



ग्रामीण कार्य विभाग

Rural Works Department, Govt of Bihar

BIHAR RURAL ROADS PROJECT

Bihar Rural Road Development Agency (BRRDA)

YEAR (2020 - 2021)

FDR

STATE :- BIHAR
DISTRICT :- Samastipur
BLOCK :- Mohanpur

NAME OF ROAD :- Detailed Estimate For Repair of Flood
Damaged in Mahnar MohaddinNagar PWD
Road Dashhara Sahendra Roy House To
Sarhad siman via Ravidas Tola

TOTAL COST OF CONSTRUCTION :- Rs. 8.004 Lacs

TOTAL COST OF PROJECT :- Rs. 8.004 Lacs

Gross charge amount - Rs. 800415 = 00

SUBMITTED BY:

EXECUTIVE ENGINEER
RWD (W) DIVISION, PATORI
SAMASTIPUR

FDR
YEAR (2020 - 2021)
GENERAL ABSTRACT OF COST

Block:--Mohanpur

District:--Samastipur

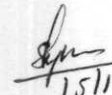
Name of Road:--

Detailed Estimate For Repair of Flood Damaged in Mahnar
MohaddinNagar PWD Road Dashhara Sahendra Roy House To
Sarhad siman via Ravidas Tola

SL. No.	Item of Work	Amount
A		
	TOTAL COST OF CONSTRUCTION	8.004 Lacs
	Sub Total= (A)	8.004 Lacs
	TOTAL cost of project	8.004 Lacs

7.954 Lacs


15/10/2020
Junior Engineer
RWD (w)Section ,
Mohanpur


15/10/20
Asstt. Engineer
RWD (w)Sub Division , Mohanpur


15/10/20
Executive Engineer
RWD (w) Division, Patori

SUMMARY OF COST ESTIMATE FOR THE PROJECT

NAME OF ROAD :

Detailed Estimate For Repair of Flood Damaged in Mahnar
MohaddinNagar PWD Road Dashhara Sahendra Roy House To
Sarhad siman via Ravidas Tola
Samastipur
Mohanpur

DISTRICT
BLOCK

Sl. No.	DESCRIPTION	AMOUNT (LAKHS)
1	BRICK BAT	5.670
2	GSB GRADE II	0.701 - 0.786
3	WBM GRADE III	0.599
	SUB TOTAL OF PAVEMENT COST IN LACS =	7.055
	Sub Total :-	7.055
	12% GST on Total Amount :-	0.847
	1% Lab Cess :-	0.071
	Seigniorage Fee @ 10%	0.032
	Total Constriction Cost (including GST and Labour Cess) (A) :-	8.004
	TOTAL COST OF PROJECT IN LACS(including GST 12% & 1% Lab Cess)(A+B+C) :-	7.954 - 8.004

15/10/2020
Junior Engineer

RWD (w)Section , Mohanpur

15/10/20
Assistant Engineer

RWD (w)Sub Division , Mohanpur

15/10/20
Executive Engineer
RWD (w)
Division, Patori

*Technically Approved for 7.954 lac say seven lakh
Ninety five thousand four hundred only.*

2/11/20
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Cost Estimate for Road Work

Sl. No.	SDB SL. NO	MORD Ref.No	Description	Unit	NOS	LENGTH	WIDTH	HEIGHT	QUANTITY	RATE	AMOUNT (in Rs.)
SUB HEAD : Embankment											
Brick Bats											
1			Laying Brick Bats on Prepared Soil Surface as per specifications and direction of E/L								
			Damaged Side Strech	cum	1.00	0.0	2.100	0.450	0.00		
			Damaged Side Strech	cum	1.00	400.0	1.125	0.750	337.50		
			Damaged Side Strech	cum	1.00	0.0	1.500	0.900	0.00		
			Damaged Side Strech	cum	1.00	0.0	2.000	0.600	0.00		
			Damaged Side Strech	cum	1.00	0.0	1.000	0.300	0.00		
			Damaged Side Strech	cum	1.00	0.0	1.225	0.750	0.00		
									337.50	1,680.02	5,67,006.75
B) SUB TOTAL OF CRUST =											5,67,006.75
Sub Head : PAVEMENT LAYERS - GSB & WBM ITEMS											
2	4.1 (A)	401 (ii)	Granular Sub-base with Well Graded Material (Table 400.1) (By mix in place method) For Grading II 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.								
			Damaged Portion	Cum	1.00	35.0	1.050	0.175	6.43		
			Damaged Portion	Cum	1.00	62.0	1.150	0.175	12.48		
			Damaged Portion	Cum	1.00	26.0	0.850	0.175	3.87		
			Damaged Portion	Cum	1.00	20.0	1.000	0.175	3.50		
			Damaged Portion	Cum	1.00	44.0	1.300	0.175	10.01		
									36.29	2,166.44	78,620.00
Net GSB Qty. Required form Grading II Material											

Cost Estimate for Road Work

Sl. No.	SDB SL. NO.	MORD Ref.No	Description	Unit	NOS	LENGTH	WIDTH	HEIGHT	QUANTITY	RATE	AMOUNT (in Rs.)
3	4.7 (3-A)	405	WBM Grading 3 (By Mechanical Means) Providing, laying, spreading and compacting stone aggregates of specific sizes to water bound macadam specification including spreading in uniform thickness, hand packing, rolling with smooth wheel roller 80-100 kN in stages to proper grade and camber, applying and brooming, stone screening to fill-up the interstices of coarse aggregate, watering and compacting to the required density Grading 3 as per Technical Specification Clause 405.								
			Damaged Portion	Cum	1.00	36.0	1.100	0.075	2.97		
			Damaged Portion	Cum	1.00	64.0	1.200	0.075	5.76		
			Damaged Portion	Cum	1.00	27.0	0.950	0.075	1.92		
			Damaged Portion	Cum	1.00	21.0	1.200	0.075	1.89		
			Damaged Portion	Cum	1.00	46.0	1.450	0.075	5.00		
			Net WBM - 3 Qty						17.55	3,414.06	59,916.75
C) SUB TOTAL OF CRUST =											1,38,536.75
TOTAL COST OF PAVEMENT IN RS. (A+B+C+D+E+F+G)=											7,05,543.50

