## ANNEX E

Project Works, Cost Estimate, and Implementation Plan

#### THE STUDY ON

# THE LINING OF DISTRIBUTARIES AND MINORS IN

## PUNJAB IN

## THE ISLAMIC REPUBLIC OF PAKISTAN

## **VOLUME II**

# ANNEX E PROJECT WORKS, COST ESTIMATES AND IMPLEMENTATION PLAN

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## Annex E Project Works, Cost Estimates and Implementation Plan

#### E.1 Project Works

#### E.1.1 Structure Planning

Proposed structure planning are shown in Table E-1~4. Detailed data are compiled into the attachment for the inventory survey and the basic design of the structures.

- Each distributary canal system is proposed to be transferred to the relevant farmer's organization and discharge measurement and control is necessary at outlet from main and branch canals. For the purpose, installation of diversion gates are proposed to the distributaries lacking them such as Mungi, Janiwala, Pirmahal, Killianwala, Thamman and China and automatic discharge reader and recorder are also proposed to be installed to all distributaries. Meter Flume is to be removed at construction.
- As required function of outlet, proportional extraction of water and silt independently from downstream water level is necessary for the project. Adjustable Proportional Module (APM) Outlet which has been applied at most of cases at present situation has been claimed its weak silt extraction function and Open Flume Outlet is exposed and vulnerable. Adjustable Orifice Semi-Module (AOSM) is thus proposed in general for the project since AOSM, applied for Command Water Management Project, showed good performance for proportional extraction of water and silt<sup>1</sup>. Proposed numbers of outlets by types are shown below.

Type of Outlet	Lower Jhelum	Lower Chenab	CBDC	Project Total
AOSM	225	487	125	837
Open Flume Ty	ne 75	62	16	153
Open Flume Type Pipe Outlet	10	19	19	48
Total	310	568	160	1,038

- Use of existing bridges with repair if necessary and replacement of Footpath Bridge by VR (Village Road) Bridge as well as new installation of VR Bridge if required among where bank damage by cattle was observed are proposed to improve rural transportation and minimize cattle passage over channel. As the

Reference to SWABI SCARP Working Paper 37

results of the structure planning, total numbers of bridges tolerant for vehicle passage increase to be 442 (every 1.31 km) from 229 (every 2.53 km excluding the bridges fatally damaged).

- For the purpose of canal bank protection, 267 Buffalo Wallow (Cattle Ghat) are proposed nearby each bridges at watercourse head. Washing Steps, Drop and Spillway will be replaced disregarding the present condition. Canal Crossings (Aquiducts and pipe crossings), pipe culvert and railway bridges will be used as they are.

#### E.1.2 Construction Volume for Earthwork and Concrete Works

Construction volumes for each king of works are decided by basic design based on the results of canal route survey executed within the Phase II field work period. Each work volumes are shown in Table B-5~8. The canal route survey was conducted through 541.27 km (Total length of the canals selected at Interim Stage is 583.42 km and out of which 553.23 km was estimated total length to be surveyed) consisting baseline survey, cross section survey and structure inventory survey and designed total length came to be 539.51 km. Total acreage of land compensation is estimated to be 138 ha and 2.7 m width outside ROW in average. Average work volume per linear meter estimated based on canal sections surveyed and designed are; 4.15 m3 excavation, 8.69 m3 embankment and 0.5 m3 concrete. The work volumes show wide fluctuation according to surface condition within ROW and thus more detailed survey is recommended to be executed at the time of Detailed Design. Designed canal profiles are shown in the Drawings (Vol. IV).

## E.1.3 Construction Procedure and Methods

#### (1) Construction Method

Specifications of earthwork and dimension of improved canal cross section are proposed as shown in Figure B-6. Stripping thickness of 0.2 m is proposed respectively for outside and inside of canal prism. Bank cutting thickness within canal prism of 1.0 m or 2.0 m and over-embankment exceeding designed lining surface is proposed by 0.5 m or 1.0 m respectively for the cases that water depth is shallower than or equal to/deeper than 3.5 feet. Compaction is to be done up to designed lining height and earthen freeboard is formed by spoil banking. Width and minimum embankment from field level for operation and maintenance road are 4.0 m and 0.3 m(1 foot) respectively. Bank width

for filling section are proposed to be 1.0 m (Q < 50 cusec), 1.5 m (50 < Q < 150 cusec), 2.0 m (150 < Q < 300 cusec) and 2.5 m (Q > 300 cusec). Half width are respectively proposed for cutting section.

Earthworks is planned to start by stripping at the canal bottom and bank cut by combination of bulldozer and backhoe after completion of temporary diversion work by every 300 to 500 m according to site condition. Haulage of earth material is not considered for the diversion work. Succeedingly, embankment work including over-embankment portion which will be cut after compaction. Borrow of earth material is planned within ROW and areas where vitally salt affected and abandoned and average hauling distance is estimated to be 500 m. Embankment work is executed with emphasis on water content control by water bowser, bulldozer and roller. Cutting and trimming of lining surface is done by backhoe and by manual work.

Lining work is started with preparation of lining base layer by mortar, followed by spreading low-water-content-concrete with steel slip form and vibrator and finished with manual surfacing. Curing with supplying enough humidity (preferably kept under water or spraying water continuously) is strongly recommended to avoid surface crack.

#### E.2 Cost Estimates

## E.2.1 Basic Conditions and Assumptions for the Cost Estimates

Foreign currency portion corresponding to services and material imported and local currency portion corresponding to domestic services and material are separately estimated for each cost items for the purpose of project evaluation and planning of loan arrangement. The project cost comprises investment cost, replacement cost and O&M cost. Institutional reform cost is included within the investment cost. Cost estimates are based on current price at the time of May, 1996 for material, manpower and machinery referred from price index and statistics of import. Exchange rate of Rs. 34 to US\$ 1.0 is applied for cost estimate at the same time.

## E.2.2 Estimates of the Project Cost

Project cost is thus estimated to be Rs. 3,120 million out of which the foreign currency portion turns to be Rs. 1,674 million and 54% and the local currency portion be

Rs. 1,446 million and 46%. The project cost, unit cost and work volume of each work items are shown in Table E-9. Distributary-wise project cost are shown in the Table E-10 ~ 22.

#### E.2.3 Breakdown of the Project Cost

Investment cost consists of 1) Compensation Cost, 2) Direct Construction Cost, 3) Administration and Consultant Cost, 4) Institutional Reform Cost, 5) Physical Contingency and 6) Price Contingency. Compensation cost of about Rs. 3.0 million includes land compensation cost for construction work outside of the Right of way and replacement cost of the facilities which would be damaged by the construction work. Direct construction cost of about Rs. 1,985 million includes gate installation, earthwork, lining, work, related facilities and miscellaneous works. Miscellaneous works are estimated to be 3% of total cost of the other items in the direct construction cost for temporary outlets, discharge measurement facilities, admixture of concrete and other uncounted items above while construction period. Administration and consultant cost comprises remuneration for expatriate consultants and local stuffs and office maintenance cost including procurement cost of equipments required in the project office. The administration and consultant cost is estimated to be Rs. 284 million and 14.3% of the direct construction cost. Institutional reform cost of about Rs. 76 million and 3.8% of the direct construction cost includes remuneration of expatriate consultant and stuffs (Rs. 64 million), procurement and operation cost of vehicle (Rs. 8 million), office maintenance cost including procurement cost of equipments (Rs. 3 million) and activities and transmission cost (Rs. 1 million) and described in detail in chapter 5.4. Physical contingency is estimated to be 10 % of the direct construction cost. Price contingency is estimated to be about 20% based on price escalation of 3% per year in both foreign and local currency for 4 year net construction period by the year of 2004.

Periodical repair of concrete lining portion as well as related facilities of the distributaries and minors to keep sustainable lined canal prism. The replacement cost is estimated to be 20% of the direct construction cost for every 20 years, namely Rs. 19.85 million and 1% of devaluation of canal is predicted and the replacement cost per 20 years comes to be Rs. 397 million.

#### E.2.4 Unit Cost Analyses

Unit cost for manpower and material as of May 1996 are surveyed and summarized in the Table E-23. Operation cost of construction machinery are summarized in the Table E-24. Unit cost of each kind of works are listed and compared with the similar project in Table E-25. The unit costs are thus justified applicable for cost estimates of the Project.

#### E.2.5 Annual Disbursement Schedule

Table E-26 shows annual disbursement schedule in accordance with the proposed project implementation schedule.

## E.2.6 Replacement Cost and O&M Cost

Periodical repair of concrete lining portion as well as related facilities of the distributaries and minors to keep sustainable lined canal prism. The replacement cost is estimated to be 20% of the direct construction cost for every 20 years, namely Rs. 19.85 million and 1% of devaluation of canal is predicted and the replacement cost per 20 years comes to be Rs. 397 million. O&M cost is divided into facility maintenance cost and personnel cost. Consideration of safety factor, facility maintenance cost is estimated as high as the same item being spent for unlined channel of about Rs. 17.80 million per year for desilting work and remedies against weeding, erosion and devastation of canal prism. Personnel cost is estimated to be drastically reduced down to Rs. 5.03 million. Annual replacement cost and O&M cost are summarized in the following table.

		t and O&M cos	t (Unit: Rs.	
Item of Cost	LJC	LCC	<u>CBDC</u>	Total
(1) Direct Cost	677,290	1,078,770	229,440	1,985,500
(2) Annual replaceme	ent cost and C	O&M cost	.*	
1) Replacement*1	6,773	10,788	2,294	19,850
2) O&M Cost				الممأل سما
a) Maintenance	5,990	9,602	2,210	17,802
b) Personnel	1,323	2,845	860	5,028
Total	14.087	21,901	5,356	41,344
(3) Annual replacement	ant pact and f	O&Moost / Dir	oct Cost (%)	
(3) Annual replacem	2.1	2.0	2.3	2.1

## E.3 Project Implementation Plan

#### E.3.1 General

In accordance with the institutional reforms of the water sectors, the Provincial Irrigation Departments (PIDs) will be transformed into Provincial Irrigation and Drainage Authorities (PIDAs). Below the PIDAs, financially self-accounting Area Water Boards (AWBs) will be created. Below the AWB level, farmers will be encouraged to form Water Users Formations at the distributary and minor level on a pilot concept basis. In the current critical time, establishment of implementation program not only for construction work, but also operation and maintenance program - with institutional reforms - is of paramount importance. In this regard, it is strongly recommended to organize an executing agency as shown in Fig. E-1, for executing construction work and for promoting the farmers participation as well.

