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. 167.28 Crore** with per km construction cost is **Rs. 11.15 Crore.**

The total Project Cost comes out to be **Rs. 217.54 Crore** with per km total project cost is **Rs. 14.50 Crore.**

7.3 Abstract of Cost

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

GENERAL ABSTRACT OF COST

Length= **15.00** Km

Bill No	Item of works and Sub-Heads	Unit	Quantity	Cost (Rs. lakhs)
1	SITE CLEARANCE AND DISMANTLING	Km	15.000	38.520
2	EARTH WORK			
	Formation Work	Cum	2837224	4692.360
	Sub Total		**2837224**	**4692.36**
3	Granular work (sub- base, base, shoulders)	Km	15.000	2335.78
4	BITUMINOUS COURSES (125 mm)	Km	15.000	2633.83
5	CULVERTS (62 Nos.)			
	a) RCC Box Culverts (2x2)	Nos.	18	2402.25
	b) RCC Box Culverts (3x3)	Nos.	28	
	c) RCC Box Culverts (4x3)	Nos.	2	
	d) RCC Box Culverts (4x4)	Nos.	8	
	e) RCC Box Culverts (5x3)	Nos.	1	
	f) RCC Box Culverts (6x3)	Nos.	1	
	g) RCC Box Culverts (6x4)	Nos.	1	
	h) RCC Box Culverts (1/6x6/3)	Nos.	3	
6	DRAINAGE AND PROTECTIVE WORKS			
	a) Longitudinal Open Drains	Mtr.	19665	1352.42
	b) Breast wall	Mtr.	3425	453.23
	c) Retaining wall	Mtr.	438	1510.96
	d) Carcth water drain	Mtr.	3425	87.41
	e) Vetriver Plantation for slope Protection work	sqm	320490	650.59
	f) Solid Footpath	Mtr.	941	133.40
	g) Pickup Bus Stop	Nos.	2	41.69
	h) Truck Laybye	Nos.	2	108.33
	h) Cross Road	Nos.	4	15.65
7	TRAFFIC SIGNS, MARKINGS AND OTHER ROAD APPURTENANCES	Km	15	105.80
8	MINOR BRIDGE	Nos.	1	166.27

A	Civil cost (inc. labour cess) (in Lakhs) =		:	**16728.48**
B	Contingency Charges@ 2.8% of Civil Cost =		:	468.40
C	Sub Total (A+B) =		:	**17196.88**
D	Supervision Charges @ 3% on C =		:	515.91
E	Agency Charges @ 3% on C =		:	515.91
F	Quality Control @ 0.25% on C =		:	42.99
G	Road Safety Cell Audit Charges @ 0.25% on C =		:	42.99
H	Maintenance @ 5% on C =		:	859.84
I	Escalation @5% per annum for 3 years on C =		:	2579.53
J	Grand Total (C+D+E+F+G+H+I) =		:	**21754.05**
	Say (Crore) =		:	**217.54**

K&J-ALLIANCE (JV)