7,01,033 = 00

[Signature]
15/10/20

Executive Engineer
RWD (w) Division, Patari

[Signature]
15/10/20
Assistant Engineer

RWD (w) Sub Division, Mohanpur

[Signature]
15/10/2020
Junior Engineer
RWD (w) Section, Mohanpur

Sl. No.	SDB Sl. No	MORD Ref.No	Description	Unit	Quantity	Rate	Amount (In Rs.)	Total Material Required	Material Amount	Add Seigniorage Fee 10%
PAVEMENT LAYERS - GSB, WBM-II & WBM-III										
1	4.1	401	Granular Sub-base with Well Graded Material (Table 400.1)							
			(By mix in place method)							
		(i)	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.							
			For Grading II Material (Local Sand)							
			Unit = cum							
			Taking output = 300 cum							
		a)	Material							
			Well graded granular sub-base material as per Table 400.1	cum	134	657.85	88,151.900			
			26.5 mm to 9.5 mm @ 35%	cum	96	514.58	49,399.680			
			9.5 mm to 2.36 mm @ 25%	cum	153	141.85	21,703.050			
			2.36 mm below @ 40% (Local sand)				1,59,254.63			
			Cost for 300 cum = a				530.85			
			Rate Per Cum = (a)/300=	Cum			530.85			
			Total Cost =	Cum			530.85	36.29	19,264.50	1,926.45

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Analysis for Carriage by Road & Rail

Name of Road:-- Detailed Estimate For Repair of Flood Damaged in Mahnar Mohaddinnagar PWD Road Dashhara Sahendra Roy House To Sarhad siman
District:-- Samastipur Block :- Mohanpur

FORM F8

Sl No	Item with Source	Unit	Source Up to	Carriage Cost & Lead in Km			Loading & Unloading Cost	Carriage Cost by Rail Head	Total
				Pucka / Surface		Katcha			
1	Stone Metal Gr-I & Gr-II	Cum	Sheikhpura	$\frac{8.00}{4.59} \times 7.60$	$\times 60.00 \text{ Km} = \text{Rs } 794.77$	$\frac{8.00}{4.59} \times 18.50 \times 0.00 \text{ Km} = \text{Rs } 0.00$	83.64	952.23	Rs. 1830.64
2	Stone Metal Gr-III / GSB	Cum	Sheikhpura	$\frac{8.00}{4.99} \times 7.60$	$\times 60.00 \text{ Km} = \text{Rs } 731.06$	$\frac{8.00}{4.99} \times 18.50 \times 0.00 \text{ Km} = \text{Rs } 0.00$	83.64	896.90	Rs. 1711.61
3	Stone Aggregate / Chips	Cum	Sheikhpura	$\frac{8.00}{4.99} \times 7.60$	$\times 60.00 \text{ Km} = \text{Rs } 731.06$	$\frac{8.00}{4.99} \times 18.50 \times 0.00 \text{ Km} = \text{Rs } 0.00$	83.64	896.90	Rs. 1711.61
4	Stone Aggregate / Chips	Cum	Mirzachowki	$\frac{8.00}{4.99} \times 7.60$	$\times 60.00 \text{ Km} = \text{Rs } 731.06$	$\frac{8.00}{4.99} \times 16.54 \times 0.00 \text{ Km} = \text{Rs } 0.00$	83.64	1282.63	Rs. 2097.34
5	Stone Boulder	Cum	Sheikhpura	$\frac{8.00}{4.80} \times 7.60$	$\times 60.00 \text{ Km} = \text{Rs } 760.00$	$\frac{8.00}{4.80} \times 18.50 \times 0.00 \text{ Km} = \text{Rs } 0.00$	83.64	922.04	Rs. 1765.68
6	Course Sand	Cum	Kuil	$\frac{8.00}{4.99} \times 6.83$	$\times 115.00 \text{ Km} = \text{Rs } 1259.24$	$\frac{8.00}{4.99} \times 16.54 \times 0.00 \text{ Km} = \text{Rs } 0.00$	96.53		Rs. 1355.77
7	Local Sand	Cum	Local	$\frac{8.00}{4.99} \times 6.83$	$\times 2.00 \text{ Km} = \text{Rs } 21.90$	$\frac{8.00}{4.99} \times 16.54 \times 1.00 \text{ Km} = \text{Rs } 26.52$	96.53		Rs. 144.95
8	Brick	1000 Nos	Local	$\frac{8.00}{2.00} \times 6.83$	$\times 7.00 \text{ Km} = \text{Rs } 191.24$	$\frac{8.00}{2.00} \times 16.54 \times 1.00 \text{ Km} = \text{Rs } 66.16$	406.10		Rs. 663.50

* Subjected to Verification of Lead

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	7.60	6.83
Unsurface Gravel Road	9.20	8.22
Kachha Road	18.50	16.54

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Analysis for Carriage by Road

Name of Road:--

District:-

Detailed Estimate For Repair of Flood Damaged in Mahnar MohaddinNagar PWD Road Dashhara Sahendra Roy House To