## E.3.2 Implementation of Construction Work

The executive agency for the Project would be PIDA, which would be responsible for the planning, design, bidding and supervision of the project work, and keep close coordination with the three irrigation systems of LJC, LCC and CBDC offices on the project approval, finance and project implementation. The Project would be implemented under the organization of PIDA, which would be reorganized from PID, and would be of great importance in the coordination of activities among the respective departments concerned.

Prior to the commencement of the project work, the Project Director would be appointed under the Managing Director of PIDA. Three Deputy Directors would be nominated as co-managers to assist the Project Director to cover the responsibilities of respective departments of Technical/Civil Engineering, WUA & FO/Agriculture and Legislation.

Under the Technical Department, aiming at the smooth implementation, Planning, Engineering & Construction Section, Right-of-Way and Coordination Section, and Financial Section would be organized. Planning, Engineering & Construction Section would have the work for planning and monitoring of construction work, design and support of construction work and supervision of contract work. Right-of-Way and Coordination Section would deal with land acquisition, education and training to farmers,

management of claim during the construction. Financial Department would be in charge of disbursement and accounting.

#### E.3.3 Construction Mode and Method

The open international competitive bidding would be conducted with financial assistance from international institution. The procedure of pre-qualification and bidding for the contract work have not been authorized. According to the draft procedure, the Awarding Committee would be chaired by the Managing Director of PIDA. Every matter would be dealt with by the departments concerned under the proposed organization and approved by the committee, through administrative arrangement of Planning, Engineering & Construction Section.

#### E.3.4 Construction Schedule

Upon approval of the project, the detailed design as well as bidding documents, specifications and other documents/drawings necessary for the approval and implementation of the project work should be commenced and at the same time the selection of consultants would be carried out. The consultants would be selected first by the technical proposal. After approval of the selection, the contract conditions would be concluded. The pre-qualification documents would be revised by the consultants upon the commencement of consulting services and advertised after approval. The contract work would be bidden upon the approval of detailed design and construction drawings and started in the construction. The arrangement of all right-of-way should be accomplished before the construction with every efforts. These pre-construction activities are estimated to take about two years. Overall construction schedule is shown in Fig. E-2.

## TABLES

Table E-1 Summary of Proposed Structures

Type of Outlier   Type of Ou	-	Name of		Outle	Outlet(Nos)		Drop						άĞ	Bridge(Nos)	(30						Step	Agui-	- Water		Pipe   Escape   Gates		Buffalo	हु इ
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Note; A: New or Replaced, B; Retained and C; Repaired

Table E-2 Proposed Structures for LJC Area

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able E-3 Proposed Structures for LCC Area

Name of	10 J	Name of		ō	Ourlet(Nos)		Orop						Brid	Bridge(Nos)					-	ž	-in Aqui-	_	ية ئو		Escape Gates	!	Buffalo to	[06]
Distributry	Source	Minor	Total	ĮĖ	Type of Outlet	ıtlet	Type A	Total			,		٦	Type of Bridge	3ridge				-	Total	r –	duct Course	<u>Se</u>	Culver			Wallow	
<del></del>			ğ	AOSM	AOSM Flume	Pine	noc	ب 100		AR		L	2.0	DR			ΥR		2	RW nos		Cross	- S					
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IS PIR MAHAL		JUNEDWALA	4.	£1		A10	1	6	0	1		4		-	7	5	v.	- 1	***************************************		-		1	-	-	-	4	20
14 PIR MAHAL		JANDWALA	4	4	***************************************		-		0	-	-	4	-		-		-	-	2				-			-	-	∞.]
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	Sub-total		8	F	4	0		21	0	0	0	4	0	-		-2	=	0	9	0	0	0	-	0	3	3	4	ន
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lore: A.: New or Replaced, B.: Retained and C.: Repair

Distributty Minor Total Type of Ouriert Type Ouriert	.— <u>-</u>	Name of Name of	Name of		Out	Outlet(Nos)		Drop					٠	ě.	Bridge(Nos)	· (%						Step	Aqui-	Water	Pipe	Escape	Cates	Aqui- Water Pipe Escape Cates Buffalo	total
1   2   10.05   Filume   Pipe   nos   AOSM   Filume   Pipe   AOSM		Distributty	Minor	Total		pe of Q	utlet	Type A	Totai						Spe of	(Bridg	ñ آ	:				Total	duct	Surse	Culver	•		Wallow	
1 2 2 A A A A A A A A A A B C A B C A B C B A B A				nos	AOSM	Flume	Pipe		ő	ļ: 	AR		H		품		_		<u>~</u>		××	SOL	***	Cross					
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Kala         25         4         3         1         20         0         0         20         17         3         3         1         2         16         1           Hotal         88         74         9         5         1         26         0		sub-total		13	‡	7	4	-	E.		. <u></u> I		0	0	0	-	62	53	٥	oò		01	2	0	0	0	7	14	132
Kala         25         18         5         2         6         0         0         0         6         6         6         6         6         6         6         6         6         6         6         7         1 <td></td> <td>-</td> <td>-</td> <td></td> <td>-</td> <td></td>													-	-														-	
Kala         25         18         5         2         6         0         0         0         6         7         7         9 <td>w</td> <td>China</td> <td></td> <td>63</td> <td>\$\$</td> <td>7</td> <td>3</td> <td></td> <td>8</td> <td>0</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>ន</td> <td>11</td> <td></td> <td>3</td> <td></td> <td>52</td> <td>-</td> <td></td> <td></td> <td></td> <td>63</td> <td>16</td> <td>8</td>	w	China		63	\$\$	7	3		8	0							ន	11		3		52	-				63	16	8
88     74     9     5     1     26     0	4		Kala	ន	18	S	7	4	9	0	-		1		_		9	٥			1							4	8
160     125     16     19     2     57     0     0     0     0     0     1     55     44     0     11     1     13     3     0     0     4     34		sub-total		88	74	6		1	83	0	0	0	0			0	∓	23	٥	3	0	3	-	0	٥	0	Сł	8	14
160 125 16 19 2 57 0 0 0 1 0 0 1 55 44 0 11 1 13 3 0 0 0 4 34						***************************************	***************************************	***************************************	***************************************	• •			<u> </u>	-	_								i						
	_	Grand Total		8	52		61	73	53	0	<del>.</del>		0		0	_	55	3	0	Ξ		13	<u>س</u>	0	0	0	4	ĸ	273

Table E-5 Project Work Volume Summary

Remarks		90	3.5		3.0	শ্ব	7.2	4	6.6			8.5	6.	<u></u>	<b>9</b>	7.6	<u> </u>	
	- Juand	Compensation (m2)	13,938.5	136,959.1	121,568.9	277.466.5	7 23,436.7	303,211.4	16,669.9	75,134.7	2,639.1	100,125.8	192,600.9	2818.415	209,499,6		388.879.3	1376.164.3
		Joints (Lincar M.)	7,812.6	143,002.0	270,667.3	4214819	47,306.7	61,170,2	29,359.6	79,125.8	35,332,3	155,346.4	110,804.6	518.445.6	82.392.4	63,910.7	146.303.0	1.086.230.5
	Lining Work	Plaster (m2)	22,920.0	416,803.3	800,068.3	1239,791.5	138,954.5	545,287.5	82,510.1	259,539.6	69,849.2	461,798.8	328,683.0	1.836,622,6	223,425.1	191,668.2	415.093.3	3.541.507.4
	:	Concrete (m3)	1,746.3	31,755.9	8.896'09	94.471.0	10,588.0	41,580.2	6,287.6	19,774.2	5,321.8	35.194.9	25,043.9	143.790.5	17.023.6	14,605.3	31.628.9	269.820.4
olume	Hanlage	Borrow&Haul (m3)	28,510.1	507,846.2	754.875.7	12912320	222,347.5	141,808.3	76,982.8	383,164.4	75,563.7	44K,800.0	686,415.4	2,035,082,1	184.961.5	134,964.5	319.926.0	3.646.240.1
Construction Work Volume	ne Diversion	Embankment (m3)	18,298.4	381,506.9	614,634.1	1014439.4	176,203.2	276,423.9	61,583.4	311,992.6	56,288.0	445,610.3	589,830.0	19179314	173,015.8	141,480.5	314.496.3	3.246.867.0
Const	Farthwork for Diversion	Excavation (m3)	5,405.3	157,713.2	372,383.4	535.501.9	44,151.3	533,637.8	36,175.8	114,944.9	27,789.7	328,315.9	140,293.7	1225309.1	156,107.5	129,230.0	285 337 4	2,046,148.4
		Tramming (m2)	0.026,22	416,803.3	800,068.3	2 167 65 1	138,954.5	545,287.5	82,510.1	259,539.6	69,849.2	461,798.8	328,683.0	1.886.622.6	223,425.1	191,668.2	415.093.1	3.541.507.4
	in Prism	Embanument (m3)	33,447.8	560,866,4	983,768.3	1.578.082.4	162,495.1	763,555.3	99,850.1	346,437.0	95,381.2	638,323,2	454.506.5	2.560.548.3	312,375.0	235,088.4	547.463.4	4 685 004.3
	Earthwork in Prism	Excavation (m3)	17,830.8	276,813.9	471,143.3	265 788 0	72,199.5	364,533.1	48,274.9	160,320,2	48,315.8	306,817.6	217,627.4	1,218,038.5	144,321.8	112.374.4	256.696.2	5 2240.572.7
		Scripping (m.1)	2,874.3	45,269.4	86,021.9	9591म्हा	13,853.8	63,068.1	8,712.8	26,146,3	8,405.1	50,361.0	35,217.7	205,264,2	27,122.3	18,805.0	45.927.1	385.857.6
Command	Area	(ha)	2,285	25,236	36,324	23.844	6,627	34.677	7.540	19,161	6.513	18,242	21.019	113.779	9.816	16.390	36.206	64.94 203.879.72
Design	Discharge	(m3/s)	0.54	979	12.86	9% 61	2.46	8.87	1.95	5.39	1.59	\$24	6.96	33.45		4.33	9	15
ار	Lined for Lining Discharge	(km)	98.9	78.18	96.49	इ	24.74	75.77	15.52	37.31	18.58	82.13	36.98	क्षाव	33.87	33.0%	66.95	12.625
Length	Lined	(km)	0.00	8;	10.6	8 21	0.30	\$9.5	23	3.9%	8.0	8	15.73	27.91	ង្គ	0.19	34	4191
	Total	(km)	6.86	80.13	107.13	134 13	8	81.42	17.71	41.29	18.58	\$2.13	52.71	318.94	37.09	33,27	70.36	\$83.45
Name of	Distributary		Pindi	2 Hujjan	Kirana	LIC Total	4 Sarangwala	S Nastana	6 Sojra	Mungi	8 Janiwala/Hamza	9 Pir Mahal	10 Killianwala	LCC Total	11 Thamman	China	CBDC Total	Project Total
	?		_	r.ŧ	۲,		4	۷,	¢		ж	٥	2		Ξ	ij		

