = 10 trees of 900 mm average girth				
		a) Labour				
		Mate	day	0.12	437.00	52.44
		Mazdoor (Skilled)	day	1.00	521.00	521.00
		Mazdoor (Unskilled)	day	2.00	412.00	824.00
		b) Overheads & Contractor's profit @ 12.5 % on (a)				174.68
		c) Contractor's profit @ 0% on a+b				0.00
		Cost for 10 trees = (a+b+c)				1,572.12
		Rate per tree = (a+b+c)/10				157.21
Total Cost Per tree						157.21
		(ii) Cutting of shrubs from the road way or with in R.O.W and disposal of shrubs to suitable locations as per technical specifications Clause 1914 Unit=Each Taking output = 100 nos shrubs				
		a) Labour				
		Mate	day	0.08	437.00	34.96
		Mazdoor (Unskilled)	day	2.00	412.00	824.00
		b) Overheads & Contractor's profit @ 12.5 % on (a)				107.37
		c) Contractor's profit @ 0% on a+b				0.00
		Cost for 100 shurbs = a+b+c				966.33
		Rate per shurb = a+b+c/100				9.66
Total Cost Per shurb						9.66
		(iii) Trimming of grass and weeds from the shoulders/berms and disposing off the same to suitable locations as per technical specifications Clause 1914 Unit = sqm Taking output = 1500 sqm				
		a) Labour				
		Mate	day	0.40	437.00	174.80
		Mazdoor (Unskilled)	day	10.00	412.00	4,120.00
		b) Overheads & Contractor's profit @ 12.5 % on (a)				536.85
		c) Contractor's profit @ 0% on a+b				0.00
		Cost for 1500 sqm = a+b+c				4,831.65
		Rate per sqm = a+b+c/1500				3.22
Total Cost Per sqm						3.22

F-8 (Rate Maintainance)

Sr. No.	Ref to MORD Sp.	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
15.13	1900	White washing of parapet walls of CD work and tree trunks White washing two coats on parapet walls and tree trunks including preparation of surface by cleaning scraping etc. as per technical specifications Clause 1915 Unit = sqm Taking output = 9 sqm				
		a) Labour				
		Mate	day	0.01	437.00	4.37
		Mazdoor (Unskilled)	day	0.143	412.00	58.86
		White washer	day	0.143	521.00	74.43
		b) Materials				
		Lime	quintel	0.045	315.00	14.18
		Fevicol adhesive	kg	0.10	125.00	12.50
		Indigo	kg	0.013	416.00	5.41
		c) Overheads & Contractor's profit @ 12.5 % on (a+b)				21.22
		d) Contractor's profit @ 0% on a+b+c				0.00
		Cost for 9 sqm = a+b+c+d				190.96
		Rate per sqm = a+b+c+d/9				21.22
Total Cost Per sqm						21.22
307	New	Maintenance of Already Planted Trees for Second Year Maintenance of trees by the road side (Avenue trees) by mixing the soil with decayed farm yard/sludge manure, watering, fixing the tree guard and maintaining the plants for additional four years. Unit = Each Taking output = 10 trees				
		a) Labour				
		Mazdoor for maintenance of already Planted Trees	day	15.00	412.00	6,180.00
		b) Machinery				
		Water tanker 6 KL capacity	hour	2.000	764.00	1,528.00
		c) Materials				
		Farm yard manure	cum	0.940	552.10	518.97
		Pesticide	kg	0.50	89.55	44.78
		Cost of water	KL	12.000	61.40	736.80
		d) Overheads & Contractor's profit @ 12.5 % on (a+b+c)				1,126.07
		e) Contractor's profit @ 0% on a+b+c+d				0.00
		Cost for 10 trees = a+b+c+d+e				10,134.62
		Rate per trees = (a+b+c+d+e)/10				1,013.46
Total Cost Per trees						1,013.46
307	New	Maintenance of Already Planted Trees for Third Year Maintenance of trees by the road side (Avenue trees) by mixing the soil with decayed farm yard/sludge manure, watering, fixing the tree guard and maintaining the plants for additional four years. Unit = Each Taking output = 10 trees				
		a) Labour				
		Mazdoor for maintenance of already Planted Trees	day	12.00	412.00	4,944.00
		b) Machinery				
		Water tanker 6 KL capacity	hour	2.000	764.00	1,528.00
		c) Materials				
		Farm yard manure	cum	0.940	552.10	518.97
		Pesticide	kg	0.50	89.55	44.78
		Cost of water	KL	12.000	61.40	736.80
		d) Overheads & Contractor's profit @ 12.5 % on (a+b+c)				971.57
		e) Contractor's profit @ 0% on a+b+c+d				0.00
		Cost for 10 trees = a+b+c+d+e				8,744.12
		Rate per trees = (a+b+c+d+e)/10				874.41
Total Cost Per trees						874.41

F-8 (Rate Maintainance)

Sr. No.	Ref to MORD Sp.	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
307	New	Maintenance of Already Planted Trees for Fourth Year Maintenance of trees by the road side (Avenue trees) by mixing the soil with decayed farm yard/sludge manure, watering, fixing the tree guard and maintaining the plants for additional four years. Unit = Each Taking output = 10 trees				
		a) Labour				
		Mazdoor for maintenance of already Planted Trees	day	10.00	412.00	4,120.00
		b) Machinery				
		Water tanker 6 KL capacity	hour	2.000	764.00	1,528.00
		c) Materials				
		Farm yard manure	cum	0.940	552.10	518.97
		Pesticide	kg	0.50	89.55	44.78
		Cost of water	KL	12.000	61.40	736.80
		d) Overheads & Contractor's profit @ 12.5 % on (a+b+c)				868.57
		e) Contractor's profit @ 0% on a+b+c+d				0.00
		Cost for 10 trees = a+b+c+d+e				7,817.12
		Rate per trees = (a+b+c+d+e)/10				781.71
Total Cost Per trees						781.71
307	New	Maintenance of Already Planted Trees for Fifth Year Maintenance of trees by the road side (Avenue trees) by mixing the soil with decayed farm yard/sludge manure, watering, fixing the tree guard and maintaining the plants for additional four years. Unit = Each Taking output = 10 trees				
		a) Labour				
		Mazdoor for maintenance of already Planted Trees	day	10.00	412.00	4,120.00
		b) Machinery				
		Water tanker 6 KL capacity	hour	2.000	764.00	1,528.00
		c) Materials				
		Farm yard manure	cum	0.940	552.10	518.97
		Pesticide	kg	0.50	89.55	44.78
		Cost of water	KL	12.000	61.40	736.80
		d) Overheads & Contractor's profit @ 12.5 % on (a+b+c)				868.57
		e) Contractor's profit @ 0% on a+b+c+d				0.00
		Cost for 10 trees = a+b+c+d+e				7,817.12
		Rate per trees = (a+b+c+d+e)/10				781.71
Total Cost Per trees						781.71
10.10	3005.2	RCD Repair of old joints Sealant Removal of existing sealant and re sealing of construction, longitudinal or expansion joint in concrete pavement with fresh sealant material Unit = running metre Taking output = 10 metres				
		a) Labour				
		Mate	day	0.040	437.00	17.48
		Mazdoor (Unskilled)	day	0.500	412.00	206.00
		b) Machinery				
		Air compressor 210 cfm with tractor	hour	0.050	455.00	22.75
		c) Material				
		Primer	Kg	0.250	523.37	130.84
		Sealant	Kg	1.000	30.54	30.54
		d) Overheads & CP @ 12.5% on (a+b+c)				50.95
		Cost for 10 sqm = a+b+c+d+e				458.56
		Rate per sqm = a+b+c+d+e/10				45.86
Total Cost Per sqm						45.86
10.6	3004.3.3	RCD Crack Filling Filling of crack using slow-curing bitumen emulsion and applying dust in case crack are wider than 3mm. Unit = running metre Taking output = 500 metres				
		a) Labour				