Block :- Mohanpur

Sl No	Item with Source	Unit	Source Up to	Carriage Cost & Lead in Km			Loading & Unloading Cost	Carriage Cost by Rail Head	Total
				Pucka / Surface	Katcha				
1	Stone Metal Gr-I & Gr-II	Cum	Sheikhpura	$\frac{8.00}{4.59} \times 7.60 \times 163.00 \text{ Km} = \text{Rs } 2159.13$	$\frac{8.00}{4.59} \times 18.50 \times 0.00 \text{ Km} = \text{Rs } 0.00$		83.64		Rs. 2242.77
2	Stone Metal Gr-III / GSB	Cum	Sheikhpura	$\frac{8.00}{4.99} \times 7.60 \times 163.00 \text{ Km} = \text{Rs } 1986.05$	$\frac{8.00}{4.99} \times 18.50 \times 0.00 \text{ Km} = \text{Rs } 0.00$		83.64		Rs. 2069.69
3	Stone Aggregate / Chips	Cum	Sheikhpura	$\frac{8.00}{4.99} \times 7.60 \times 163.00 \text{ Km} = \text{Rs } 1986.05$	$\frac{8.00}{4.99} \times 18.50 \times 0.00 \text{ Km} = \text{Rs } 0.00$		83.64		Rs. 2069.69
4	Stone Aggregate / Chips	Cum	Mirzachowki	$\frac{8.00}{4.99} \times 7.60 \times 208.00 \text{ Km} = \text{Rs } 2534.35$	$\frac{8.00}{4.99} \times 18.50 \times 0.00 \text{ Km} = \text{Rs } 0.00$		83.64		Rs. 2617.99
5	Stone Boulder	Cum	Sheikhpura	$\frac{8.00}{4.80} \times 7.60 \times 163.00 \text{ Km} = \text{Rs } 2064.67$	$\frac{8.00}{4.80} \times 18.50 \times 0.00 \text{ Km} = \text{Rs } 0.00$		83.64		Rs. 2148.31
6	Course Sand	Cum	Kuil	$\frac{8.00}{4.99} \times 6.83 \times 115.00 \text{ Km} = \text{Rs } 1259.24$	$\frac{8.00}{4.99} \times 16.54 \times 0.00 \text{ Km} = \text{Rs } 0.00$		96.53		Rs. 1355.77
7	Local Sand	Cum	Local	$\frac{8.00}{4.99} \times 6.83 \times 2.00 \text{ Km} = \text{Rs } 21.90$	$\frac{8.00}{4.99} \times 16.54 \times 1.00 \text{ Km} = \text{Rs } 26.52$		96.53		Rs. 144.95
8	Brick	1000 Nos	Local	$\frac{8.00}{2.00} \times 6.83 \times 7.00 \text{ Km} = \text{Rs } 191.24$	$\frac{8.00}{2.00} \times 16.54 \times 1.00 \text{ Km} = \text{Rs } 66.16$		406.10		Rs. 663.50

* Subjected to Verification of Lead

Cost of Haulage Excluding Loading & Unloading as per SOR

Type of Road	Per Ton. Km by Tinner	Per Ton. Km by Truck
For Surface Road	7.60	6.83
Unsurface Gravel Road	9.20	8.22
Kachha Road	18.50	16.54

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FDR

YEAR (2020 - 2021)

Analysis for Carriage by Road & Rail

Name of Road:--

Detailed Estimate For Repair of Flood Damaged in Mahnar MohaddinNagar
PWD Road Dashhara Sahendra Roy House To Sarhad siman via Ravidas Tola

Block :-

Mohanpur

District:-

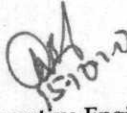
Samastipur

0.190 KM.

Sl No	Item	Unit	Carriage Cost By Road (Per cum)	Carriage Cost By Road & Rail (Per cum)	Minimum Carriage Cost (Adopted in DPR)
1	Stone Metal Gr-I & Gr-II	Cum	2242.77	1830.64	1830.64
2	Stone Metal Gr-III / GSB	Cum	2069.69	1711.61	1711.61
3	Stone Aggregate / Chips (seikhpura)	Cum	2069.69	1711.61	1711.61
4	Stone Aggregate / Chips	Cum	2617.99	2097.34	2097.34
5	Stone Boulder	Cum	2148.31	1765.68	1765.68
6	Course Sand	Cum	1355.77	1355.77	1355.77
7	Local Sand	Cum	144.95	144.95	144.95
8	Brick	1000 Nos	663.50	663.50	663.50
9	Cement	MT	617.16	617.16	617.16
10	Steel	MT	617.16	617.16	617.16
11	Bitumen Emulsion (Ulberia)	MT	978.35	978.35	978.35
12	Bitumine (Barauni)	MT	848.58	848.58	848.58
13	Hume Pipe (1000 mm)	Pipe	353.75	353.75	353.75


15/10/2020
Junior Engineer
RWD (w) Division, Patori


15/10/20
Asstt. Engineer
RWD (w) Division, Patori


15/10/20
Executive Engineer
RWD (w) Division, Patori

Analysis for Carrige Through Railway from Quarry Site to Work Site

Sheikhpura to Karpoorigram

Material -Stone Metal Gr-I & Gr-II

Quarry Site to Sheikhpura Railway Yard (By Road)

Carriage Cost & Lead in Km										Loading & Unloading	Total							
Pucka / Surface					Katcha													
$\frac{8.00}{4.59}$	x	7.60	x	2.00 Km	=	Rs 26.49	+	$\frac{8.00}{4.59}$	x	18.50	x	0.00 Km	=	Rs 0.00	+	Rs 83.64	=	Rs 110.13
UnSurface						$\frac{8.00}{4.59}$	x	9.20	x	1.00 Km						=	Rs 16.03	
															Total "A"	=	Rs 126.16	