Table E-6 Project Work Volume for LJC Area

No Dutrholowy   Minor   Gray   Carrol   Carro	L.,	Name of	Name of		Length		Design	Command					Const	Construction Work Volume	Hame					Remarks
Carry   Carr	ž	Distributary	Minor	Total	Lined f	J. Lining	Discharge	Area		Farrhwork	in Prism		Earthwork fo	y Diversion	Havinge	. !	Lining Work		Land	
March   Marc		-		(£	(km)	(km)	(m.//s)	- P	Supping		Embankment	Inmmang	-	Embankment	Borrow& Haul	Concrete	Plaster	Γ	Compensation	
Acta					:				· (EE)	(F,m)	(m3)	(m2)	(£m)	(m3)	(m3)	(£E)	(m2)		(ZE)	
Avone         3.3.98         1.59         2.0.0.0         2.0.		Pung		98.0	0.0	6.86	0.54	2,285	2,874,3	17,830.8	33,447.8	22,920,0	5,405.3		28,510.1	1,746.3	22,920.0	7,812.6	13,938.5	<u> </u>
Ack Alian         5.43         0.00         5.44         0.00         5.45         0.01         1.392         2.5944         14,000.0         2.55940         1.502.0         3.9924         8.5289         1.701.0         3.9924         4.2279         3.9024         3.5234         3.502.0         <	*1	Kujan		33.98	8	32.03	5.46	11,329	26.364.2	156,927.9	339.214.K	268,479,3	119,183,7	256.559.4	319,662,7	20.455.8	268.479.3	92.213.4	124.844.7	
Note Name   678   0.00   6.31   0.05   2.668   1.9027   1.9027   1.9028   1.9027   1.9026   1.9022   3.55.987   8.7002   1.9022   3.55.987   3.55.987	~		Arian	5.43	8	5,43	0,33	1,392	2,104,4	14,068.6	25.594.0	16,671.9	0.989.0	3,992.4	8.528.9	1.271.1	16,671.9	5.572.5	0.0	
No.			Kot Moman	6.78	8	6.78	0.63	2,668	2.932.7	17,633.2	33,772.1	25,368.7	9.906.6	11,720.9	17,953.2	1,932.2	25,368.7		1,704.9	
Bhildt    6.34   0.00   5.54   0.40   1.974   2.5440   1.6471.0   2.99446   21,1958   3.355.9   24,347.7   34,555.4   1.614.9   21,1958   7.353.0     Salvowal 3.76   0.00   5.56   0.31   1.517   2.204.8   14,981.2   27,254.8   27,134.8   1.307.6   4.255.5   21,004.1   21,242.3   17,707.6   6.033.7   10,004.1     Tanga 4.34   0.00   4.54   0.03   1.470   1.935.2   1.2578.8   2.294.6   4.975.7   3.020.8   9.379.1   1.665.2   1.141.1   14,976.7   4.972.0     Tanga 4.34   0.00   4.54   0.03   1.470   1.935.2   1.2578.8   2.294.6   4.975.7   3.020.8   9.379.1   1.665.2   1.141.1   14,976.7   4.972.0     Tanga 4.34   0.00   4.54   0.03   1.470   1.935.2   1.2578.8   2.294.6   4.975.7   3.020.8   9.379.1   1.665.2   1.141.1   14,976.7   4.972.0     Tanga 4.34   0.00   4.54   0.03   1.270   4.972.0   4.972.0   4.972.0   1.391.2     Sanul 1.29   0.00   1.59   0.04   1.670   4.972.0   4.972.0   4.972.0   4.972.0   4.972.0     Malda 4.34   0.00   1.59   0.04   1.670   4.972.0   4.972.0   4.972.0   4.972.0   4.972.0     Malda 4.34   0.00   0.00   0.04   0.04   1.10   0.020   4.972.0   4.972.0   4.972.0   4.972.0     Malda 6.30   0.00   0.00   0.04   0.00   0.04   0.00	٧.		Kot Raja	2.81	8	2.81	070	90%	1.110.0	7,254.0	13.196.7	7,026.7	1,420.5	4,227.9	8,750.2	535.2	7.026.7		0.0	
Shbwwii   3.76    0.00    5.76    0.27    1.575    2.3048   14.581    2.72443   17.7076   4.2555    2.104441   29.1016   1.3842   1.57976   6.033.7   10.40	•		Bhikhi	Š	0.00	2,	0.46	1,974	2.534.0	16,471.0	29,964.6	21,195.8	3,305.9	24,347.7	34,535.4	1,614.9	21,195.8		0.0	
M.Wala   S.K.    C.M.   C.M.	_	_	Sahowal	5.76	8	5.76	0.37	575	2,304.8	14,981.2	17.154.3	17,707.6	4255.5	21,084.1	29,101.6	1,348.3	17,707.6		10,409.5	
Tango   4.84   0.00   8.34   1.470   1.935.2   1.2578.8   2.2883.7   14976.7   3,020.8   9,379.1   14665.2   1.141.1   14,976.7   4,972.0	oc		M.Wala	5.87	8	5.87	0.31	1,311	2,344.0	15,236.0	27.717.8	16,182.1	4,658.0	16,064.3	23,888.0	12323	16,182.1		0.0	
Maribara   1.05   1.0	•		Tango	3.	8	4 2	3	0,470	1,935.2	12,578.8	22,883.7	14,976.7	3,020.8	9,379.1	16,663.2	1,141.1	14,976.7	4,972.0	0.0	
Saruli   159   78.18   6.46   25.236   45.269.4   276.813.9   560.866.4   416.803.3   157.713.2   381.506.9   597.846.2   31.755.9   416.803.3   143.002.0   136.99     Saruli   1.59   0.50   1.59   0.14   0.06   0.34   0.4121.0   7.497.1   4.064.1   1,126.8   2.632.4   4.881.6   310.3   4.064.1   1,391.2   1,206.8     Hadda   4.11   1.12   2.59   0.41   1.639   1.644.4   10.688.6   19.445.0   12.779   3.174.4   6.269.4   11.828.5   958.8   12.2779   4.064.1   1,391.2     Hadda   4.11   1.12   2.59   0.41   1.639   1.644.4   10.688.6   19.445.0   12.2779   3.118.5   4.064.1   1,391.2   1,206.8     Washina   0.016   0.89   0.41   1.639   1.644.4   10.688.6   19.445.0   1,226.4   11.828.5   939.0   12.239.1   4.105.0     Washina   0.016   0.89   0.41   1.74   1.54   1.7	⋍.		legal	£.	000	× 33	0.63	2,651	3.574.1	21,663.2	41 268,4	978162	4,973.3	X,131.1	48,763.0	2225.0	29,194.6	9,813.3	0.0	
Saruli   LS9   9.52   53.43   12.86   21.374   67.569.8   356.181.7   771,600.7   640,171.1   318,546.2   474,616.7   571,498.6   44,816.7   310.3   4,064.1   1,391.2   1,256.8   4,121.0   7,497.1   4,064.1   1,126.8   2,632.4   4,881.6   310.3   4,064.1   1,391.2		sub-total		8	8	78.18	6.46	25236	45,269.4	276,813.9	\$60,866.4	416,803.3	157,713.2	381,506.9	507,846.2	31,755.9	416,803.3	143,002.0	136,959,1	
Saruli   1.59   0.00   1.59   0.14   0.00   0.14   0.06886   0.1210   0.1411,   0.1715   0.1714   0.26524   4.8816   0.1033   4.064.1   1.391.2   0.10484   0.06886   0.1217		Kırana		8.3	9.52	53.43	12.86	21,374	67,569.8	356,181.7	771,609.7	640,171.1	318,546.2	474,616.7	571,498.6	48,783.0	640,171.1	215,961.5	121,568.9	-
Hadda	=		Saruli	1.59	0.00	85	0.14	Ş	0.4.0	4,121.0	7,497.1	4,004	1,126.8	2,632,4	4,881.6	310.3	4,004,1	1,391.2	0.0	
Malkana         10.16         0.00         10.16         0.87         3,548         4,571.4         2,6254.8         5,013.6         3,151.1         51,033.9         3,118.5         40,932.4         14,095.0           Wesuma         6.89         0.00         6.89         0.41         1,731         2,802.4         18,215.6         37,134.4         19,771.4         8,665.0         12,299.7         18,557.5         1507.6         19,771.4         6,798.0           Tandalian         3.96         0.00         6.04         1,731         2,802.4         15,691.0         20,167.7         22,396.1         14,695.0         12,396.1         15,691.0         22,167.7         22,396.1         17,013         22,319.6         7,591.8           Hunde         4.00         0.00         4,10         0.00         4,10         0.00         2,41         1,677.2         12,786.1         13,992.5         15,907.2         12,007.0         3,538.2         2,031.6         1,751.4         4,095.0         1,097.2         1,138.8         20,176.2         3,538.2         2,031.6         1,201.3         2,031.6         1,201.3         2,031.6         1,201.3         1,201.3         1,201.3         0,04,93.4         1,201.3         1,201.3         1,201.3         1	Ξ:	(Figure	Hadda	4.11	=======================================	8	9.4	1,639	1.644.4	10,688.6	19,445.0	12,277.9	3,174.4	0,246.4	11,828.5	935.8	12,277.9		0.0	
Weature         6.89         0.401         1,731         2,802.4         18,215.6         33,138.4         19,771.4         8,665.0         12,299.7         18,557.5         1507.6         19,771.4         6,798.0           Tandalian         3.96         0.00         3.96         0.32         1,304.7         1,304.3         13,567.5         1,304.3         1,304.3         1,304.3         1,399.8         1,204.3         1,304.3	7	Sirana Sirana	Malkana	10.16	000	10:16	0.87	3,548	4,571.4	26.254.8	50 158 2	40,932.4	11,020.6	38,151.1	51,033.9	3,118.5	40,932,4	_	0.0	
Tandalian 3:96   0.00   3.96   0.32   1,304   1,584.8   10,301.2   18,740.3   12,336.1   14,554.6   13,569.7   7,454.3   9.990   12,356.1   4,182.6   1,560.0   0.57   2,374   2,647.5   12,660.0   20,167.7   22,319.6   3,566.2   27,626.1   37,466.6   1,701.3   22,319.6   7,591.8   1,597.2   20,000   4,100   0.27   1,47   1,672   12,766.8   12,325.5   5,309.2   1,508.2   1,	2		Wasuana	68.9	8	689	0.41	1,731	2,802.4	18,215,6	33,138,4	19,771.4	8.665.0	12,299.7	18,557.5	1,507.6	19.771.4		0.0	
Rodium   6,04   0.50   6.64   0.57   2.374   2,647.5   15,691.0   29,167.7   22,319.6   3,636.2   27,626.1   37,466.6   1,701.3   22,319.6   7,591.8     Hunde	<u></u>	_	Tandalian	8	0.0	8	0.32	Š	584.8	10,301.2	18,740,3	12,336.1	14,554.6	13,569.7	7,454.3	0360	12,336.1		0.0	
Hunde   4.72   0.00   4.92   0.43   1.778   1.967.2   12.786.8   23.262.1   15.932.5   5.053.2   10.637.4   16.049.5   1.213.9   15.932.5   5.399.9     Killa   4.10   0.00   2.41   0.10   4.57   1.657.2   10.641.8   19.359.9   12.067.1   19.359.9   12.067.2   10.641.8   19.359.9   12.067.2   19.359.9   12.06.8	=	<u>۔۔۔</u>	Rodian	Š	8	900	0.57	2,374	2,647.5	15,691.0	29:67.7	22,319.6	3,636.2	27,626.1	37,466.6	1,701.3	22,319.6		0.0	
Wills         4.10         0.00         4.10         0.20         4.10         0.00         2.41         0.00         2.41         0.00         2.41         0.00         2.41         0.10         8.23         6.260.8         11.389.8         20.176.2         3.238.3         20.316.8         22.207.5         1.538.6         20.176.2         6.937.2           Fundal         107.13         10.64         96.49         12.86         36.224         86.021.9         471.143.3         983.768.3         800.068.3         372.383.4         614.634.1         754.875.7         60.968.8         800.068.3         270.667.3           Towl         1.04.12         12.59         181.53         19.86         63.844         174.165.6         765.788.0         1.239.791.5         535.501.9         1.014.439.4         1.291.232.0         94.471.0         1.239.791.5         421.481.6	<u>~</u>		Hunde	4.33	8	26.4	0.43	1,778	1.967.2	12,786,8	23,262.1	15,932.5	5,063.2	10,637.4	16,049.5	1,213.9	15,932.5	\$399.9	0.0	
Dhabian   2.41   0.00   2.41   0.19   822   963.2   6,260.8   11,389.8   20,176.2   3,238.3   20,316.8   22,207.5   1,538.6   20,176.2   6,937.2	<u>2</u>		Kills	4.10	8	4.10	0.27	1,147	1.637.2	10.641.8	6,359.9	12,087,0	3,358.2	8.537.8	13,897.7	920.8	12,087.0	4.043.4	0.0	
107.13 10.04 96.49 12.86 36.324 86,021.9 471,143.3 983,768.3 772,383.4 614,634.1 734,875.7 60,968.8 800,068.3 270,667.3 194.1 104.12 12.59 181.53 19.86 63,844 134,165.6 765,788.0 1.278,082.4 123,0791.5 535,501.9 1,014,439.4 1291,232.0 94,471.0 1,239,791.5 421,481.9	ન સ	Krava	Dhabian	2.4	800	2.41	0.19	\$2 \$6	2.696	6,260.K	11,389.8	20,176.2	3,238.3	20,316,8	22,207.5	1,538.6	20,176,2		0.0	
1984 12 12.50 181.53 19.86 63.844 134.165.6 765.788.0 1.578.082.4 1.239.791.5 535.501.9 1.014.630.4 1.291.232.0 94.471.0 1.239.791.5 421.481.6		sub-total		107.13	0. 20.	96.49	12.86	36,324	86,021.9	471,143.3	983,768,3	800,068.3	372,383.4	614,634.1	754,875.7	8.896,09	800,008		121,568.9	-
134.12 12.50 181.53 19.86 63.844 134.165.6 765.788.0 1578.082.4 12.39.791.5 535.501.9 1.014.59.9 1.291.252.0 94.471.0 12.39.791.5 421.481.9						: :	:													
	J	Ional		196.12	12.50	181.53	19.86	63.844	134,165,6	765.78×0	1.57%,0%2.4	1,239,791.5	535,501.9	1,014,439,4	1.291,232.0	94.471.0	1,239,791,5	421,481,9	272,466.5	