F-8 (Rate Maintainance)

Sr. No.	Ref to MORD Sp.	Description	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
		Mate	day	0.040	437.00	17.48
		Mazdoor (Unskilled)	day	1.000	412.00	412.00
	b)	Material				
		Slow-curing bitumen emulsion	Kg	33.000	43.00	1,419.00
		Stone crusher dust	Cum	0.020	266.62	5.33
	c)	Overheads & CP @12.5%on (a+b)				231.73
		Cost for 500 sqm = a+b+c+d				2,085.54
		Rate per sqm = a+b+c+d/500				4.17
Total Cost Per sqm						4.17

MUKHYA MANTRI GRAM SAMPRAK YOJNA, AWASHES (NDB)
With Respect to Revised Core Network

Name of Road: Chandisthan Se Mahadevpur TO Tarapur

Link No: 27227

District: Gaya

Length: 2 Km

Package No:

Block: Gurua

Sl.No.	Description	Yes	No	
1	The Proposed road is part of revised Core Network and revised State CNCPL	√		
2	The population of the connected village or Tola is ≥ 1000			
3	Certified that the land width for the road is available and no additional width is required.	√		
4	Certified that the land width for the road is available and no additional width is required.	√		
5	The proposed alignment provides only single connectivity to the Village or Tola.	√		
6	The length of the proposed alignment will provide all weather connectivity to village or tola	√		
7	Certified that no forest land is involved along the entire roadway.	√		
8	Certified that the Alignment has been verified at site & does not require LA.	√		

JE/AE

Executive Engineer
(Head of PIU)

Remarks if any:

Dated: _____

MUKHYA MANTRI GRAM SAMPRAK YOJNA, AWASHES (NDB)
YEAR 24-25

CERTIFICATE OF GROUND VERIFICATION FROM EXECUTIVE ENGINEER

1. a) Certified that the land width for the Road is available and that no additional land is required ; or
b) Certified that the land width for the road is likely to be available as certified by Panchayats.
2. a) Certified that no forest land is involved along the entire roadway ; or
b) Certified that the case for permission under forest conservation Act has been moved to the Forest department on (Date).
- 3 Certified that DPR has been checked at site by

A.E.
on date.....

E.E

S.E

(DPR wise summary in Formate F9-B)

Executive Engineer
Work Division.....

FORMAT F-9B

LIST OF DPR's VERIFIED ON GROUND

Sl. No.	DPRs seen on Ground By	DPR Nos.	Percentage of Total Number
1	A.E.		
2	E.E		
3	S.E.		

Executive Engineer
Work Division.....

MUKHYA MANTRI GRAM SAMPRAK YOJNA, AWASHES (NDB)
YEAR 24-25
FIELD DATA SHEET FOR TRAFFIC SURVEY (BOTH DIRECTIONS)

Day-1

Name of Road Chandisthan Se Mahadevpur TO Tarapur

Date: 17 - 01 - 2025

Block Gurua
District Sherghati

Hour	Vehicle Class													
	Animal Drawn Vehicles	Cycles	Cycle Rickshaws	Motorised two- wheelers	Cars, Jeeps, Vans, Three- wheelers	Agricultural Tractors/ Trailers		Light Commercial Vehicles		Trucks		Buses		Remarks
						Laden	Unladen	Laden	Unladen	Laden	Unladen	Laden	Unladen	
From 7.00 Hrs To 9.00 Hrs	11	33	9	18	10	12	5	6	5	1	1	-	-	
From 9.00 Hrs To 13.00 Hrs	11	36	7	19	9	11	3	3	6	2	0	0	-	
From 13.00 Hrs To 18.00 Hrs	19	35	11	21	6	10	2	2	5	1	1	0	-	
From 18.00 Hrs To 20.00 Hrs	17	33	12	17	9	5	3	3	6	2	1	-	-	
From 20.00 Hrs To 24.00 Hrs	-	-	-	-	-	9	2	1	5	1		-	-	
From 24.00 Hrs To 7.00 Hrs	12	-	-	8	6	2	1	1	1		-	-	-	
Total for Day	70	137	39	83	40	49	16	16	28	7	3	0	0	

MUKHYA MANTRI GRAM SAMPRAK YOJNA, AWASHES (NDB)

FIELD DATA SHEET FOR TRAFFIC SURVEY (BOTH DIRECTIONS)

Day-2

Name of Road Chandisthan Se Mahadevpur TO Tarapur
Block Gurua
District Sherghati

Date: 18 - 01 - 2025
Link route no. where Traffic Survey conducted = 27227

Hour	Vehicle Class													
	Animal Drawn Vehicles	Cycles	Cycle Rickshaws	Motorised two-wheelers	Cars, Jeeps, Vans, Three-wheelers	Agricultural Tractors/ Trailers		Light Commercial Vehicles		Trucks		Buses		Remarks
						Laden	Unladen	Laden	Unladen	Laden	Unladen	Laden	Unladen	
From 7.00 Hrs To 9.00 Hrs	15	35	10	16	15	15	4	2	5	1	0	0	-	
From 9.00 Hrs To 13.00 Hrs	18	45	9	20	8	11	5	3	6	2	1	-	-	
From 13.00 Hrs To 18.00 Hrs	9	42	7	15	9	10	6	2	3	1	0	0	-	
From 18.00 Hrs To 20.00 Hrs	11	27	8	14	6	14	5	1	5	0	1	-	-	
From 20.00 Hrs To 24.00 Hrs	-	-	-	-	-	6	9	1	3	1	1	-	-	
From 24.00 Hrs To 7.00 Hrs	10	-	-	8	4	1	2	3	-		-	-	-	
Total for Day	63	149	34	73	42	57	31	12	22	5	3	0	0	

MUKHYA MANTRI GRAM SAMPRAK YOJNA, AWASHES (NDB)

FIELD DATA SHEET FOR TRAFFIC SURVEY (BOTH DIRECTIONS)

Day-3

Name of Road Chandisthan Se Mahadevpur TO Tarapur
Block Gurua
District Sherghati

Date: 12 - 12 - 2023
Link route no. where Traffic Survey conducted = 27227

Hour	Vehicle Class													
	Animal Drawn Vehicles	Cycles	Cycle Rickshaws	Motorised two-wheelers	Cars, Jeeps, Vans, Three-wheelers	Agricultural Tractors/ Trailers		Light Commercial Vehicles		Trucks		Buses		Remarks
						Laden	Unladen	Laden	Unladen	Laden	Unladen	Laden	Unladen	
From 7.00 Hrs To 9.00 Hrs	14	34	5	18	8	1	0	5	5	0	1	0	-	
From 9.00 Hrs To 13.00 Hrs	12	36	9	21	8	5	2	6	3	2	-	-	-	
From 13.00 Hrs To 18.00 Hrs	5	38	4	16	5	6	1	5	5	1	1	0	-	
From 18.00 Hrs To 20.00 Hrs	7	35	4	15	6	3	5	6	3	2	2	-	-	
From 20.00 Hrs To 24.00 Hrs	-	-	-	-	-	3	6	5	2	2	1	-	-	
From 24.00 Hrs To 7.00 Hrs	8	-	-	9	4	4	1	1	-	1	-	-	-	
Total for Day	46	143	22	79	31	22	15	28	18	8	5	0	0	