Sheikhpura Railway Yard to Karpoorigram Railway Yard = 122.00 Km

i) Loading Cost from Railway Yard to Railway Wagon	= For 1 cum	= Rs 118.86	=	Rs 118.86
Total	= For 1 cum	"B"	=	Rs 118.86
iii) Railway freight charge from Sheikhpura Railway	= For 1 MT 122.00 Km	= Rs 231.30	=	Rs 231.30
Busy Season charge 12% of Railway freight charge	= For 1 MT	= 12%	=	Rs 27.76
Railway Development Charge to 5% of Railway freight Charge	= For 1 MT	= 5%	=	Rs 11.57
Terminal charge @Rs.40.00 per Terminal per MT	= For 1 MT 2 x	= Rs 40.00	=	Rs 80.00
Total	= For 1 MT For 1 cum	"C"	=	Rs 350.63 Rs 611.11
	Add 6% Overhead Charge	= 6.0%	=	Rs 36.67
	Add 10% Contractor Profit	= 10%	=	Rs 0.00
	Total Railway Freight for 1 cum	"C"		Rs 647.78
Cost for Stacking the Materials from Unloading dump upto lead 30 m.	Total "D" = For 1 cum	= Rs 59.43	=	Rs 59.43
Carriage Cost from Quarry to Karpoorigram Railway Yard	= For 1 Cum	A+B+C+D	=	Rs 952.23

Analysis for Carriage Through Railway from Quarry Site to Work Site

Sheikhpura to Karpoorigram

Material -Stone Metal Gr-III & GSB

Quarry Site to Sheikhpura Railway Yard (By Road)

Pucka / Surface		Carriage Cost & Lead in Km		Katcha		Loading & Unloading		Total
$\frac{8.00}{4.99}$	x 7.60	x 2.00 Km	= Rs 24.37	+ $\frac{8.00}{4.99}$	x 18.50	x 0.00 Km	= Rs 0.00	+ Rs 83.64 = Rs 108.01
UnSurface		$\frac{8.00}{4.99}$	x 9.20	x 1.00 Km				= Rs 14.75
Total "A"								= Rs 122.76

Sheikhpura Railway Yard to Karpoorigram Railway Yard = 122.00 Km

i) Loading Cost from Railway Yard to Railway Wagon	=	For 1 cum	=	Rs 118.86	=	Rs 118.86
Total		=	For 1 cum	"B"	=	Rs 118.86
iii) Railway freight charge from Sheikhpura Railway station to Karpoorigram Railway station	=	For 1 MT	122.00 Km	=	Rs 231.30	= Rs 231.30
Busy Season charge 12% of railway freight charge	=	For 1 MT		=	12%	= Rs 27.76
Railway Development Charge to 5% of Railway Freight Charge		For 1 MT		=	5%	= Rs 11.57
Terminal charge @Rs.40.00 per Terminal per MT		For 1 MT	2	x	Rs 40.00	= Rs 80.00
Total		=	For 1 MT		=	Rs 350.63
			For 1 CUM	"C"	=	Rs 562.13
			Add 6% Overhead Charge	=	6.0%	= Rs 33.73
			Add 10% Contractor Profit	=	10%	= Rs 0.00
			Total Railway Freight for 1 cum	"C"		Rs 595.85
Cost for Stacking the Materials from Unloading dump upto lead 30 m.						
Total "D"		=	For 1 cum	=	Rs 59.43	= Rs 59.43

Carriage Cost from Quarry to Karpoorigram Railway Yard	=	For 1 Cum	A+B+C+D	=	Rs 896.90
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Analysis for Carriage Through Railway from Quarry Site to Work Site

Sheikhpura to Karpoorigram

Material -Stone Aggregate / Chips

Quarry Site to Sheikhpura Railway Yard (By Road)

		Carriage Cost & Lead in Km				Loading & Unloading		Total
Pucka / Surface		Katcha						
$\frac{8.00}{4.99}$	x 7.60 x 2.00 Km	= Rs 24.37	+	$\frac{8.00}{4.99}$	x 18.50 x 0.00 Km	= Rs 0.00	+	Rs 83.64 =
								Rs 108.01
	UnSurface	$\frac{8.00}{4.99}$	x	9.20	x 1.00 Km			Rs 14.75
								Total "A" = Rs 122.76

Sheikhpura Railway Yard to Karpoorigram

Railway Yard = 122.00 Km

i) Loading Cost from Railway Yard to Railway Wagon	=	For 1 cum	=	Rs 118.86	=	Rs 118.86
Total	=	For 1 Cum		"B"	=	Rs 118.86
iii) Railway freight charge from Sheikhpura Railway station to Karpoorigram Railway station	=	For 1 MT 122.00 Km	=	Rs 231.30	=	Rs 231.30
Busy Season charge 12% of Railway freight charge	=	For 1 MT	=	12%	=	Rs 27.76
Railway Development Charge to 5% of Railway Freight Charge	=	For 1 MT	=	5%	=	Rs 11.57
Terminal charge @Rs.40.00 per Terminal per MT	=	For 1 MT	2 x	Rs 40.00	=	Rs 80.00
Total	=	For 1 MT			=	Rs 350.63
		For 1 CUM		"C"	=	Rs 562.13
		Add 6% Overhead Charge		6%		Rs 33.73
		Add 10% Contractor Profit	=	10%	=	Rs 0.00
		Total Railway Freight for 1 cum		"C"	=	Rs 595.85
Cost for Stacking the Materials from Unloading dump upto lead 30 m.						
	Total "D" =	For 1 CUM	=	Rs 59.43	=	Rs 59.43
Carriage Cost from Quarry to Karpoorigram Railway Yard	=	For 1 Cum		A+B+C+D	=	Rs 896.90