Table E-7 Project Work Volume for LCC Area

Ne.         Distributary         Minor         Total         Lined         for Lining         Discharge         Area           2         Narana         25.04         0.30         24.72         2.46         6.03         24.64         6.03           3         Nasrana         Saduana         27.64         0.30         24.72         2.48         25.094           4         Nasrana         Satuana         3.64         0.00         4.43         0.00         24.64         8.887         2.209           5         Nasrana         Satuana         3.66         0.40         3.26         0.23         1.239           7         Nasrana         Satuana         3.66         0.40         3.76         0.24         2.101           7         Nasrana         Sab-total         Frida         3.76         0.44         2.101           9         Goyra         2.00         3.76         0.20         3.78         0.24         1.013           9         Goyra         2.00         2.10         1.29         4.65         0.20         1.20           10         Goyra         2.00         2.10         2.26         1.25         1.20           11 </th <th>                                     </th> <th>Excivation (m.3)  29,696.9  24,72.199.5  24,136.6  25,000.12  25,000.12  26,100.12  26,100.12  26,100.12  27,000.12  28,100.12</th> <th>ment Tri 1 495.1 1 495.1 1 495.1 1 495.2 4 444.3 4 444.3 4 505.3 6 507.4 6 775.7 7 775.7 2 775.7 2 775.7 2 775.7 2</th> <th>Eguthwork (m2) (m2) (m3) (m3) (m3) (m3) (m3) (m3) (m3) (m3</th> <th>Egithwerk for Diversion His according for the first of th</th> <th>Hauloge Borrow&amp;Haul (m3) 222347.5 108.010.7 4.256.8 6.116.6 9.077.7 2.012.7 6.549.2 5.804.6 141.808.3 73.448.2 75.982.8 76.982.8 76.982.8</th> <th>[7]</th> <th> </th> <th></th> <th>Dompensation (m2) 23,436.7 229,684.3 2527.1 3527.1 16,669.9</th>		Excivation (m.3)  29,696.9  24,72.199.5  24,136.6  25,000.12  25,000.12  26,100.12  26,100.12  26,100.12  27,000.12  28,100.12	ment Tri 1 495.1 1 495.1 1 495.1 1 495.2 4 444.3 4 444.3 4 505.3 6 507.4 6 775.7 7 775.7 2 775.7 2 775.7 2 775.7 2	Eguthwork (m2) (m2) (m3) (m3) (m3) (m3) (m3) (m3) (m3) (m3	Egithwerk for Diversion His according for the first of th	Hauloge Borrow&Haul (m3) 222347.5 108.010.7 4.256.8 6.116.6 9.077.7 2.012.7 6.549.2 5.804.6 141.808.3 73.448.2 75.982.8 76.982.8 76.982.8	[7]			Dompensation (m2) 23,436.7 229,684.3 2527.1 3527.1 16,669.9
Ckm	2 38885846 484 8	Exervation (m.3) (	100 ment 170	ু ন নাল্ৰক্সন্তথা ৰ	<u>ω ωχο∴Γ4χα χον λ</u>	Borrow&Haul (m3) 222.347.5 222.347.5 108,010.7 4.236.8 6,116.6 9,077.7 2,012.7 6,549.2 5,804.6 141,808.3 73,448.2 73,544.2 73,544.2	Concrete (m3) 10,588.0 36,056.8 281.9 1,026.6 1,088.6 1,081.2 1,380.2 5,739.6 5,739.6 5,739.6	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	5 90505000 000	Ompensation (m2) 23,436.7 299,684.3 3,527.1 303,211.4 16,669.9
Sactionary   25.04   0.30   24.74   2.46			85.1 85.2 85.3	<u>አ</u> ኤጵድያርር % ድ ህ ህህ 4 ወ ህ ህ ዕ ህ 4		100,010,7 4,256,8 6,116,6 9,077,7 2,012,7 6,549,2 5,804,6 141,808,3 73,448,2 73,448,2 73,448,2 73,448,2 76,982,8 76,982,8	10,283,0 28,056,8 281,9 1,026,6 1,084,6 1,084,6 1,335,7 1,335,7 1,335,7 1,336,2 5,739,6 5,739,6	54.5 60.9 60.9 67.5 67.5 67.5 67.5 67.5 67.5 67.5 67.5	47306.7 3288.6 2537.2 4417.7 4617.7 6584.9 61,170.2 26,798.2 2561.3 2561.3	23,436.7 299,684.3 3,527.1 303,211.4 16,669.9
Saduana   24.66   0.00   54.66   X.47						10% 010.7 4.236.8 6.116.6 9.077.7 2.012.7 6.549.2 5.804.6 141,808.3 73.448.2 73.448.2 76.982.8	36.056.8 281.9 1,026.6 1,088.6 7.29.4 1,081.2 1,335.7 4,1,580.2 5,739.0 5,480.0	47,776.2 3,696.3 13,483.4 14,300.9 9,575.3 13,977.2 17,336.0 545,287.5 73,324.4 71,85.6 82,510.1	32,838,6 2,517,2 4,417,7 5,678,9 6,564,9 6,170,2 2,561,3 2,561	3.527.1 3.527.1 303.211.4 16.669.9
Sadvana   2.76   1.10   1.66   0.14						4.236.8 6.116.6 9.077.7 2.012.7 6.549.2 5.804.6 141.808.3 73.448.2 73.448.2 76.982.8 389.611.8	281.9 1,025.6 1,088.6 7,29.4 1,335.7 1,335.7 1,335.7 5,739.6 5,739.6	3,696.3 13,483.4 14,300.9 9,507.5 13,927.5 17,386.0 77,384.4 77,185.6 82,510.1	25172 44177 56759 3463.1 5673.0 61,702 26,798.2 2,561.3 2,561.3 2,561.3	3,527,1 303,211.4 16,669.9 16,669.9
Charliana   A43   0.00   4.43   0.30			<u> </u>			6,116.6 9,077.7 2,012.7 6,549.2 5,804.6 141,808.3 73,448.2 76,982.8 369,611.8	1,026.6 1,088.6 1,088.6 1,061.2 1,335.7 41,580.2 5,739.6 5,739.6 5,739.6	13,483.4 14,300.9 9,507.5 13,927.2 17,536.0 545,277.5 77,324.4 71,185.6 82,510.1	2678.9 5.678.9 5.673.9 6.564.9 61,170.2 26,798.2 2,561.3 29,359.6	3.527.1 303.211.4 16.669.9 16,669.9
Number   SAC   247   3.35   0.48						9,077.7 2,012.7 5,804.6 5,804.6 141,808.3 73,448.2 3,544.8 76,982.8 369,611.8	1,088.6 1,081.2 1,081.2 1,385.7 41,580.2 5,739.6 5,739.6	14.300.9 9,567.5 13,927.2 17,536.0 545,224.5 75,324.4 7,185.6 82,510.1	2674.9 3.463.1 5.673.9 6.564.9 61.170.2 26.798.2 2.561.3 29.359.6	3,527.1 303,211.4 16,669.9 16,669.9
Saluana   3.66   0.40   3.26   0.23     Saluana   3.66   0.40   3.26   0.44     Sab-itotal					· · · · · · · · · · · · · · · · · · ·	2,012.7 5,804.6 5,804.6 141,808.3 73,448.2 3,534.5 76,982.8 369,611.8	7.29.4 1.061.2 1.335.7 41.580.2 5.739.6 5.739.6 5.739.6	9,567.2 13,927.2 17,536.0 5,527.5 7,3224.4 7,185.6 82,510.1	3,463.1 5,673.9 6,564.9 61,170.2 26,198.2 2,561.3 29,359.6	3.527.1 303.211.4 16,669.9 16,669.9
Nutricol   151   0.86   4.65   0.64						6,549,2 5,804,6 141,808,3 73,546,2 76,982,8 369,611,8	1,061.2 1,335.7 41,580.2 5,739.6 548.0 6,287.6	13,927.2 17,536.0 545,277.5 70,324.4 7,185.6 82,510.1	2673.9 61,170.2 26,798.2 2561.3 29,359.6	3.527.1 303.211.4 16,669.9 16,669.9