MUKHYA MANTRI GRAM SAMPRAK YOJNA, AWASHES (NDB)
SUMMARY OF 7-DAY COUNTS

Name of Road Chandisthan Se Mahadevpur TO Tarapur
Block Gurua
District Sherghati
State Bihar

DAY		Vehicle Class													Total
		Cars, Jeeps, Vans, Three	Motoris ed two- wheele rs	Light Commercial Vehicles		Trucks		Agricultural Tractors/ Trailers		Buses		Cycles	Cycle Rickshaws	Animal Drawn Vehicles	
				Lade n	Unlad en	Lade n	Unlad en	Lade n	Unlad en	Lade n	Unlad en				
DAY 1	17 - 01 - 2025	40	83	16	28	7	3	49	16	0	0	137	39	70	488
DAY 2	18 - 01 - 2025	42	73	12	22	5	3	57	31	0	0	149	34	63	491
DAY 3	12 - 12 - 2023	31	79	28	18	8	5	22	15	0	0	143	22	46	417
TOTAL		113	235	56	68	20	11	128	62	0	0	429	95	179	1396

	Cars, Jeeps, Vans, Three	Motoris ed two- wheele rs	Light Commercial Vehicles		Trucks		Agricultural Tractors/ Trailers		Buses		Cycles	Cycle Rickshaws	Animal Drawn Vehicles	
			Lade n	Unlad en	Lade n	Unlad en	Lade n	Unlad en	Lade n	Unlad en				
Average Daily Traffic (T)	16.14	33.57	8.00	9.71	2.86	1.57	18.29	8.86	0.00	0.00	61.29	13.57	25.57	199.43
AADT at the time of Traffic Survey **	20.12	41.85	9.97	12.11	3.56	1.96	22.79	11.04	0.00	0.00	76.40	16.92	31.88	249
AADT at the time of opening of Road ***	21.33	44.36	10.57	12.84	3.78	2.08	24.16	11.70	0.00	0.00	80.98	17.93	33.79	264
VDF					2.84	0.31	0.34	0.02	2.86	0.31	-	-	-	
ESAL per Day					10.72	0.64	8.22	0.23	0	0	-	-	-	19.81

*, **,***

Formula explained in next page

_____ - -

Computation of Design Traffic

Name of Road: Chandisthan Se Mahadevpur TO Tarapur

Link Route No. 27227

Block: Gurua

$$** \text{ AADT at the time of Traffic survey from ADT (T}_0\text{)} = T + \frac{1.2 \times n \times T \times t}{365}$$

where,

T = ADT at the time of traffic survey
 n = Ratio of Harvesting season traffic to Lean season traffic
 t = Harvesting period in no. of Days

$$*** \text{ AADT at the time of opening of Road} = T_0 (1 + 0.01r)^n$$

where,

T₀ = AADT at the time of Traffic survey
 r = Traffic growth rate
 n = Time period between traffic survey & opening of road to traffic

There are two harvesting seasons in the area each having a duration of about 2½ months, the harvesting season traffic remaining at its peak for 15 days

The traffic data was collected 1 years before opening the road to traffic and in the lean season. It may be assumed that peak harvesting season traffic is double the lean season traffic.

$$\text{Cumulative ESAL applications over design life @ } r\% \text{ growth rate} = T_0 \times 365 \left[\frac{(1 + 0.01r)^n - 1}{0.01r} \right] \times L$$

Where,

T₀ = ESAL per day
 r = Growth rate of traffic over the design life
 n = Design life of pavement
 L = Lane distribution factor.

Here,

T₀ = 19.81
 r = 6%
 n = 10
 L = 1

Therefore,

$$\text{Cumulative ESAL applications over 10 years @ 6\% growth rate} = 19.81 \times 365 \times \left[\frac{(1 + 0.01 \times 6)^{10} - 1}{0.01 \times 6} \right]$$

$$\begin{aligned} \text{Cumulative ESAL} &= 19.81 \times 4811 \\ &= \mathbf{95306} \end{aligned}$$

3.5. Traffic Categories:--

Traffic Categories	Cumulative ESAL Applications		
T01	10,000.00	-	30,000.00
T02	30,000.00	-	60,000.00
T03	60,000.00	-	1,00,000.00
T04	1,00,000.00	-	2,00,000.00
T05	2,00,000.00	-	3,00,000.00
T06	3,00,000.00	-	6,00,000.00
T07	6,00,000.00	-	10,00,000.00
T08	10,00,000.00	-	15,00,000.00
T09	15,00,000.00	-	20,00,000.00

Traffic category : T03 (Cumulative ESAL Application, Para No. 3.5, (60000 to 100000))

Design pavement thickness as per Fig 4 of IRC-SP - 72 - 2015 = 275 mm

Hence Thickness Corresponding to CBR 5% (mm) to be adopted

Thickness of grade III (mm) 75 mm

Hence thickness of GSB (mm) 200 mm

Provide **Mix Seal Surfacing** as wearing course

TRAFFIC CATEGORY $\Rightarrow$	T ₁ (10,000 TO 30,000)	T ₂ (30,000 TO 60,000)	T ₃ (60,000 TO 1,00,000)	T ₄ (1,00,000 TO 2,00,000)	T ₅ (2,00,000 TO 3,00,000)	T ₆ (3,00,000 TO 6,00,000)	T ₇ (6,00,000 TO 1,00,00,000)	T ₈ (1,00,00,000 TO 1,50,00,000)	T ₉ (1,50,00,000 TO 2,00,00,000)
SUBGRADE STRENGTH CBR $\uparrow$									
S ₁ VERY POOR CBR = 2	200 100	75 150 100	75 150 100	75 150 100	75 150 100	75 150 100	75 150 100	75 150 100	75 150 100
S ₂ POOR CBR = 3 to 4	200	275	75 150 100	75 150 100	75 150 100	75 150 100	75 150 100	75 150 100	75 150 100
S ₃ FAIR CBR = 5 to 6	175	250	225	75 150 100	75 150 100	75 150 100	75 150 100	75 150 100	75 150 100
S ₄ GOOD CBR = 7 to 9	150	175	225	75 150 100	75 150 100	75 150 100	75 150 100	75 150 100	75 150 100
S ₅ VERY GOOD CBR = 10 to 15	125	150	175	75 150 100	75 150 100	75 150 100	75 150 100	75 150 100	75 150 100

LEGEND

- Modified Soil/Improved Subgrade (CBR not < 10)
- Granular Subbase (CBR not < 20) In exceptional case can be 15
- Gravel Base (CBR not < 80). In Lower base course shall not be less than 50 Clause 2.3.5 (in exceptional case may be relaxed suitably)
- WBM Grade-3
- Bituminous Macadam
- Surface Dressing
- OGPC