Material -Stone Aggregate / Chips

Carriage Cost & Lead in Km										Loading & Unloading	Total							
Pucka / Surface				Katcha														
8.00 4.99	x	7.60	x	2.00 Km	=	Rs 24.37	+	8.00 4.99	x	18.50	x	0.00 Km	=	Rs 0.00	+	Rs 83.64	=	Rs 108.01
				UnSurface				8.00 4.99	x	9.20	x	1.00 Km						Rs 14.75
																Total "A"	=	Rs 122.76

i) Loading Cost from Railway Yard to Railway Wagon	=	For 1 cum	=	Rs 118.86	=	Rs 118.86
Total	=	For 1 Cum		"B"	=	Rs 118.86
iii) Railway freight charge from Mirzachowki Railway station to Karpoorigram Railway station	=	For 1 MT	230.00 Km	=	Rs 425.30	= Rs 425.30
Busy Season charge 12% of Railway freight charge	=	For 1 MT		=	12%	= Rs 51.04
Railway Development Charge to 5% of Railway Freight Charge		For 1 MT		=	5%	= Rs 21.27
Terminal charge @Rs.40.00 per Terminal per MT		For 1 MT	2	x	Rs 40.00	= Rs 80.00
Total	=	For 1 MT				= Rs 577.61
		For 1 CUM			"C"	= Rs 926.02
		Add 6% Overhead Charge		=	6.0%	= Rs 55.56
		Add 10% Contractor Profit		=	10%	= Rs 0.00
		Total Railway Freight for 1 cum			"C"	= Rs 981.58
Cost for Stacking the Materials from Unloading dump upto lead 30 m.						
Total "D"	=	For 1 CUM		=	Rs 59.43	= Rs 59.43
Carriage Cost from Quarry to Karpoorigram Railway Yard	=	For 1 Cum			A+B+C+D	= Rs 1282.63

Analysis for Carriage Through Railway from Quarry Site to Work Site

Sheikhpura to Karpoorigram

Material -Stone Boulder

Quarry Site to Sheikhpura Railway Yard (By Road)

		Carriage Cost & Lead in Km				Loading & Unloading		Total
Pukka / Surface		Katcha						
8.00 4.80	x 7.60 x 2.00 Km = Rs 25.33 + 8.00 4.80	x 18.50	x 0.00 Km = Rs 0.00	+ Rs 83.64	=			Rs 108.98
UnSurface		8.00 4.80	x 9.20	x 1.00 Km	=			Rs 15.33
Total "A"								Rs 124.31

Sheikhpura	Railway Yard to Karpoorigram	Railway Yard = 122.00 Km						
i)	Loading Cost from Railway Yard to Railway Wagon	=	For 1 cum	=	Rs 118.86	=		Rs 118.86
	Total	=	For 1 CUM		"B"	=		Rs 118.86
iii)	Railway freight charge from Sheikhpura Railway station to Karpoorigram Railway station	=	For 1 MT 122.00 Km	=	Rs 231.30	=		Rs 231.30
	Busy Season charge 12% of Railway freight charge	=	For 1 MT	=	12%	=		Rs 27.76
	Railway Development Charge to 5% of Railway Freight Charge	=	For 1 MT	=	5%	=		Rs 11.57
	Terminal charge @Rs.40.00 per Terminal per MT	=	For 1 MT	2 x	Rs 40.00	=		Rs 80.00
	Total	=	For 1 MT	=		=		Rs 350.63
			For 1 CUM		"C"	=		Rs 584.38
	Add 6% Overhead Charge	=		=	6.0%	=		Rs 35.06
	Add 10% Contractor Profit	=		=	10.0%	=		Rs 0.00
	Total Railway Freight for 1 cum				"C"	=		Rs 619.44
	Cost for Stacking the Materials from Unloading dump upto lead 30 m.							
	Total "D"	=	For 1 CUM	=	Rs 59.43	=		Rs 59.43
	Carriage Cost from Quarry to Karpoorigram Railway Yard	=	For 1 Cum	=	=A+B+C+D	=		Rs 922.04

Analysis of Rates (FORMAT F8)

Sl. No.	SDB Sl. No.	MORD Ref No.	DESCRIPTION	Unit	Quantity	Rate	Amount in Rs
Haulage BY TIPPER							
1	1.10	(i)	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 @ 6 % on (a) Contractor's profit @ 10% on (a+b) Cost for 100 t-km = a+b Rate per cum = (a+b) / 100	hour hour	0.40 0.29	1043.00 1043.00	417.20 302.47 43.18 0.00 762.85 7.63
				Rate Per Km.	Cum		7.60
2	1.10	(ii)	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-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 @ 6 % on (a) Contractor's profit @ 10% on (a+b) Cost for 100 t-km = a+b Rate per cum = (a+b) / 100	hour hour	0.50 0.33	1043.00 1043.00	521.50 344.19 51.94 0.00 917.63 9.18
				Rate Per Km.	Cum		9.20
3	1.10	(iii)	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-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 Tipper 10 t capacity Haulage with load Empty return trip b) Overheads @ 6 % on (a) (c) Contractor's profit @ 10% on (a+b) Cost for 100 t-km = a+b+c Rate per cum = (a+b+c) / 100	hour hour	1.00 0.67	1043.00 1043.00	1043.00 698.81 104.51 0.00 1846.32 18.46
				Rate Per Km.	Cum		18.50

Sl. No.	SDB Sl. No.	MORD Ref No.	DESCRIPTION	Unit	Quantity	Rate	Amount in Rs
Haulage BY TRUCK							
4	1.10	(i)	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 Empty return trip b) Overheads @ 6 % on (a) (c) Contractor's profit @ 10% on (a+b) Cost for 100 t-km = a+b+c Rate per cum = (a+b+c) / 100	hour hour	0.40 0.29	934.30 934.30	373.72 270.95 38.68 0.00 683.35 6.83
				Rate Per Km.	Cum		6.83
5	1.10	(ii)	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-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 Empty return trip b) Overheads @ 6 % on (a) (c) Contractor's profit @ 10% on (a+b) Cost for 100 t-km = a+b+c Rate per cum = (a+b+c) / 100	hour hour	0.50 0.33	934.30 934.30	467.15 308.32 46.53 0.00 822.00 8.22
				Rate Per Km.	Cum		8.22
6	1.10	(iii)	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-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 Truck 10 t capacity Haulage with load Empty return trip b) Overheads @ 6 % on (a) (c) Contractor's profit @ 10% on (a+b) Cost for 100 t-km = a+b+c Rate per cum = (a+b+c) / 100	hour hour	1.00 0.67	934.30 934.30	934.30 625.98 93.62 0.00 1653.90 16.54
				Rate Per Km.	Cum		16.54