Sub-total   Ni 42   S.65   75.77   X.87			<b>V</b>			5.804.6 [41,808.3 73,448.2 3,534.5 76,982.8 369,611.8	1,335.7 41,5%0.2 5,739.6 54X.0 6,287.6	17.5360 545,237.5 75,324.4 7,185.6 82,510.1	61,170,2 61,170,2 26,798,2 2,561,3 29,359,6	3,527,1 303,211.4 16,669.9 16,669.9
Sub-total         R1.42         5.65         75.77         X/K7           Sub-total         15.06         2.10         12.96         1.95           Sub-total         17.77         2.25         1.25         1.95           Sub-total         Mung;         4.32         3.98         3.29         5.03           Sub-total         41.29         3.98         3.731         5.39           LaHamza         Amirwala         7.62         0.00         1.59           Sub-total         18.58         0.00         1.59           Aal         7.62         0.00         1.59           Aal         4.75         0.00         4.75         5.24           Aal         4.75         0.00         4.75         0.23           Aal         4.75         0.00         4.75         0.23           Aal         4.75         0.00         4.75         0.23           Aal         4.75         0.00         4.75 <th></th> <th></th> <th></th> <th></th> <th></th> <th>141,808.3 73,448.2 3,534.5 76,982.8 369,611.8</th> <th>5.739.6 5.739.6 5.287.6</th> <th>245,287.5 75,324.4 7,185.6 82,510.1</th> <th>61,170.2 26,798.2 2,561.3 29,359.6</th> <th>303,211.4 16,669.9 16,669.9</th>						141,808.3 73,448.2 3,534.5 76,982.8 369,611.8	5.739.6 5.739.6 5.287.6	245,287.5 75,324.4 7,185.6 82,510.1	61,170.2 26,798.2 2,561.3 29,359.6	303,211.4 16,669.9 16,669.9
15.06   2.10   12.96   1.95     2.71   0.15   2.26   0.25     2.71   0.15   2.26   0.25     2.72   2.25   1.95     3.6.97   3.98   32.99   5.03     2.74   2.25   3.98   32.99   5.03     2.74   2.25   3.98   3.29   5.03     2.74   2.25   3.98   3.29   3.29     2.74   2.75   3.20     2.75   2.75	<u></u>				. ·	73.448.2 3.534.5 76.982.8 369.611.8	5,739.6 54X.0 6,2X7.6	75,324.4 7,185.6 87,510.1	26,79%;2 2,561,3 29,359,6	16,669.9
Sub-total   17.77   2.25   15.52   1.95     Sub-total   17.77   2.25   15.52     Sub-total   17.77   2.25   15.52     Sub-total   17.77   2.25   15.90     Sub-total   17.77   2.25     Su	. <u>.                                   </u>				~ ×	3,534.5	6.2x7.6	7,185.6	29,359.6	16,669,9
Number   N		:		7,185,6 4,774.0	* ×	369,611.8	6.237.6	87.510.1	29,359,6	16,669,9
Mungs   36,97   3,98   32,99   5,03   12,49   5,03   12,49						369,611.8	-			
Mungs   4,32   0,00   4,32   0,36   1,39				27,325.2 113,181.5		12 555 7	18,841.7	247,325,2	74.314.0	76.132.7
Sub-totical   41.29   3.98   37.31   5.39   5.39   15.40   10.86   1.59   15.40   10.86   1.59   15.40   10.86   1.59   15.40   10.86   1.59   15.40   16.88   1.59   15.40   16.88   1.59   15.40   16.88   1.59   15.40   16.88   15.40   16.88   15.40   16.88   16.89		1,710,4					932.5	122144	4,811.8	
Amirwala 7.62 0.00 10.96 1.59  18.58 0.00 18.58 1.59  Thera 4.75 0.00 4.85 0.23  Magneja 9.89 0.00 9.89 0.43  Juncywala 16.00 0.00 18.00 1.18  Jandwala 2.74 0.00 3.74 0.18			۲۱.		۳)	383.164.4	19.774.2	259.539.6	79.125.8	76,134,7
Amirwals 7.62 0.00 7.62 0.51 Thera 4.7.57 0.00 4.7.57 5.24 Thera 4.85 0.00 4.85 0.23 Magneya 9.89 0.00 9.89 0.45 Juneywals 16.08 0.00 16.08 1.18 Jandwaln 3.74 0.00 87.13 0.18	998.3	5,157.1	57,798.6	12,676.8 17,436.4	6.4 3X,900.3	50,758.7	3,252,3	42,676.8	25,999.6	2,639.1
Thera   47.57   0.00   18.58   1.59     Thera   47.57   0.00   47.57   5.24     Thera   4.85   0.00   4.85   0.23     Magneya   9.89   0.00   9.89   0.45     Luncywala   16.08   0.00   1.08     Landwaln   27.4   0.00   37.4   0.18     R. 1.1   0.00   82.11   5.24				27.172.3 10.353.3	÷,	24,805.0	2,069,6	27,172,3	9,332.6	
Thera 47.57 0.00 47.57 5.24 Thera 4.85 0.00 4.85 0.23 Magneja 9.89 0.00 9.89 0.45 Junejwala 16.08 0.00 15.08 Link Jandwaln 87.74 0.00 3.74 0.18						75,563.7	5,321.X	69.249.2	35,332,3	2,639.1
Thera 4.85 0.00 4.85 0.23 Magneya 9.89 0.00 9.89 0.45 Juneywala 16.08 0.00 15.08 Link Jandwaln 8.74 0.00 3.74 0.18 Lendal 8.2.11 0.00 8.213	9,902	34 433.7 216,766.6	458,535.2	127.746.7 279.542.2	2.2 341,696.2	303.922.6	24,978.2	327,746.7	108,393.0	6.929.66
Magneya 9-89 0-00 9-89 0-45 Juneywala 16-08 0-00 15-00 1-11K Jandwalla 3-74 0-00 3-74 0-11K perced		1,940.4 12,612.6	-	12,584.5 2,679,1	9.1] 8.464.4	16,118.0	6.666	12,584.5	4212.9	
Jungwala 16.08 0.00 15.08 1.18 Jandwala 3.74 0.00 3.74 0.18 hereal X2.13 0.00 X2.13 5.24	XIX.	4,942.5 25,701.0		40,913.2 13,666.4	6.4 31,454.1	46,454.3	3,119.2	40,913.2	14,622,7	
Pir Mahal Jandwala 3.74 0.00 3.74 0.18 Substitute X2.13 0.00 X2.13 5.24	4,703	7.535.6 41.930.2	84,633.7			56,526.8	5,416.1	71,041.0	24,936.2	2,099.5
X2.13 0.00 X2.13 5.24		1.508.K 9.807.2	17.841.6	9.473.5 784.8		25,778.3	721.6	9,473.5	3.181.7	
	18,242	90,361.0 306,817.6	63X,323.2 46	9215,826 328,315,9	5.9 445,610.3	448,X00.0	35,194.9	461.798.8	155,346.4	100,125.8
46.05 15.73 30.32 6.96	19.27x	32,552.5 200,303.6	422,990.5 X	06,346.7 123,774.6	4.6 583,345.6	6X2.257.9	23,339,9	306.346.7	103,258.8	192,600.9
6.66 0.39		2,665.2 17,323.8	31,516.0	22,336.3 16,519.1	0.1	4,157.5	1,703.9	22,336,3	7,545.8	
Mal 52.71 15.73 36.9K 6.96		35,217.7 217,627.4	454,506.5	128,683.0 140,293.7	3.7 589,830.0	686,415.4	25,043,9	328,683.0	110,804.6	192,600.9
Total 318.94 27.91 291.03 32.46 113.7	113.779 20	205.764.7 1.218,088.5	2,560,548,3	1,886,622.6 1,225,309.1	P.11.917.931.4	2,035,082,1	143,790.5	3.886,622.6	518,445.6	714,818.5
					• •					