Base of Gravel/CRMB/WBM (CBR not < 100) Where 100mm thickness is recommended it can be modified to 75 mm for WBM with corresp. increase of 25 mm. in Subbase

PAVEMENT COMPOSITION DETAILS								
NAME OF ROAD : :-- Chandisthan Se Mahadevpur TO Tarapur								
Survey ID :-- 27227								
BLOCK :-- Gurua								
LENGTH OF ROAD :-- 2.000 Km								
S.L.	Chainages			Total Length in Meter	Existing Pavement	Condition	Type of Pavement Proposed	Type of Existing Area
	No.	From	- To					
1	0	-	1200	1200	Earthen	DAMAGED	Flexible	Open Area
2	1200	-	1400	200	SOLING	DAMAGED	Rigid	Village Area
3	1400	-	1600	200	CC	DAMAGED	Rigid	Village Area
4	1600	-	2000	400	SOLING	DAMAGED	Rigid	Village Area
	Total Length			2000				
	Total Brick Soling			600				
	Total Earthen			1200				
	CC LENFTH			200				
	Proposed Flexible Pavement				Proposed Rigid Pavement			
	On BES Portion			0	On BES Portion		600	
	On Earthen Portion			1200	On Earthen Portion		0	
	ON BT				ON CC		200	
	Total Flexible Pavement			1200	Total Rigid Pavement		800	

Existing Pavement							
Flexible Pavement					Rigid Pavement		
Brick Soling					Brick Soling		
From	To				From	To	
0	0	0			1200	1400	200
0	0	0			1600	2000	400
		0			0	0	0
		0					0
Tota		Total	0		Total		600
Earthen					Earthen		
From	To				From	To	
0	1200	1200			0	0	0
0	0	0			0	0	0
		0					
		Total	1200		Total		0

EARTHWORK CHART

Name of Road:

Chandisthan Se Mahadevpur TO Tarapur

Survey ID

27227

Block:

Gurua

CH	Area Cut (m2)	Area Fill (m2)	Volume Cut (m3)	Volume Fill (m3)
0	0.00	0.08	0.00	0.00
50	0.00	0.20	0.00	7.17
100	0.00	0.22	0.00	10.73
150	0.00	2.17	0.00	59.84
200	0.00	4.25	0.00	160.40
250	0.00	4.43	0.00	216.81
300	0.00	3.79	0.00	205.43
350	0.00	4.35	0.00	203.59
400	0.00	6.39	0.00	268.56
450	0.00	0.00	0.00	159.77
500	0.00	2.65	0.00	66.23
550	0.00	8.19	0.00	270.98
600	0.00	3.54	0.00	293.21
650	0.00	4.13	0.00	191.62
700	0.00	4.90	0.00	225.68
750	0.00	5.53	0.00	260.81
800	0.00	5.92	0.00	286.24
850	0.00	4.25	0.00	254.08
900	0.00	4.12	0.00	209.21
950	0.00	5.37	0.00	237.25
1000	0.00	5.54	0.00	272.78
1050	0.00	5.75	0.00	282.27
1100	0.00	5.89	0.00	290.92
1150	0.00	5.81	0.00	292.44
1200	0.00	6.29	0.00	302.52
1250	0.00	5.22	0.00	287.87
1300	0.00	4.25	0.00	236.84
1350	0.00	4.63	0.00	222.01
1400	0.02	5.01	0.43	240.92
1450	0.00	5.39	0.43	260.05
1500	0.00	5.78	0.00	279.46
1550	0.01	6.16	0.28	298.58
1600	0.00	6.76	0.28	322.89
1650	4.61	0.00	115.15	168.92
1700	0.00	1.96	115.15	48.97
1750	0.00	0.68	0.00	66.08
1800	0.97	0.00	24.35	17.11
1850	0.00	2.42	24.35	60.49
1900	0.00	2.36	0.00	119.52
1950	0.00	2.71	0.00	126.82
2000	0.00	3.65	0.00	159.08
NET E/W (Including Crust) =			280.420	7944.150

CH	Area Cut (m2)	Area Fill (m2)	Volume Cut (m3)	Volume Fill (m3)
----	---------------	----------------	-----------------	------------------

Proposed Flexible Pavement

E/W Including Crust	7944.150
Deduction	
GSB	683.910
GRADE-II	344.250
GRADE-III	516.380
SUB-GRADE	3762.150
PCC	375.000
Net Qty of E/w for Filling	1937.040
Box Cutting Qty	45.000
Cutting	280.420
Net Cut Volume	325.420

1. Project Background

Part A: General Information

- 1 District Background – District Background all Ready given in Report in chapter Sl 1.4 on page no. 2.
- 2 Location of the Road – Proposed Road Starts From Chandisthan Se Mahadevpur and ends at Tarapur, Total Length 2 km.
Socio-economic setting of the project road – After Construction of the Project Road, It Will help in the Conveyance of the people of the area. Which will improve their economic status. Also in the Emergency this Road will be helpful for them.
- 3
- 4 Environmental setting of the project road – Existing Environment setting will not be changed due to Construction of the Project Road.

Part B: Overview

Name of District	Name of Block	Total Proposed length (in kms)	Details about Beneficiary Villages*					
			Names of Village/Ha bitation	Chainage		Total Population	SC Population	ST Population
				From	To			
Gaya	Gurua	2	Tarapur			200	50	32
			0			0	0	0
			0			0	0	0

2. Project Location

- . Start and end points of the road with settlement and chainage – Shown on the map attached in page no. 184
- . Key settlements (town/city) around the project road – No Such Case Exists.
- . Other key road/s (NH and/or SH in the block) or road network in the vicinity – No Such Case Exists.
- . A major river (if any) in the area – The Project Road does not Cross any Major River in the area.

3. Transact Walk Map

- Start and end point of the road - Shown on the Map attach page no. 184
- Key features such as settlement area/s – Shown on the Transect Walk Sketch & Road Plan on page no. 184
- Key environmental features such as trees, water bodies, irrigation channels, religious/cultural properties and sensitive receptors such as educational and health facilities - No Such Case Exists.
- Any other locally important feature/s and/or – Along the Alignment of the Road No Such Case exists .

The Transect Walk has-been Conducted by the Engineer of the Company along with Local People including Mukhiya, Local Members, Important people and Engineer of the RWD Department. The Local Mukhiya and the People have given their consent for the Project Road.

4. Outputs of the Transact Walk

- 1 Environmentally sensitive locations and features – No Such Case exists along the Project Road.
- 2 Socially sensitive locations and features (including sections with land availability constraints) – No Such Case exists along the Project Road.
- 3 Identified Key Issues – No Key issues exists along the Project Road.
- 4 Required Design Interventions – No Such Case has been seen during the Transect Walk.
- 5 Suggestions received from the community during the transact walk – No Such Suggestion received from the Community during the Transect Walk.
- 6 Participants by gender and social groups - Local People as well as Social groups have participated during the Transect Walk.