Sl. No.	SDB Sl. No.	MORD Ref No.	DESCRIPTION	Unit	Quantity	Rate	Amount in Rs
7	1.1	RCD	Loading and Unloading of Stone Boulder/Stone aggregates/Sand/Kanker/Moorum. Placing tipper at loading point, loading with front end loader, dumping, turning for return trip, excluding time for haulage and <i>Unit = cum</i> <i>Taking output = 5.5 cum</i> Time required for i) Positioning of tipper at loading point ii) Loading by front end loader 1 cum bucket capacity @ 25 cum per hour iii) Maneuvering, reversing, dumping and turning for return iv) Waiting time, unforeseen contingencies etc Total a) Machinery Tipper 5.5 tonnes capacity Front end-loader 1 cum bucket capacity @ 25 cum/hour (b) Overheads @ 6 % on (a) (c) Contractor's profit @ 10% on (a+b) Cost for 5.5 cum = a+b+c Rate per cum = (a+b+c)/ 5.5	hour hour	1 Min 13 Min 2 Min 4 Min 20 Min 0.330 0.330	1043.00 1403.00	344.19 462.99 48.43 0.00 855.61 155.57
			Unloading will be by tipping.			say	156.00
8	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. <i>Unit = cum</i> <i>Taking output = 5.5 cum</i> 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 Tipper 10 t capacity Front end-loader 1 cum bucket capacity @ 45 cum per hour b) Overheads @ 6.0 % c) Contractors Profit @ 10.0 % Cost for 5.5 cum = a+b+c Rate per cum = (a+b)/5.5 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. <i>Unit = cum</i> <i>Taking output = 5.5 cum</i> Placing tipper at unloading point excluding time for haulage and return trip Time required for i Positioning of tipper at loading point ii Manoeuvering, reversing, dumping and turning for return iii Waiting time, unforeseen contingencies, etc. Total a) Machinery Tipper 10 t capacity b) Overheads @ 6 % on (a) c) Contractors Profit @ 10.0 % on (b) Cost for 5.5 cum = a+b Rate per cum = (a+b)/5.5 Total loading and unloading by mechanical means	Min Min Min Min hour hour Min Min Min Min Min Min Min Min hour	1.000 7.330 2.000 10.330 0.172 0.122 1.000 2.000 2.000 5.000 0.080	1043.00 1043.00	179.40 171.17 21.03 - 371.60 67.56 83.44 5.01 0.00 88.45 16.08 83.64

Sl. No.	SDB Sl. No.	MORD Ref No.	DESCRIPTION	Unit	Quantity	Rate	Amount in Rs
8	1.2	RCD	Loading and Unloading of Boulders by Manual Means Unit = cum Taking output = 5.5 cum a) Labour Mate Mazdoor for loading and unloading b) Machinery Tipper 5.5 tonne capacity c) Overheads @ 6 % on (a+b) (d) Contractor's profit @ 10% on (a+b+c) Cost for 5.5 cum = a+b+c+d Rate per cum = (a+b+c+d)/5.5	day day hour	0.110 0.750 0.750	305.00 287.00 1043.00	33.55 215.25 782.25 61.86 0.00 1092.91 198.71
			Unloading will be by tipping.			say	199.00
9	1.3	RCD	Loading and Unloading of Cement or Steel by Manual Means Unit = tonne Taking output = 10 tonnes a) Labour Mate Mazdoor for loading and unloading b) Machinery Truck 10 tonne capacity c) Overheads 6 % on (a+b) (d) Contractor's profit @ 10% on (a+b+c) Cost for 10 tonnes = a+b+c+d Rate per tonnes = (a+b+c+d)/10	day day hour	0.080 2.000 2.000	305.00 287.00 934.30	24.40 574.00 1868.60 148.02 0.00 2615.02 261.50
						say	262.00
10	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 Mazdoor (Unskilled) b) Machinery Truck c) Overheads 6 % on (a+b) d) Contractor's profit @ 10% on (a+b+c) Cost for 5.5 cum = a+b+c+d Rate per cum = (a+b+c+d) /5.5	day day hour	0.02 0.50 0.50	305.00 287.00 934.30	6.10 143.50 467.15 37.01 0.00 653.76 118.86
			Total Cost	Cum			118.86
11		(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 Mazdoor (Unskilled) b) Machinery Truck c) Overheads 6 % on (a+b) d) Contractor's profit @ 10% on (a+b+c) Cost for 5.5 cum = a+b+c+d Rate per cum = (a+b+c+d) /5.5	day day hour	0.01 0.25 0.25	305.00 287.00 934.30	3.05 71.75 233.58 18.50 0.00 326.88 59.43
			Total Cost	Cum			59.43