Table E-8 Project Work Volume for CBDC Area

Lury Minor Total Lined for Lining I Am Saharan 7.24 0.00 7.24 Ani Saharan 7.24 0.19 7.24 Ani Xale Minor 7.81 0.00 7.81 Ani Xale Minor 7.81 0.00 7.81 Ani 70.36 3.41 66.95	Name of	Name of Name of		Cheth		Oesign Oesign	Design Command				 	Constr	Construction Work Volume	/olume					Reman
(km) (km) (km) (m3/4) (	o. Distributar	Minor	Total	Lined	or Lining	Discharge	Area		Earthworl	c in Pmsm		Earthwork fo	_	Haulage		Lining Work		Land	
Annior         T.S.         Co. Co. St. St. St. St. St. St. St. St. St. St		i	ĝ		<b>E</b>	(m3/s)		Smipping	Excavation	Embankment	Trimming	Excavation	Embankment	Borrow&Haul	Concrete	Plaster	Joints	Compensation	
Annior         7.24 o.00         7				-;	:			(£ m.)	(m3)	(m <sup>3</sup> )	(m2)	(£m3)	(£m3)	(Em)	(m,3)	(E)	Clinear M.)	(m2)	
Ann.         Salama         7.24         0.00         7.24         0.82         3.217         3.285.4         18,769.4         37.208.9         26,879.8         17,253.9         10,430.3         11,615.9         2.048.6         26,879.8         10,430.3         11,615.9         2.048.6         26,879.8         10,430.3         11,615.9         2.048.6         26,879.8         10,430.3         11,615.9         2.048.6         26,879.8         10,430.3         11,615.9         2.048.6         26,879.8         10,610.7         17,015.8         14,605.5         10,023.6         22,37.2         32,322.1         32,327.2         32,327.2         11,725.5         11,725.5         11,725.2         11,725.2         15,631.2         11,788.6           Anal	Thamman :		29.85	3.22	26.63	62.8	665'9	23.836.9	125,552.4	275,166.1	196,545,3	138,853.6		_	14,975.0	196,545,3			
Nair Minor         25.46         3.7.05         3.7.05         3.7.05         3.7.05         3.7.05         17.023.6         223.425.1         156.107.5         17.023.6         17.023.6         22.322.4           Nair Minor         25.46         0.19         25.27         4.33         12.664         15.097.1         92.000.6         193.645.1         103.25.2         124.843.8         127.200.0         11.928.2         15.6512.1         35.156.1         26.009.8         16.636.7         11.755.5         2.677.1         35.156.1         35.156.1         26.009.8         16.636.7         11.755.5         2.677.1         35.156.1         11.758.6         <	Themman	Sahamu	7.24	80	7.24	0.82	3,217	3,285.4	18,769.4	37,208.9	26.879.8				2,048.6	26.879.8			_
Xale Minor         7.81         0.00         7.81         0.50         7.81         0.00         7.81         0.50         7.81         0.50         11,755.5         12,684.7         11,755.5         16,584.7         11,755.5         16,584.7         11,788.6           7.81         0.00         7.81         0.50         7.81         0.50         11,755.5         2,677.1         35,156.1         26,009.8         16,686.7         11,755.5         2,677.1         35,156.1         17,886.6         11,788.6	sub-tota		37.08	ដ	33.87	8.20	9.816	27.122.3	144,321.8	312,375.0	223,425.1			_	17.023.6	223,425.1			
Kale Minor         7.81         0.00         7.81         0.96         3.726         3.707.9         20.313.8         41.442.3         35.156.1         26,099.8         16,686.7         11,785.5         2.677.1         35,156.1         11,788.6           18,805.0         18,805.0         112,374.4         235,088.4         191,668.2         129,230.0         141,480.5         134,605.3         191,668.2         63,910.7           70,36         3.41         66.95         12.62         26.206         45,927.3         256,696.2         547,463.4         415,093.3         236,337.4         314,496.5         31,628.9         415,093.3         146,303.0	Chira	:	33.46	0.19	25.27		12,664	15,097.1	92,060.6	193,646.1	_	103,220.2			11,928.2				
33.27 0.19 33.08 4.33 16.390 18,805.0 112.374.4 235,088.4 191,668.2 129,230.0 141,480.5 134,964.5 191,668.2 63,910.7 10.36 3.41 66.95 12.62 26.206 45,927.3 256,696.2 547,463.4 415,093.3 235,337.4 314,496.3 31,628.9 415,093.3 146,303.0	China			8	7.81		3,726	3,707.9	20,313.8			26,009.8		11,755.5	2,677.1				
70.36 3.41 66.95 12.62 26.206 45.927.3 256.696.2 547.463.4 415,093.3 285,337.4 314.496.3 31,028.9 415,093.3 146,303.0	sub-rota	-	33.27	6	33.08	4.33	16,390	18,805.0	112,374.4	235.088.4	_	129,230.0	141,480.5	134,984.5	14,605.3				
	Tota		70.36	3.41	8,8			45,927.3	256.696.2		415,093.3	285,337.4	314.496.3	319,926.0	31,628.9	415.093.3	146,303.0		

Table E-9 Financial Cost for Lining of Distributaries and Minors

Work Item	Specification	Unit	Ür	it Cost(F	(5.)	Work		Cost(1,000Rs.)	
:	Specialists	2.014	Total	F	L	Volume	Total	F	L
l Conpensation		·				<del></del>			
1.1 Compensation for La	and. House etc	L.S.					2,421.9	0.0	2,421.9
1.2 Compensation for H		LS.					980.0	0.0	980.0
t.2 compensation to 11	Sub-total						3,401.9	0.0	3,401.9
II Direct Construction Cost									
I. Gate and Installation	at Disty's Head	nos	892,000	300,000	592,000	12	10,701.0	3,600.0	7,104.0
2. Earthwork									
2.1 Stripping (0.2 m)	by machine	m3	22.5	17.4	5.1	385857.7	8,681.8	6,713.9	1,967.9
2.2 Excavation for Canal Prism	by machine&manual	m3	38.5	27.0	11.5	2240572.7	86,262.0	60,495.5	25,766.6
2.3 Embankment and Compaction of Bank	by machine, normal	m3	57.9	44.9	13	4686094.3	271,324.9	210,405.6	60,919.2
2.4 Borrow & Haulage	Excavation and haul	m3	54.6	42.6	12	3646240.2	199,084.7	155,329.8	43,754.9
2.5 Trimming &	within 500 m Manual	m2	9.1	0.0	9.1	3541507.6	32,227.7	0.0	32,227.7
Surface Finishing  2.6 Excavation for	by machine	m3	38.5	27.0	- 11.5	2046148.5	78,776.7	55,246.0	23,530.7
Diversion Work				41.0		3246867.1	167,213.7	133,121.6	34,092.1
2.7 Embankment for Diversion Work	by machine	ın3	51.5	41.0	10.5	3240807.1			
	Sub-total						834,889.7	614,598.5	220,291.2
3. Lining Work									
3.1 Mortar Pluster	" mortar	nı 2	51.8	. 12.3	39.5	3541507.6	183,450.0	43,560.5	139,889.6
3.2 Concrete insitu	3" thick	m3	2,996.2	1,072.3	1923.9	269890.5	808,645.9	289,403.6	519,242.3
3.3 Precast Panel	2" thick	m3	3,300.0	1,200.0	2100		0.0	0.0	0.0
3.4 Joint	Rubber/Bitumen	m	25.0	20.0	. 5	1086230.6	27,155.8	21,724.6	5,431.2
3.5 Geomembrane with geotextile	1 mm	n:2	340.0	300.0	40	•	0.0	0.0	0.0
•	Sub-total					:	1,019,251.8	354,688.7	664,563.0
(New/Replace Installation	n)								
Outlet		105	26000	7800	18200	1038	26,988.0	8,096.4	18,891.6
VR Bridge	1 .	nos	40000	12000	28000	200	8,000.0	2,400.0	5,600.0
Drop		n <b>0\$</b>	60000	18000	42000	51	3,060.0	918.0	2,142.0
Washing Step		nos	60000	18000	42000	84	5,040.0	1,512.0	3,528.0
Buffalo Wallow	•	nos	70000	21000	49000	267	18,690.0	5,607.0	13,083.0
Spillway (Repair Work)	10% of New	105	70000	21000	49000	1:	70.0	21.0	49.0
DR Bridge		nos	8000	2400	5600	37	296.0	88.8	207.2
VR Bridge	•	nos	4000	1200	2800	169	676.0	202.8	473.2
	Sub-total						62,820.0	18,846.0	43,974.0
5. Miscellaneous Items	3% of Item 1-4 above	LS.		100			57,830.0	29,752.0	28,078.0
Direct Cost							1,985,495.5	1,021,485.2	964,010.2
III Administration and Con	sulting Cost						284,236.3	206672.0	77564.3
IV Institutional Reform Cos	st.		•				76,118.2	34544.0	41574.2
V Physical Contingency (10				٠			234,925.2	126,270.1	108,655.1
		,	:		i .				
Base Construction C	-051			2.54	٠		2,584,177.0 372.9	1,388,971.3 200.4	1,195,205.7 172.5
Price Escaration	•						535,760.1	285,222.1	250,538.0
Total Project Cost							3,119,937.1	1,674,193.4	1,445,743.7

