

## **COST ESTIMATES**

### **7.1 General**

Cost estimate is an important component of the detailed study as it provides vital input to economic and financial evaluation. The cost estimation have been prepared for the project road, for improvement of the existing road to 2-lane with paved shoulders configuration including reconstruction of existing pavement, cross drainage structures, lined longitudinal drains, road furniture, pick bus stops/shelters, improvement of junctions & project facilities etc. Over and above these construction costs, provision has been made for environmental costs, relocation of utilities, cost of land acquisition, quality control, supervision charges, Road Safety Cell Audit Charges, highway plantation charges, escalation charges and maintenance charges as lump sum provisions to assess the total cost of the project road.

### **7.2 Methodology**

Cost estimate methodology involves the following:

- Computation of quantities for improvement proposal
- Unit rate analysis
- Bill pricing and finalization of cost estimates

#### **7.2.1 Computation of quantities for improvement proposal**

The main construction items covered in costs estimating are :

1. Site Clearance
2. Earthworks
3. Granular Base and Sub-base Course
4. Bituminous Courses
5. Cross Drainage Works
6. Road side apparatus, Traffic Sign , Road Markings
7. Drainage and Protective Works
8. Bridges

#### **7.2.2 Unit Rates Analysis**

The Detailed Rate Analysis for various items have been carried out based on the procedure given in 'Standard Data Book for Analysis of Rates, First Revision 2003' published by Ministry of Road Transport & Highways . The basic rates for various item are taken from Arunachal Pradesh Schedule of Rates (AP SOR 2014). The basic rate cement has be adopted from



INAMPRO (DALMIA OPC 43 GRADE), for bitumen IOCL rates of Haldia (VG 30) has been adopted and steel prices were adopted from the market price at Guwahati.

#### **Materials sources**

##### **(i) Coarse Aggregates**

Coarse aggregates fulfilling the requirements for base, sub base and asphaltic works are considered from Palin river quarry near the Km 70. Hard stone aggregates fulfilling the requirement for concrete works are considered from roadside stone quarry at KM 85, KM122 and KM115.

##### **(ii) Fine Aggregate**

Fine Aggregates will be also available from the sources at existing Km at 70.

##### **(iii) Bitumen**

Bitumen of viscosity grade VG-30 is available from Haldia IOCL. A lead of 1533 Km is considered for the Analysis of Rates.

##### **(iv) Cement**

Cement is considered to be used from Jayantia Hills.

##### **(v) Reinforcement**

Reinforcement Bars are considered from Guwahati.

#### **7.2.3 Bill pricing and finalization of cost estimates**

The construction cost is worked out according to the development proposal detailed under chapter 5. Cost of civil works is calculated bill wise and other non civil items like, land acquisition cost, Utilities relocation cost, Environmental cost, contingencies etc. are added to arrive the project cost.

The total Civil Construction Cost of the project comes out to be **Rs. 216.75 Crore** with per km construction cost is **Rs. 12.04 Crore**.

The total Project Cost comes out to be **Rs. 281.87 Crore** with per km total project cost is **Rs. 15.66 Crore**.

#### **7.3 Abstract of Cost**

The Abstract of Project Cost of Civil works is presented under below.



### GENERAL ABSTRACT OF COST

Bill No	Item of works and Sub-Heads	Unit	Quantity	Cost (Rs. lakhs)
1	SITE CLEARANCE AND DISMANTLING	Km	18.000	47.932
2	EARTH WORK			
	Formation Work	Cum	3389691	5169.339
	Sub Total		<b>3389691</b>	<b>5169.34</b>
3	Granular work (sub- base, base, shoulders)	Km	18.00	2379.18
4	BITUMINOUS COURSES (125 mm)	Km	18.00	2977.62
5	CULVERTS (82 Nos.)			
	a) RCC Box Culverts (2x2)	Nos.	24	3503.25
	b) RCC Box Culverts (3x3)	Nos.	38	
	c) RCC Box Culverts (3x4)	Nos.	1	
	d) RCC Box Culverts (4x3)	Nos.	5	
	e) RCC Box Culverts (4x4)	Nos.	8	
	f) RCC Box Culverts (5x3)	Nos.	1	
	g) RCC Box Culverts (1/6x6/3)	Nos.	5	
6	DRAINAGE AND PROTECTIVE WORKS			
	a) Road Side Drain	Mtr.	26973	1854.87
	b) Breast wall	Mtr.	4620	536.50
	c) Retaining wall	Mtr.	927	3084.90
	d) Catch water drain	Mtr.	4620	117.90
	e) Vetiver Plantation for slope Protection work	sqm	256163	520.01
	f) Solid Footpath	Mtr.	3462	486.54
	g) Pickup Bus Stop	Nos.	4	81.71
	h) Cross Road	Nos.	11	40.10
7	TRAFFIC SIGNS, MARKINGS AND OTHER ROAD APPURTENANCES	Km	18.00	181.99
8	BRIDGE	Nos.	2	689.572

A	Civil cost (inc. labour cess) (in Lakhs) =	:	<b>21671.41</b>
B	Contingency Charges@ 2.8% of Civil Cost =	:	606.80
C	Sub Total (A+B) =	:	<b>22278.21</b>
D	Supervision Charges @ 3% on C =	:	668.35
E	Agency Charges @ 3% on C =	:	668.35
F	Quality Control @ 0.25% on C =	:	55.70
G	Road Safety Cell Audit Charges @ 0.25% on C =	:	55.70
H	Maintenance @ 5% on C =	:	1113.91
I	Escalation @5% per annum for 3 years on C =	:	3341.73
J	Grand Total (C+D+E+F+G+H+I) =	:	<b>28181.94</b>
	Say ( Crore ) =	:	<b>281.82</b>