Sl. No.	SDB Sl. No.	MORD Ref No.	DESCRIPTION	Unit	Quantity	Rate	Amount in Rs
12		(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	305.00	3.05
			Mazdoor (Unskilled)	day	0.25	287.00	71.75
		b)	Machinery				
			Truck	hour	0.25	934.30	233.58
		c)	Overheads 6 % on (a+b)				18.50
		d)	Contractor's profit @ 10% on (a+b+c)				0.00
			Cost for 5.5 cum = a+b+c+d				326.88
			Rate per cum = (a+b+c+d) / 5.5				59.43
			Total Cost	Cum			59.43
			Total Loding & Unloading of Stone Aggregate	Cum	= 118.86 + 59.43 =		178.29
13		(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	305.00	1.53
			Mazdoor (Unskilled)	day	0.13	287.00	35.88
		b)	Machinery				
			Truck	hour	0.166	934.30	155.09
		c)	Overheads 6 % on (a+b)				11.55
		d)	Contractor's profit @ 10% on (a+b+c)				0.00
			Cost for 5.5 cum = a+b+c+d				204.04
			Rate per cum = (a+b+c+d) / 5.5				37.10
			Total Cost	Cum			37.10
			Total Loding & Unloading of Sand / Moorum	Cum	= 59.43 + 37.1 =		96.53
14	1.3	(i)	Loading, Unloading and Stacking of Bricks by Manual Means Loading of Bricks by manual means including a lead upto 30 m Unit = 1000 Nos. Taking output = 2000 Nos.				
		a)	Labour				
			Mate	day	0.01	305.00	3.05
			Mazdoor (Unskilled)	day	0.25	287.00	71.75
		b)	Machinery				
			Truck	hour	0.33	934.30	308.32
		c)	Overheads 6 % on (a+b)				22.99
		d)	Contractor's profit @ 10% on (a+b+c)				0.00
			Cost for 2000 Nos. = a+b+c+d				406.11
			Rate for 1000 bricks = (a+b+c+d)/2				203.05
			Total Cost	no.			203.05
15		(ii)	Unloading and Stacking of Bricks by manual means including a Unit = 1000 Nos. Taking output = 2000 Nos.				
		a)	Labour				
			Mate	day	0.01	305.00	3.05
			Mazdoor (Unskilled)	day	0.25	287.00	71.75
		b)	Machinery				
			Truck	hour	0.33	934.30	308.32
		c)	Overheads 6 % on (a+b)				22.99
		d)	Contractor's profit @ 10% on (a+b+c)				0.00
			Cost for 2000 Nos. = a+b+c+d				406.11
			Rate for 1000 bricks = (a+b+c+d)/2				203.05
			Total Cost	no.			203.05
			Total Loding & Unloading of Brick Per 1000		= 203.05 + 203.05 =		406.10

Sl. No.	SDB Sl. No.	MORD Ref No.	DESCRIPTION	Unit	Quantity	Rate	Amount in Rs
			PAVEMENT CRUST LAYERS				
15	4.1 (A)	401	Granular Sub-base with Well Graded Material (Table 400.1) (By mix in place method) 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.				
		(ii)	For Grading II Material Unit = cum Taking output = 300 cum				
		a)	Labour				
			Mate	day	0.48	305.00	146.40
			Mazdoor (Skilled)	day	2.00	364.00	728.00
			Mazdoor (Unskilled)	day	10.00	287.00	2870.00
		b)	Machinery				
			Motor Grader 140 HP @ 50 cum per hour	hour	6.00	2786.00	16716.00
			Three wheel 80-100 kN static roller @ 10 cum per hour	hour	30.00	803.00	24090.00
			Tractor with Rotavator 25 cum per hour	hour	12.00	573.20	6878.40
			Water tanker 6 kl capacity	hour	5.00	184.00	920.00
		c)	Material				
			Well graded granular sub-base material as per Table 400.1				
			26.5 mm to 9.5 mm @ 35%	cum	134.00	657.85	88151.90
			9.5 mm to 2.36 mm @ 25%	cum	96.00	514.58	49399.68
			2.36 mm below @ 40% (Local sand)	cum	153.00	141.85	21703.05
			Water	kl	30.00	40.00	1200.00
		d)	Overheads @ 6 % on (a+b+c)				21280.34
			Cost of GSB for 300 cum				234083.77
			A) Cost of GSB without carriage per cum	cum			780.28
		f)	CARRIAGE				
			Carriage for GSB material	Cum	0.77	1711.61	1312.23
			Carriage for material below 2.36 mm (With Local Sand)	Cum	0.51	144.95	73.92
			Rate per cum with carriage				2166.44
			Total Cost	CUM			2,166.44

2042.17

Sl. No.	SDB Sl. No.	MORD Ref No.	DESCRIPTION	Unit	Quantity	Rate	Amount in Rs
15	4.7 (3-A)	405	Water Bound Macadam with Stone Screening Type "B" Gr- III WBM Grading 3 Providing, laying, spreading and compacting stone aggregates of specific sizes to water bound macadam specification including spreading in uniform thickness, hand packing, rolling with smooth wheel roller 80-100 kN in stages to proper grade and camber, applying and brooming, stone screening to fill-up the interstices of coarse aggregate, watering and compacting to the required density Grading 3 as per Technical Specification Clause 405.				
		(A)	By Mechanical Means Unit = cum Taking output = 360 cum				
		a)	Labour				
			Mate	day	0.68	305.00	207.40
			Mazdoor (Skilled)	day	2.00	364.00	728.00
			Mazdoor (Unskilled)	day	15.00	287.00	4305.00
		b)	Machinery				
			Tractor Mounted grader for grading @ 100 cum per hour	hour	14.40	549.10	7907.04
			Three wheel 80-100 kN static roller @ 8 cum per hour	hour	45.00	803.00	36135.00
			Water tanker 6 kl capacity	hour	24.00	184.00	4416.00
		c)	Material (Refer Tables 400.7, 8, 9 and 10)				
			Aggregate				
			Grading 3 53 mm to 22.4 mm @ 0.91 cum per 10 sqm for compacted thickness of 75 mm	cum	435.60	511.44	222783.26
			Stone Screening				
			Type B 11.2 mm for Grading 3 @ 0.18 cum per 10 sqm	cum	86.40	397.73	34363.87
			Water	kl	144	40.00	5760.00
		d)	Overheads @ 6 % on (a+b+c)				18996.33
			Cost for 360 cum = a+b+c+d+e				335601.91
			Rate per cum = (a+b+c+d+e)/360				932.23
		f)	CARRIAGE				
			Stone material Grading 3 53 mm to 22.4 mm	Cum	1.21	1711.61	2071.05
			Stone Screening	Cum	0.24	1711.61	410.79
			Rate per cum with carriage				3414.06
			Total Cost	cum			3,414.06

ANALYSIS OF RATES BRICK BAT FILLING.