Table E-10 Financial Cost for Each Distributary Systems

Distributary	Total	.[	for Lining					i direct	-						100	ļ	,		
					_	-				Craning	Othor	Director	Admit &	Admit & Increme			5	Total	
				NSCharge O.	_	<u>.</u>		1	o o		3		3 6		100	1 3		3	
	Î	(ig	(E) v	(SVCIII)	<u></u>	notaes.	0	Y OI		12	13	<b>i</b> 4	3 5	ş 9	17	§ %	13	<u> </u>	. 73
	6.86	0.00	98.9	0.54	2.285	0.05	8.0	5.54	19'9	0.56	0.38	13.09	1.88	0.50	1.55	17.08	0.0	17.08	
	80.13	8.	78.18	6.46	25,236	0.56	8	100.37	120.31	12.14	6.98	239.81	7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7	9.19	28.39	312.30	0.0	312.30	
	107.13	10.64	67.96	12.86	50,765	0.33	8	169.59	230.88	11.55	12.36	424.38	60.30	16.30	50.13	551.45	8.	551.45	
	194.12	12.59	181.53	19.86	78,286	0.94	000	275.50	357.81	24.25	19.73	677.29	96.52	26.00	80.08	880.83	0.0	880.83	
	3.8	0.30	24.74	2.46	6.627	0.14	800	36.37	40.10	3.74	 4.1	82.62	11.95	3.16	9.79	107.65	0.0	107.65	
	81.42	5.65	75.77	8.87	34.677	0.72	0.00	105.73	154.36	8.58	8.06	276.73	38.71	10.68	32.68	359.52	8.0	359.52	
	17.71	225	15.52	1.95	7,540	0.07	8	17.16	23.85	2.01	1.29	44.30	6.27	1.70	5.23	57.58	8.0	57.58	
	41.29	3.98	37.31	5.39	19.161	0.18	1.78	70.01	74.67	3.66	4.50	154.62	22.45	5.90	18.32	201.48	8.0	201.48	
uzu	18.58	0.0	18.58	1.59	6.513	0.03	0.89	16.11	20.45	1.46	1.17	40.08	5.72	1.54	4.74	\$2.11	0.00	52.11	
	82.13	0.0	82.13	5.25	18.242	0.22	1.78	113.07	133.26	5.68	7.61	261.40	37.61	10.01	30.92	340.16	8.0	340.16	
	52.71	15.73	36.98	96.9	27,798	0.37	2.68	110.94	94.83	4.18	6.38	219.01	32.53	8.31	26.02	286.24	0.00	286.24	
17	318.94	27.91	291.03	32.46	120,558	1.73	7.14	469.38	541.51	29.32	31.42	1.078.77	155.24	41.30	127.70	1,404.74	0.0	1,404.74	
	37.09	32	33.87	8.29	25.877	0.39	1.78	20.70	2	4.39	3.65	125.16	17.81	4.81	14.82	162.98	0.00	162.98	
	33.27	0.19	33.08	4.33	16,390	0.34	1.78	39.31	55.29	4.86	3.04	104.28	14.66	4.02	12.33	135.63	0.00	135.63	
ia	70.36	3.41	66.95	12.62	42,267	0.72	3.57	10.06	119.93	9.25	6.68	229.44	32.48	8.82	27.15	298.61	0.0	298.61	
Gig	583.42	43.91	539.51	2	241,111,13	3.40	10.70	834.89	1,019.25	62.82	57.83	1.985.50	284.24	76.12		2.584.18	000	2,584.18	
3 Kirana LJC LJC Sarangwala S Nasrana 6 Gojra 7 Mungi 8 Janiwala/H 9 Pir Mahal 10 Killianwala 11 Thamman 12 China CBDC Project	1 Kirana  LJC Total  Sarangwala S Nasrana G Cojra Mungi R Janiwala/Hamza Pir Mahal LCC Total LCC Total LCC Total China CBDC Total Project Total	Total Total Total	Total 194.12 1 25.04 81.42 17.77 17.77 41.29 82.13 82.13 52.71 17.04al 318.94 70.36 70.36 70.36 70.36	Total 194.12 12.59 1 25.04 0.30 81.42 5.65 17.77 2.25 41.29 3.98 41.29 3.98 82.13 0.00 82.71 15.73 Total 318.94 27.91 2 33.27 0.19 Total 583.42 43.91 5	Total 194.12 10.64 96.49  Total 194.12 12.59 181.53  81.42 5.65 75.77  17.77 2.25 15.52  41.29 3.98 37.31  82.13 0.00 82.13  52.71 15.73 36.98  Total 318.94 27.91 291.03  Total 70.36 3.41 66.95  Total 583.42 43.91 539.51	Total 194.12 12.59 181.53 19.86  25.04 0.30 24.74 2.46  81.42 5.65 75.77 8.87  17.77 2.25 15.52 1.95  41.29 3.98 37.31 5.39  amza 18.58 0.00 18.58 1.59  Total 318.94 27.91 291.03 32.46 11  37.09 3.22 33.87 8.29  Total 70.36 3.41 66.95 12.62  Total 583.42 43.91 539.51 64.94 241.	Total 194.12 10.64 96.59 12.86 50.703  Total 194.12 12.59 181.53 19.86 78.286  81.42 5.65 75.77 8.87 34.677  17.77 2.25 15.52 1.95 7.540  41.29 3.98 37.31 5.39 19.161  82.13 0.00 82.13 5.24 18.242  52.71 15.73 36.98 6.96 27.798  Total 318.94 27.91 291.03 32.46 120.558  Total 70.36 3.41 66.95 12.62 42.267  Total 583.42 43.91 539.51 64.94 241.111.13	Total 194.12 10.54 96.49 12.36 50.705 0.35  Total 194.12 12.59 181.53 19.86 78.286 0.94  81.42 5.65 75.77 8.87 34.677 0.72  41.29 3.98 37.31 5.39 19.161 0.18  82.13 0.00 82.13 5.24 18.242 0.22  52.71 15.73 36.98 6.96 27.798 0.37  Total 318.94 27.91 291.03 32.46 120.558 1.73  Total 70.36 3.41 66.95 12.62 42.267 0.72  Total 583.42 43.91 539.51 64.94 241.111.13 3.40	Total 194.12 12.59 181.53 19.86 78.286 0.94 0.00 25.04 0.30 0.30 0.30 0.30 0.30 0.30 0.30 0	Total 194.12 12.59 181.53 19.86 78.286 0.94 0.00 275.50 104.12.9 181.53 19.86 78.286 0.94 0.00 275.50 25.04 0.30 24.74 2.46 6.627 0.14 0.00 275.50 105.73 17.77 2.25 15.52 1.95 7.540 0.07 0.00 105.73 17.77 2.25 15.52 1.95 7.540 0.07 0.00 105.73 17.77 2.25 15.52 1.95 7.540 0.07 0.00 17.16 17.16 17.29 25.71 15.73 26.98 17.59 6.513 0.03 0.89 16.11 17.00 18.58 1.59 19.161 0.18 1.78 70.01 17.16 17.17 15.73 36.98 6.96 27.798 0.37 2.68 110.94 17.00 17.16 17.17 17.14 469.38 17.00 17.16 17.17 17.14 469.38 17.10 17.17 17.14 469.38 17.10 17	Total 194.12 10.54 96.49 12.80 50.703 0.435 0.00 109.29 2.30.80  25.04 0.30 24.74 2.46 6.627 0.14 0.00 275.50 357.81  17.77 2.25 15.52 1.95 7.540 0.07 0.00 105.73 154.36  41.29 3.98 37.31 5.39 19.161 0.18 1.78 70.01 74.67  82.13 0.00 82.13 5.24 18.242 0.22 1.78 113.07 133.26  52.71 15.73 36.98 6.96 27.798 0.37 2.68 110.94 94.83  Total 318.94 27.91 291.03 32.46 120.558 1.73 7.14 469.38 541.51  Total 70.36 3.41 66.95 12.62 42.267 0.72 3.57 90.01 119.93	Total 194.13 10.54 96.49 11.280 50,765 0.55 0.00 109.29 12.00 11.25 0.00 104.12 0.00 24.74 2.46 6.627 0.14 0.00 26.37 40.10 3.74 8.87 34.677 0.72 0.00 105.73 154.36 8.58 17.77 2.25 15.52 1.95 15.40 0.00 0.00 105.73 154.36 8.58 17.77 2.25 15.52 1.95 7.540 0.00 10.77 0.00 17.16 23.85 2.01 17.77 2.25 15.52 1.95 7.540 0.00 0.00 17.16 23.85 2.01 17.77 2.25 15.52 1.95 15.40 0.00 10.18 1.73 70.01 74.67 3.66 1.46 17.29 22.13 0.00 82.13 5.39 19.161 0.18 1.73 70.01 74.67 3.66 1.46 22.13 0.00 82.13 5.34 18.242 0.22 1.73 110.94 94.83 4.18 17.8 70.01 15.73 36.98 6.96 27.798 0.37 2.68 110.94 94.83 4.18 17.8 70.01 33.28 4.33 16.39 0.37 2.68 110.94 94.83 4.18 17.8 70.36 25.29 4.86 17.01 70.36 34.15 66.95 12.63 70.36 17.7 7.14 469.38 541.51 29.32 17.8 17.34 70.36 119.93 9.25 17.01 25.32 4.35 12.62 42.267 0.72 3.57 90.01 119.93 9.25 17.01 25.32 4.36 12.01 25.32 12	Total 194.13 10.64 96.99 11.80 50.70 0.43 0.00 105.29 12.00 11.20 11.20 11.20 11.20 12.20 12.80 12.80 0.94 0.00 275.50 357.81 24.25 19.73 19.80 18.42 5.65 75.77 8.87 34.677 0.72 0.00 105.73 154.36 8.58 8.06 17.77 2.25 15.52 1.95 7.540 0.07 0.07 17.16 23.85 2.01 12.9 17.77 2.25 15.52 1.95 7.540 0.07 0.00 17.16 23.85 2.01 12.9 17.77 2.25 15.52 1.95 7.540 0.07 0.00 17.16 23.85 2.01 12.9 17.77 2.25 15.52 1.95 7.540 0.07 0.00 17.16 23.85 2.01 12.9 17.10 18.58 0.00 18.58 1.59 19.161 0.18 1.78 70.01 74.67 3.66 4.50 1.17 1.20 1.15 3.89 6.96 27.798 0.37 2.68 110.94 94.83 4.18 6.38 7.00 1.17 7.14 469.38 541.51 29.32 31.42 1.17 7.14 469.38 541.51 29.32 31.42 1.17 7.14 469.38 541.51 29.32 31.42 1.17 7.14 469.38 541.51 29.32 31.42 1.17 7.14 469.38 541.51 29.32 31.42 1.17 7.14 469.38 541.51 29.32 57.83 1.17 7.14 469.38 541.51 29.32 57.83 1.17 7.14 469.38 541.51 29.32 57.83 1.17 7.14 469.38 541.51 29.32 57.83 1.17 7.14 469.38 541.51 29.32 57.83 1.17 7.14 469.38 541.51 29.32 57.83 1.17 7.14 7.14 7.14 7.14 7.14 7.14 7.14	Total 194.12 10.64 96.49 12.86 30.703 0.33 0.00 175.59 17.39 12.39	Total 194-12 12.59 18153 19.86 78.286 0.94 0.00 275:50 1773 17.29 17.29 0.00 0.00 17.16 17.30 17.29 17.29 0.00 0.00 17.16 17.30 17.29 18.153 19.86 78.286 0.94 0.00 275:50 275:50 2773 17.40 17.20 17.20 17.20 17.30 17.	Total 194.12 10.54 96.59 12.80 50.705 0.55 0.00 105.75 15.05 11.35 12.4.25 19.75 677.29 96.52 26.00  Total 194.12 12.59 181.53 19.86 78.286 0.94 0.00 275.50 377.81 24.25 19.73 677.29 96.52 26.00  81.42 5.65 75.77 8.87 34.677 0.72 0.00 175.73 154.36 8.58 8.06 276.73 38.71 10.68  17.77 2.25 15.52 19.5 7.540 0.07 0.00 17.16 23.85 2.01 1.29 44.30 6.27 1.70  41.29 3.98 37.31 5.39 19.161 0.18 1.73 70.01 74.67 3.66 4.50 154.62 22.45 5.90  mmza 18.58 0.00 18.58 1.59 6.513 0.03 0.89 16.11 20.45 1.46 1.17 4.06 5.72  52.71 15.73 36.98 6.96 2.77.98 0.37 2.68 110.94 94.83 4.18 6.38 219.01 32.53 8.31  Total 318.94 27.91 291.03 33.46 120.588 1.73 7.14 469.38 541.51 29.32 31.42 1.078.77 155.24 41.30  37.09 3.21 6.59 12.62 42.267 0.32 1.78 119.93 5.29 4.86 3.04 10.428 14.66 4.02  Total 70.36 3.41 66.95 12.62 42.267 0.32 3.57 89.01 119.93 9.25 6.88 2.94 32.48 32.4	Tronal 194-12 12.59 181.53 19.86 78.286 0.94 0.00 275.50 377.81 24.25 19.73 677.29 96.52 26.00 80.08 8 81.42 5.65 75.77 8.87 24.67 0.04 0.00 275.50 377.81 24.25 19.73 677.29 96.52 26.00 80.08 81.42 5.65 75.77 8.87 34.677 0.01 0.00 17.16 23.85 2.01 12.9 44.30 67.71 10.68 32.68 34.12 17.77 12.25 15.52 1.95 7.540 0.07 0.00 17.16 23.85 2.01 12.9 44.30 62.7 17.05 32.68 34.12 17.77 12.25 15.25 1.95 1.94 0.00 17.16 23.85 2.01 12.9 44.30 62.7 17.0 14.25 18.26 19.73 10.08 32.13 38.71 10.68 32.68 32.84 12.13 18.58 0.00 18.58 1.59 6.513 0.03 10.10 17.77 13.25 14.18 6.38 10.10 13.2 14.18 11.19 11.19 11.11	Total 194.12 11.054 98.49 11.280 50.703 0.030 179.39 2.036 11.39 12.20 2.030 11.59 11.59 11.59 11.30 11.280 11.30 11.280 11.30 11.280 11.3	Troni 194.12 10.564 96.49 11.80