5. Public Consultation – Summary

S.No.	Date of Consultation	Settlement Name/ Location of the Meeting	Total Duration of the Meeting	Venue of the Meeting	Name of the Facilitator (who conducted the meeting)	Method/Type of Materials Used for Dissemination of Information about the Meeting	Remarks
1	17 - 01 - 2025	Tarapur	2.00Hr.	Tarapur	MUKHIYA	Public Notice	

6. Public Consultation Record

Block: Gurua

District: Gaya

Road Name: Chandisthan Se Mahadevpur TO Tarapur

Date: 17 - 01 - 2025

Time:

Venue: Tarapur

Duration: 2.00Hr.

1. **Project Description** – The Project Road is Very Important for the Community of the area.

2. **Issues raised by the community and responses provided**

- **Issues:** The Villagers also advised that PCC Road should be constructed in the Portion of the Village and some Cross drainages in the Project road.

- **Response by PIU/field office staff:** - Since no any issue raised by the community so response by PIU/Field Office Staff does not arise.

- **Key Agreements and Conclusion**

(i) No Key Agreements has been executed with the community.

Attendance Sheet

Name of the Village:

Road Name: Chandisthan Se Mahadevpur TO Tarapur

Date of Meeting :

S.No.	Name of the Person		Village of Residence		Signature		
	Attach in Next page.						

1. Basic Environmental Datasheet

Sl.No	Aspect	Details			
1	District/s	Gaya			
2	Block/s	Gurua			
3	Start Point of the Road (GPS coordinates) (Longitude and Latitude)	Chandisthan Se Mahadevpur Latitude 0.000000 Longitude 0.000000			
4	End Point of the Road (GPS coordinates) (Longitude and Latitude)	Tarapur Latitude 0.000000 Longitude 0.000000			
5	Rainfall (in cm) – annual average	114.23 cm			
6	Temperature (Max.)	43°C.			
7	Temperature (Minimum)	6 °C.			
8	Altitude (in mts.)	52			
9	Soil Type	Clay & Sandy Soil			
10	Wind Direction (pre-dominant)	From South -West to North -East			
11	Wind Velocity	6 Km/h			
12	Pre-dominant Land-use	Agriculture			
13	Water lable	52 m			
14	Flooding Details (Frequency; HFL)	48.5 m			

4. Tree Cutting Requirement

S.No.	Species	Chainage	Side of the Road	Girth Size	Distance from the proposed Centre Line	Ownership	Remarks
	(Name)						
1	No Tree Cutting Required.						
2							
3							

5. Strip Plan showing Drainage Arrangements

- Start and end point of the road - Chandisthan Se Mahadevpur TO Tarapur
- Key Drainage Related Features (river, a local stream, nala, pond etc.) - No Pound In this project Road.
- Existing culverts (categorized by type) – Attached in page no. 57
- New/proposed culverts (categorized by type) - Attached in page no. 57
- Show the outfalls / flow direction, as applicable

6. Strip Plan showing Proposed Safety Measures

- Start and end point of the road - Chandisthan Se Mahadevpur TO Tarapur
- Location of signage (by type)
- Location of access roads to villages/junctions
- Location of sensitive receptors such as primary health centers and school
- Location of settlement area
- Location of safety measures like rumble strips, signage by type, lane markings etc.at each critical location in line with given design speeds.
- Any other

Different Signages for villages, Junction, School, Health Centre etc. has been mention in the DPR of the Project Road.

8. Materials Requirement – Summary Chart

S.No.	Type of Material	GSB	WBM II	WBM III	PANEL CONCRETE	PRIME & TACK	MIX SEAL SURFACE WITH WASTE PLASTIC
1	Stone/Aggregate (M ³)	683.91		516.38	378.75		4590.00
2	Sand (M ³)				1.89		
3	Earth (M ³)	2648.63					
4	Local Sand (M ³)	143405.73					
5	Water (Kl)				1515.00		
	Moorum & Dust (M ³)			86.40			
6	Bitumen (kg)					1960.00	7068.00
7	Cement (Bag)				2352.00		

9. Lead Chart – Quarry Area/s

- Start and end point of the road - Chandisthan Se Mahadevpur TO Tarapur
- Location of the existing approved quarry area/s

S.NO.	TYPE OF MATERIAL	SOURCE	DISTANCE BY RAIL	DISTANCE BY ROAD
1	Stone Metal Gr-I & Gr-II	Mirzapur	152	60
2	Stone Metal Gr-III / GSB	Mirzapur	152	60
3	Stone Aggregate / Chips	Mirzapur	262	60
4	Stone Boulder	Mirzapur	152	60
5	Course Sand	Sherghati	Nil	18
6	Binding Material (Moorum)	Mirzapur	152	60
7	Cement +Steel	LOCAL	Nil	10
8	Local Sand	LOCAL	Nil	3
9	Brick	LOCAL	Nil	8
10	Bitumen Emulsion	Belaganj	0	65
11	Bitumen	Belaganj	0	65
12	Hume Pipe	Bankebazar	Nil	16

10. Lead Chart – Borrow Area/s

- Start and end point of the road - Chandisthan Se Mahadevpur TO Tarapur
- Location of the suggested borrow areas (include sand, earth, murram, GSB sources) - Location of the suggested borrow areas Such as Sand, Moorum, GSB etc Shown at SL.No-9. Earth will be procured within 1 km from the Centre of the Road.

11. Debris Related Information -

Debris Related Information - No Debris obtain from the Project Road.

1.

Total Quantum of Debris likely to be generated = _____ cu. mt. or _____ tonnes

Break-up by type of debris

- Concrete = _____ cu. mt. or _____ tonnes
- Bitumen/Scarified Bitumen = _____ cu. mt. or _____ tonnes
- Spoils/earth/other debris = _____ cu. mt. or _____ tonnes

2.

Total Quantum of Debris that is being proposed for re-use = _____ cu. mt. or _____ tonnes

3.

Total Quantum of Debris would require disposal = _____ cu. mt. or _____ tonnes

4.

Area/s for disposal

- Location 1 (----- Village; Near -----) = _____ cu. mt. or _____ tonnes
- Location 2 (----- Village; Near -----) = _____ cu. mt. or _____ tonnes
- Location 3 (----- Village; Near -----) = _____ cu. mt. or _____ tonnes
- Start and end point of the road - Chandisthan Se Mahadevpur TO Tarapur
- Stretch/es of the project road requiring dismantling/re-construction (indicate above that the approx. quantity of debris that would be generated)
- Existing old/damaged culvert/s or other drainage structures requiring dismantling/re-construction (indicate the approx. quantity of debris that would be generated)
- Stretch/es of the project road requiring scarification (indicate the approx. quantity of debris that would be generated)
- Stretches where re-use of the generated debris is being proposed (with approx. quantity)
- Area/s where debris (balance after re-use or otherwise) would be disposed off (with approx. quantity)

Note: Debris disposal area/s should be carefully selected depending upon the nature of waste (primarily keeping in mind the pollution issue). Please seek specific guidance on the topic from the Nodal Environment Officer.