1. ~~Gravel sub~~ providing brick bats including spreading, laying hand packing with C.I. Hammers in layers not exceeding 75MM thick including cost of eight batters, dangle signal, chokidar, taxes, Royalty, etc, an complete job, as per specifications and directions of S/G including cost of bricks. - - - all complete job.

Unit — Cum.

Assuming — 2.892 M³

Cost of Brick bats — 2.892 M³ @ 1096 = 00 — Rs 3163 = 87
~~max darsun skilted~~ Local Sand 0.632 M³ @ 141 = 95/M³ Rs 89 = 65

Labour (unskilled)

1. Carrying, spreading, carrying and packing unskilled labour 1.5 NO @ 287 = 00 — Rs 430 = 50
 Compaction of brick bats, with C.I. Hammers, 0.670 NO @ 287 = 00 — Rs 192 = 29
 Over head charge @ 6% on (a+b+c) — Rs 228 = 98.
 Total — 4045 = 29
 Rate / M³ — Rs 1428 = 42 / M³.

Carriage Cost

Carriage for Bricks (1 M³ bat) @ 300 NO @ 663 = 50/M³ — Rs 199 = 06
 Local Sand 0.220 M³ @ 97 = 00 / M³ — Rs 21 = 34.
 Cost of Sand in Royalty @ Rs 141 = 95 / M³ — Rs 1648 = 81.
 Total — 31 = 21
 Total — 1680 = 02

2. Gravel sub-base, with well Graded Material, Table 400.1 by Mix And Place Method, for grading II Material an complete job.

Labour — Mate — 0.48 NO @ 305.00 — Rs 146 = 40
 Max darsun skilted — 2.0 NO @ 364.00 — Rs 728 = 00
 Max darsun skilted — 10.0 NO @ 287 = 00 — Rs 2870 = 00

Machinery

Tractor Mounted Grader 6.0 Hrs @ 573 = 20 Rs 3439 = 20
 Three wheel 80-100 KM Statereolized 30.0 Hrs @ 803 = 00/Hrs — Rs 24090 = 00
 10 M³ / Hour
 Tractor with rotavator 12.0 Hrs @ 573 = 20 — Rs 6878 = 40
 25 M³ / Hour
 Water Tanker 6K9 Capacity 5.04 @ 184 = 00 — Rs 920 = 00
 Total — 39072 = 00

Material

Coarse Graded Gravel sub base
 53MM to 9.5MM, 95% — 134.40 M³ @ 604 = 91/M³ — Rs 80695 = 00
 9.5MM to 2.36MM 25% 96.00 M³ @ 514 = 58/M³ — Rs 49400 = 00
 2.36MM below Local Sand 153.60 M³ @ 141 = 95/M³ Rs 21788 = 00
 Water 30 KLD @ 40 = 00/Kg — Rs 1200 = 00
 Total — 1,92,155 = 00
 Add over head charge 6% — 11,529 = 00
 Total — 2,04,084 = 00

Construction at Road Embankment.
 Material obtained from borrow pits.
 All compaction on P.B.
 Clause, 300.1, 300.2, with lend up B
 to 1000.0m. - Out put - 100.0m

Mate - 0.04 NO @ 305 = 12.20 - R 12 = 20
 Unskilled - 1.0 NO @ 287 = 287 - R 287 = 00

Machinery

113 draught excavators 0.9m³

2m³ of 60m³/hr - 1.67 H @ 1969 = 20 - R 3288 = 56

Tippers 5.5 cum with 10t capacity - 4.50 H @ 1043 = 00 R 4693 = 50

10% for carrying Tippers - R 469 = 35

Doser D-50 for spreading 100m³/hr - 0.50 @ 3337 = 90 R 1668 = 95

Trucks mixed Gravel - 1.0 H @ 573 = 20 - R 573 = 20

Water Tenders 600 Capacity 2.0 H @ 184 = 00 - R 368 = 00

Three wheel Rovers 80-100KN 1.25 H @ 803 = 00 R 1003 = 75

Static Rovers @ 80m³/hr - 1.00 H @ 342 = 9 R 342 = 00

Compaction at birth - 100.0m³ @ 40 = 00 R 400 = 00

Rate 12.0m³

Add O.H.C. 6%.

Rate 173 = 06/m³.

Total 816325 = 51
 R 979 = 53
 17306 = 04

Item 7 Labor for cutting bamboo to 75mm dia bamboo, pile to 3m and making shoes and driving etc. - all comp. etc.

Out put - 30.5m

Assuming 20 no pile shoes 1.5m deep

Labor

Carpenter Grade II - 0.25 NO @ 345 = 00 - 86 = 25

Unskilled Maxd - 2.5 NO @ 287 = 00 - 717 = 50

Add Over Head 6%.

R 803 = 75
 48 = 22
 851 = 97

Item 8 Labor for fixing and @ 28 = 40/meter.

Group 62mm to 75mm dia bamboo

at every vertical pile with 150mm

long nails & 38 SW G. 9 mm - all comp. etc.

Out put - 30.5m

Nails 150mm long - 1.5 kg @ 55 = 84 - 27 = 90

Carpenter Grade II - 0.25 NO @ 345 = 00 - 49 = 13

Unskilled Maxd - 0.25 NO @ 287 = 00 - 71 = 75

Add Over Head 6%

Here Rate - 4 = 96/meter.

142 = 80
 8 = 57
 151 = 37