

6.5 Preliminary Cost Estimates

6.5.1 Basis of Cost Estimates

Project cost for the structural measures proposed in this stage is estimated and expressed in both as Bolivar (Bs) the Venezuelan currency and US dollar currency, based on the following conditions.

- 1) Cost for all works is estimated on the price level of January 1999.
- 2) Conversion rate of currency is US\$ 1.00= Bs. 570 (January 1999).
- 3) Project cost consists of following components (Table 6.5.1):

Table 6.5.1 Project Cost Components

Direct cost	- Construction cost	- Construction and procurement costs
Indirect cost	- Government administration cost	- Assumed at 5 % of construction cost
	- Engineering cost for detailed design and construction supervision	- Assumed at 10 % of direct construction cost
	- Physical contingency	- Assumed at 20 % of the direct construction cost

- 4) Unit costs of construction and procurement works for closing dike and erosion protection revetment are estimated, referring to the construction costs of civil works in the project area, as well as current costs of material and labor.
- 5) The unit cost of US\$ 2.6 per m³ is tentatively applied for dredging works, which is estimated based on INC's records of previous dredging works and its expenses. Due to the old records, this cost of dredging has to be updated in the second survey stage.
- 6) As for the cost estimates, the provisional volumes of proposed work are adopted based on available information and data, such as navigation map in 1995, satellite image. Since these bases of calculation shows only rough figures for the estimates, the definite volumes have to be confirmed with taking the results of site survey to be conducted in the feasibility stage. In addition, the extent of construction for erosion protection revetment is also tentatively determined in view point of protection of existing urbanized town. Therefore, the final extent of protection would be made based on the results of 2-dimensional hydraulic analysis to be conducted in the feasibility stage.

6.5.2 Construction and Procurement Cost

The preliminary project cost for the proposed channel improvement Alternative B-2 is shown below. The project cost is estimated at 58,793 million Bs (US \$ 103.1 million) as tabulated below.

A.	Direct Cost	43,550 Million Bs.	(US \$ 76.4 Million)
	- Closing Dike	30,464 Million Bs.	(US \$ 53.4 Million)
	- Revetment	5,587 Million Bs.	(US \$ 9.8 Million)
	- Initial Dredging	7,499 Million Bs.	(US \$ 13.2 Million)
B.	Indirect Cost	6,533 Million Bs.	(US \$ 11.4 Million)
	- Administration Cost	2,178 Million Bs.	(US \$ 3.8 Million)
	- Engineering Service Cost	4,355 Million Bs.	(US \$ 7.6 Million)
C.	Physical Contingency	8,710 Million Bs.	(US \$ 15.3 Million)
Total		58,793 Million Bs.	(Equivalent US \$ 103.1 million)

Details of the project cost is in Table 6.5.2.

Table 6.5.2 Channel Improvement Cost

Work Items		Unit Cost (Bs)	Quantity (m ³)	Cost/m (Bs)	Total Cost (Million Bs)	Equivalent (Million US\$)
Direct Cost	A. Closing Dike (L=2300m)					
	1). Rubble Stone	6,498	403	2,618,694	6,023	10.6
	2). Concrete Block	54,777	194	10,626,738	24,441	42.9
	Sub Total			13,245,432	30,464	53.4
	B. Revetment (L=2000m)					
	1). Concrete Block Riprap	54,777	51	2,793,627	5,587	9.8
	Sub Total			2,793,627	5,587	9.8
	C. Initial Dredging	1,482	5,060,000	7,498,920,000	7,499	13.2
	Total Direct Cost				43,550	76.4
Indirect Cost	Administration Cost				2,178	3.8
	Engineering Service Cost				4,355	7.6
	Total Indirect Cost				6,533	11.4
Physical Contingency					8,710	15.3
Total Cost					58,793	103.1