11. Affected Common Property Resources (CPRs)

S.No.	Type of Affected CPR	Chainage	Side of the Road	Settlement/ Village Name	Distance from the proposed Centre Line	Extent of Impact	Remarks
						(Partial/Full)	
1	No Common Property Resources will be effected.						
2							
3							
5							

12. Utility Shifting Details

S.No.	Type of Affected Utility	Chainage/s	Side of the Road	Settlement / Village Name	Number and/or Length Affected	Distance from the proposed Centre Line	Remarks
1	Electrical Poles/Lines/ Transformers	No Such Case Shown along the alignment of the Road.					
2	Water Supply Lines						
3	Irrigation (Ducts; Channels)						
4	Telephone/OFC						

Social 4 :Affected Property Census Survey

Affected Property Census Survey would not Required. For the Project Road.

Project Coordinator **Not Required**
 Road Name _____
 Affected Property Identification number _____
 Plot no./Patta No./Khasra No. _____
 Side of the Road _____
 Distance from the Centre Line _____

AFFIX PHOTO OF AFFECTED PROPERTY

Name of Respondent _____
 Head of Household (Name) _____

SC	ST	Women HH	Handicap	BPL	Others

Vulnerability (*tick*)
 (whether belong to)

Yes		Card No.
No		

If BPL, proof of BPL Ration Card

Household size (No. of persons)
 No. of earning adult members (Nos)

Not Required

Children	
Adults	

No. of dependents (Nos)

Agriculture	Residence	Commercial	Other

Nature of impact (*tick*)

<Marginal	
>Marginal	

Agriculture

Size of Total holding (ha)

<10%	>10%	1

Extent of Impact (% total land holding including any
 other land parcels owned elsewhere by PAP)

Size of residual holding (ha)

Residence

Plot size (sqm)

Extent of impact (Full/Partial)

Impacted Area (sqm)

Not Required

Yes		No	
-----	--	----	--

Residual plot viable (Yes/No)

Yes	No	If yes Specify

If No, Alternate house site (if relocation reqd)

Commercial establishments

Plot size (sqm)

Full		Partial	
------	--	---------	--

Extent of Impact (*tick*)

Not Required

Impacted Area (sqm)

Yes		No	
-----	--	----	--

Commercial Plot viable (*tick*)

Yes	No	If yes Specify

If No, Alternate commercial site (if relocation required)

Asset Loss

Inventory assets lost (Trees, Wells, Handpump, CPRs, etc)

Not Required

Yes	No	If yes Specify

Livelihood loss

Alternate livelihood sources, other than mentioned above

Social 1. Land Availability Status

Chainage	Existing Formation Width*	Adjoining land use	Available Road land Width**	Land availability Constraint (Y/N)
All Ready Mentioned in Single Conectivity Certificate				

Social 2. Alignment superimposed over Khasra Map verified by Revenue Officer

Attach/provide here the Khasra map showing the following details:

- Start and end point of the road - Chandisthan Se Mahadevpur TO Tarapur
- Proposed alignment
- Existing road width with proposed deviations if any clearly marked
- Color additional land requirement
- Highlight private land required clearly, if any.

Not in needed, since no extra land is required for the Construction for the Project Road.

Social 3. Summary of Affected Property (Titleholders/Non Titleholders) as per proposed design

Chainage	Affected Property ID	Type of Property*	Affected Partial/Full	Census Survey Form attached (Y/N)	Titleholder s/Non Titleholder s	Vulnerable Category	Plan for Assistance/restoration

House, Shop, Temple, Varandah, Cowshed, Handpump or any other private structure etc.
Not affected for the Construction of the Project Road.

Social 6. Model Format of Gift Deed/Affidavit

THIS GIFT DEED IS EXECUTED ON THIS.....DAY OF.....,20__ at..... by :Mr/Mrs..... S/o /W/o.....,residing at (herein after referred to as the DONOR which expression shall wherever the context so requires or admits, mean and include his/her successors, executors, administrators and assigns or anyone claiming through or under her)

IN FAVOUR OF:

.....Department, Government of..... (hereinafter referred to as the DONEE which expression shall wherever the context so requires).

N/A

WHEREAS the Donor herein, is the absolute owner of _____ acre of land bearing khasraNo. _____ in village _____ block _____, tehsil _____, and district _____ which is more fully described in the Schedule hereunder and hereinafter referred to as the Schedule Property:

WHEREAS the Donor, is desirous of gifting a portion the schedule property, a strip of land,m wide for a length ofm required for laying the road (as delineated in the sketch appended to this deed by the letters ABCDEF absolutely and forever) to the Donee for the construction and development of PRADHAN MANTRI GRAM SADAK YOJANA road in the village _____ for the benefit of the villagers and the public at large.

NOW THIS DEED WITNESS AS UNDER:

- 1 In consideration of the benefit of the villagers and the public at large, the Donor hereby gifts in favour of the Donee the specified width of the above piece of land fully described in Schedule hereunder and delineated in the sketch appended to this deed by the letters ABCDEF absolutely and forever.
- 2 The Donor has this day put the Donee in actual physical possession of the said portion of the schedule property and the Donee has accepted the said Gift and has taken possession of the said portion of the Schedule Property, and has in token thereof signed this deed.
- 3 The Donee hereby commits that the extent of the proposed roads shall be strictly within the boundaries of the land gifted and shall not spillover into the residual holding of the Donor. In the event of any violation of the same or any damages to structure/assets outside the said portion, either by the Donee or the Contractor, the Donee shall be liable to compensate the Donor.

SCHEDULE

(Describe the property)

All that piece and parcel of the property bearing No _____ in village _____ block _____, tehsil _____, and district _____ delineated in the annexed sketch by the letters..

IN WITNESS WHEREOF, parties above named have executed theses present s in the presence of the witnesses attesting hereunder on the day, month and year first above written.

WITNESSES:

1. D O N O R
2. D O N E E

NOTE: 1) Documents to be stamped with appropriate non-Judicial stamp.

2) To be registered as contemplated by the Indian Registration Act.

No Such Case Exists for the Construction of the Project Road.

Junior Engineer

Assistant Engineer

Executive Engineer

LOAD-PANETRATION CURVE OF LABORATORY C.B.R. TEST

Test conducted on compacted sample after 4-days soaking

Chandisthan Se Mahadevpur TO Tarapur

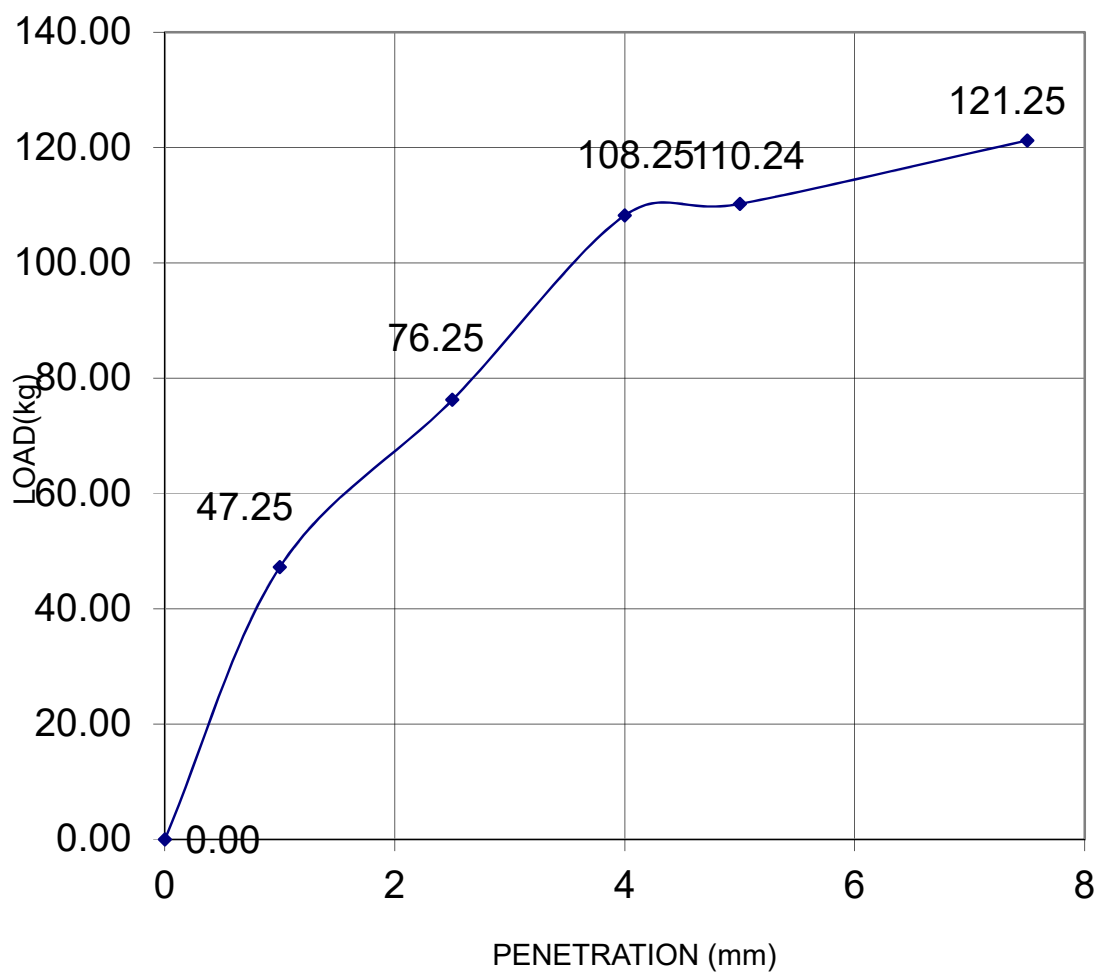
Location: CH : 0.5 km

Panetration	Load	CBR
0	0.00	
1	47.25	
2.5	76.25	5.57
4	108.25	
5	110.24	5.36
7.5	121.25	

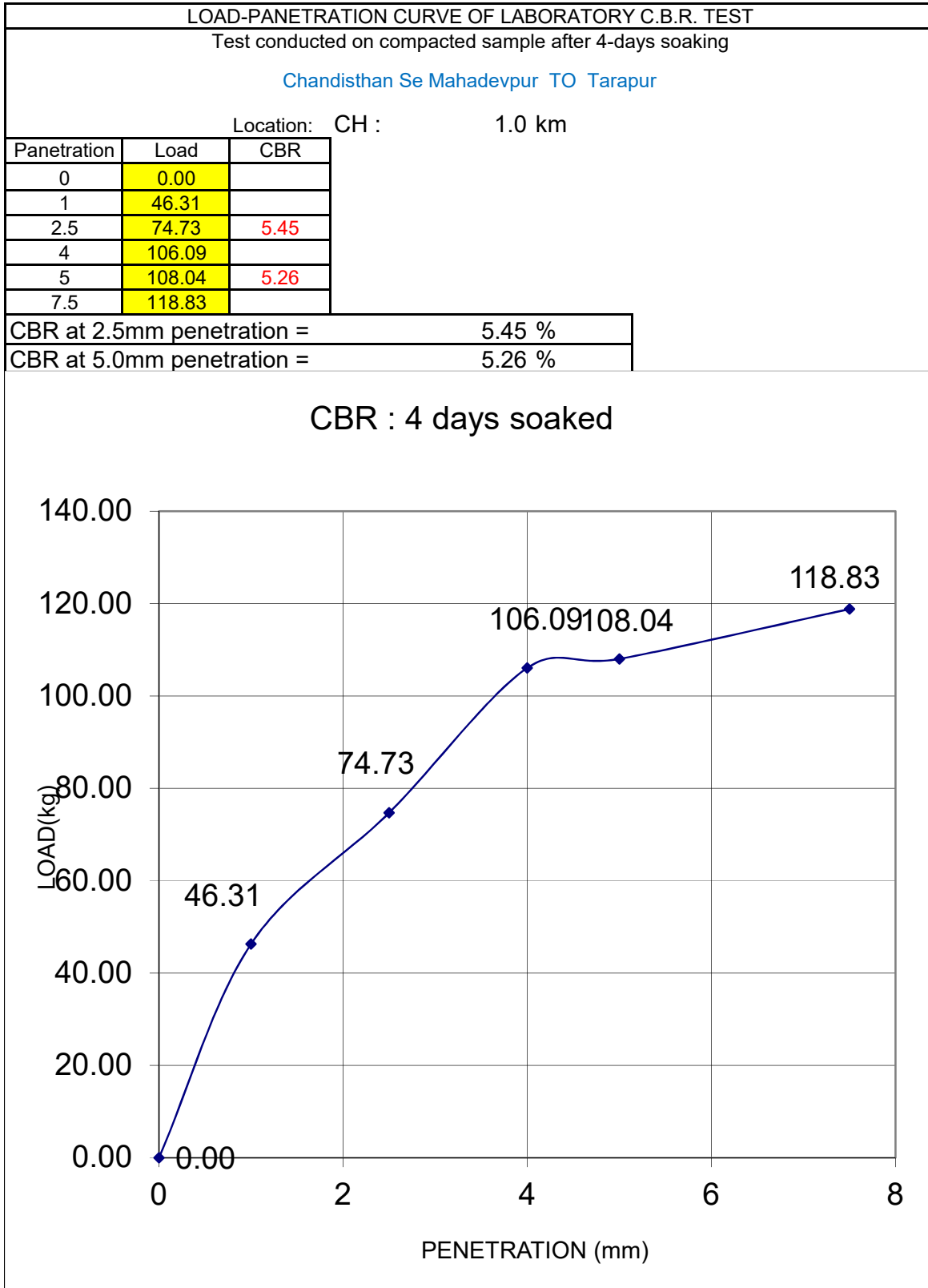
CBR at 2.5mm penetration = 5.57 %

CBR at 5.0mm penetration = 5.36 %

CBR : 4 days soaked



2



LOAD-PANETRATION CURVE OF LABORATORY C.B.R. TEST

Test conducted on compacted sample after 4-days soaking

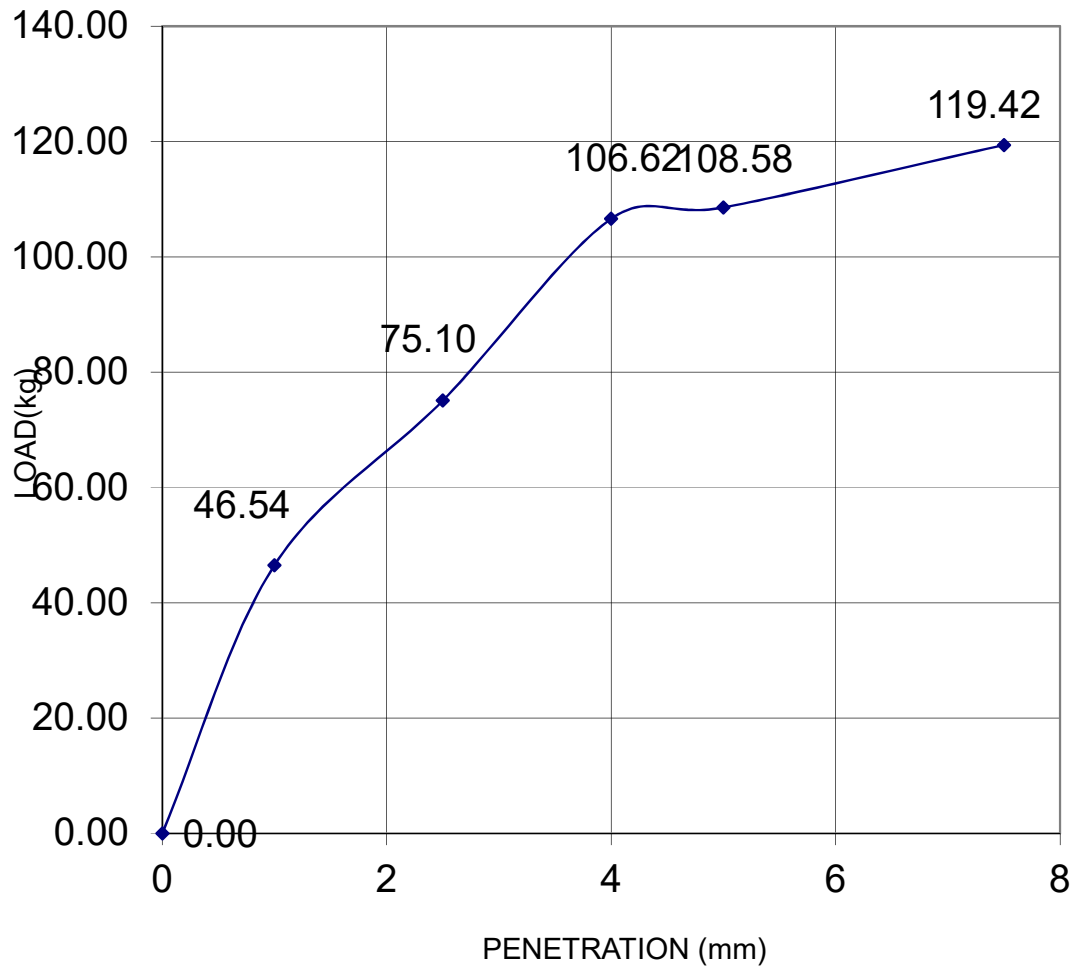
Chandisthan Se Mahadevpur TO Tarapur

Location: CH : 1.5 km

Panetration	Load	CBR
0	0.00	
1	46.54	
2.5	75.10	5.48
4	106.62	
5	108.58	5.28
7.5	119.42	

CBR at 2.5mm penetration =	5.48 %
CBR at 5.0mm penetration =	5.28 %

CBR : 4 days soaked



LOAD-PANETRATION CURVE OF LABORATORY C.B.R. TEST

Test conducted on compacted sample after 4-days soaking

Chandisthan Se Mahadevpur TO Tarapur

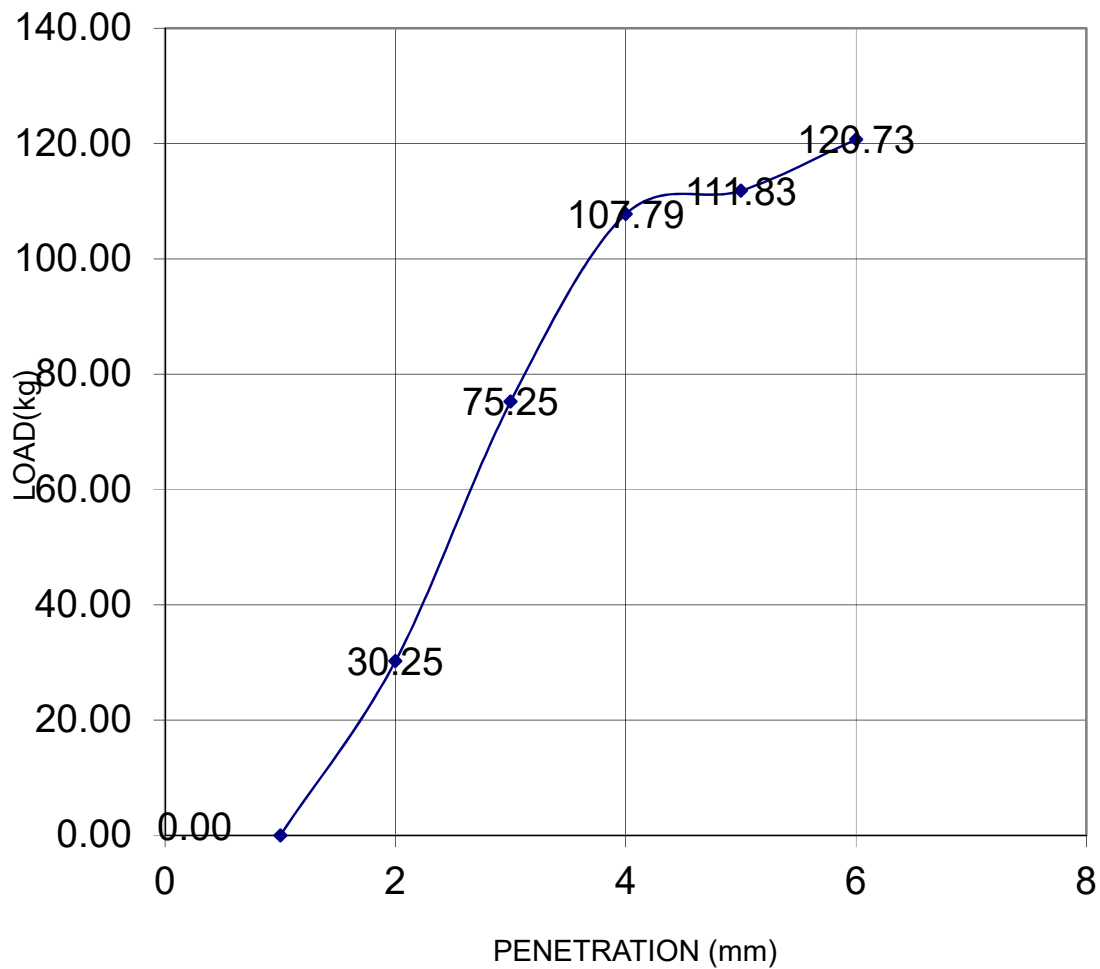
Location: CH : 2 km

Panetration	Load	CBR
0	0.00	
1	30.25	
2.5	75.25	5.49
4	107.79	
5	111.83	5.44
7.5	120.73	

CBR at 2.5mm penetration = 5.49 %

CBR at 5.0mm penetration = 5.44 %

CBR : 4 days soaked



RESULT OF STANDERED PROCTOR COMPACTION TEST

Road Chandisthan Se Mahadevpur TO Tarapur
Block Gurua
District Gaya
State BIHAR