Table E-11 Direct Construction Cost for Lining on Pindi Distributary System

Work Item	Specification	Unit		it Cost(F	<b>₹</b> s.}	Work		t(1,000Rs.)	
			Total	F	L	Volume	Total	F	I.
l Conpensation	·			·					<del></del>
1.1 Compensation for La	and House etc	LS.	16000		16000	1.39	24.5	0.0	24.5
1.2 Compensation for H		LS	10005			,	30.0	0.0	30.0
1.2 Compensation for 11	Sub-total	۵.6.					54.5	0.0	54.5
	Out-total						24.3	0.0	34.3
II Direct Construction Cost									
1. Gate and Installation	at Disty's Head	nos	892,000	300,000	592,000	. 0	0.0	0.0	0.0
2. Earthwork									
*	by machine	m3	22.5	17.4	5.1	2874.3	64.7	50.0	14.7
2.1 Stripping (0.2 m)		-							
2.2 Excavation for	by machine&manual	m3	38.5	27.0	11.3	17830.8	686.5	481.4	205.1
Canal Prism			***			****			
2.3 Embankment and	by machine, normal	m3	57.9	44.9	- 13	33447.8	1,936.6	1,501.8	434.8
Compaction of Bank					:			. :	
2.4 Borrow & Haulage	Excavation and haul- within 500 m	m3	54.6	42.6	12	28510.1	1,556.7	1,214.5	342.1
2.5 Talmarias &			9.1	0.0	. 0.1	22920	208.6	0.0	208.6
2.5 Trimming & Surface Finishing	Manual	m2	9.1	0.0	9.1	22920	203.6	0.0	208.0
2.6 Excavation for	by machine	m3	38.5	27.0	11.5	5405.3	208.1	145.9	62.2
	oy machine	1113	30.3	21.0	11.5	3403.3	208.1	143.9	02.2
Diversion Work						10300 1	0.42.4	## C C	100.4
2.7 Embankment	by machine	m3	51.5	41.0	10.5	18298.4	942.4	750.2	192.1
for Diversion Work					•				
	Sub-total						5,538.8	4,093.9	1,444.9
) I taka Wash	:								
3. Lining Work	••	•	• •		30.0	03030	1 100 0	201.0	0050
3.1 Mortar Pluster	1" mortar	m2	51.8	12.3	39.5	22920	1,187.3	281.9	905.3
3.2 Concrete insitu	3" thick	m3	2,996.2	1,072.3	1923.9	1746.3	5,232.3	1,872.6	3,359.7
3.3 Precast Panel	2" thick	m3	3,300.0				0.0	0.0	0.0
3.4 Joint	Rubber/Bitumen	113	25.0	20.0	5	7812.6	195.3	156.3	39.1
3.5 Geomembrane	1 mm	m2	340.0	300.0	40		0.0	0.0	0.0
with geolextile						400		1	
	Sub-total						6,614.8	2,310.7	4,304.1
4.0									
4. Structure						1 1 1		100	
(New/Replace Installation	n)							. 111	
Outlet		nos	26000	7800	18200	10	260.0	78.0	182.0
VR Bridge	*	nos	40000	12000	28000	. 1.	49.0	12.0	28.0
Drop		nos	60000	18000	42000	3	180.0	54.0	126.0
Washing Step		nos	60000	18000	42000		0.0	0.0	0.0
Buffalo Wallow		nos	70000	21000	49000	1	70.0	21.0	49.0
Spillway		nos	70000	21000	49000		0.0	0.0	0.0
(Repair Work)	10% of New								e di Sa
DR Bridge		nos	8000	2400	5600		0.0	0.0	0.0
VR Bridge		nos	4000	1200	2800	2	8.0	2.1	5.6
	Sub-total						558.0	167.4	390.6
5. Miscellaneous Items	3% of Item 1-4 above	L.S.					381.3	197.2	184.2
Direst Cost	* * *					1	13,093.0	6,769.2	6,323.8
t. 11 tot 0 75t						A B	10,000	0,103.2	5,0200
III Administration and Con-	sulting Cost				* .		1,878.4	1,369.6	503.8
ius analise e e							40.4	0000	
IV Institutional Reform Cos	<b>t</b>		. :		• .		501.6	228.9	272.7
V Physical Contingency (10	% of item 1, U,U1 and1	V)					1,552.7	836.8	716.0
Rose Constantis	n Cost						13 000 3	0.204.6	7,875.7
Base Constructio	n Cost						17,080.2	9,204.5	7,875

Table E-12 Direct Construction Cost for Lining on Hujjan Distributary System

Work Item	Specification	Unit		it Cost(F		Work		Cost(1,000Rs.)	
		•	Total	F	L	Volume	Total	F	L
1 Conpensation								······································	
1.1 Compensation for L		L.S.	16000		16000	13.7	241.1	0.0	241.1
1.2 Compensation for H		L.S.					320.0	0.0	320.0
	Sub-total						561.1	0.0	561.1
II Direct Construction Cos	t								
1. Gate and Installation	at Disty's Head	nos	892,000	300,000	592,000	0	0,0	0.0	0.0
2. Earthwork									
2.1 Stripping (0.2 m)	by machine	m3	22.5	17.4	5.1	45269.4	1,018.6	787.7	230.9
2.2 Excavation for	by machine&manual	m3	38.5	27.0	11.5		10,657.3	7,474.0	3,183.4
Canal Prism	-,						10,001		5,103.1
2.3 Embankment and	by machine, normal	m3	57.9	44.9	13	560866.4	32,474.2	25,182.9	7,291.3
Compaction of Bank			1			4			
2.4 Borrow & Haulage	Excavation and haul within 500 m	m3	54.6	42.6	12	507846.2	27,728.4	21,634.2	6,094.2
2.5 Trimming &	Manual	m2	9.1	0.0	9. į	416803.3	3,792.9	0.0	3,792.9
Surface Finishing	(Manual	HIZ	7.1	0.0	7.1	410003.3	3,192.9	0.0	3,192.9
2.6 Excavation for	by machine	m3	38.5	27.0	115	157713.2	6,072.0	4,258.3	1,813,7
Diversion Work	oy machine	101.5	30.3	27.0	11.5	13771.7.2	0,072.0	4,230.3	1,013.7
2.7 Embankment	by machine	m3	51.5	41,0	10.5	381506.9	19,647,6	15,641.8	4,005.8
for Diversion Work	by matunic	111.7	21.2	0,17	10.5	301300.9	17,041.0	13,041.6	4,005.6
TOTAL DEVOLUTION OF A	Sub-total						100,372.4	74,191.2	26,181.2
3. Lining Work									
3.1 Mortar Pluster	I" mortar	m2	51.8	12.3		416803.3	21,590.4	5,126.7	16,463.7
3.2 Concrete insitu	3" thick	m3	2,996.2		1923.9	31755.9	95,147.0	34,051.9	61,095.2
3.3 Precast Panel	2" thick	m3	3,300.0		2100		0.0	0.0	0.0
3.4 Joint	Rubbet/Bitumen	m	25.0	20.0	5	143002	3,575.1	2,860.0	715.0
3.5 Geomembrane with geotextile	1 mm	m2	340.0	300.0	40		0.0	0.0	0.0
Will Brownie	Sub-total		;				120,312.5	42,038.6	78,273.9
								•	
4. Structure							,		
(New/Replace Installation	on)								
Outlet		nos	26000	7800	18200	126	3,276.0	982.8	2,293.2
VR Bridge		nos	40000	12000	28000	46	1,840.0	552.0	1,288.0
Drop		nos	60000	18000	42000	. H	660.0	198.0	462.0
Washing Step		nos	60000	18000	42000	38	2,280.0	634.0	1,596.0
Buffalo Wallow		nos	70000	21000	49000	56	3,920.0	1,176.0	2,744.0
Spillway		nos	70000	21000	49000		0.0	0.0	0.0
(Repair Work)	10% of New								
DR Bridge		nos	8000	2400		5	40.0	12.0	28.0
VR Bridge		nos	4000	1200	2800	32	128.0	38.4	89.6
	Sub-total		-				12,144.0	3,643.2	8,500.8
5. Miscellaneous Items	3% of Item 1-4 above	L.S.					6,984.9	3,596.2	3,388.7
Direst Cost							239,813.7	123,469.1	116,344.6
III Administration and Con	sulting Cost						34,342.0	24,980.9	9,361.1
IV Institutional Reform Cos	t	:					9,192.9	4,175.4	5,017.5
V Physical Contingency (10	% of item I, II,III andi	<b>V</b> )					28,391.0	15,262.5	13,128.4
Base Constructio	n Coct						353 344 =		
Daye Constituctio	II CUST						312,300.7	167,888.0	144,412.8

Table E-13 Direct Construction Cost for Lining on Kirana Distributary System

Work Item	Specification	Unit	Un	it Cost(F	ls.)	Werk	Co	ost(1,000Rs.)	
	.,,		Total	F	Ł	Volume	Total	F	L
1.6									
1 Conpensation	- 4 Manas aks	L.S.	16000		16000	12.16	214.0	0.0	2140
1.1 Compensation for La	no, crouse etc	LS.	10000		10000	12.10	115.0	0.0	115.0
1.2 Compensation for Ha		L.S.					329.0	0.0	329.0
	Sub-total						327.0	0.0	<i>527.0</i>
II Direct Construction Cost									
1. Gate and Installation	at Disty's Head	nos	892,000	300,000	\$92,000	0	0.0	0.0	0.0
2. Earthwork									
2.1 Stripping (0.2 m)	by machine	m3	22.5	17.4	5.I	86021.9	1,935.5	1,496.8	438.7
2.2 Excavation for	by machine&manual	กเส	38.5	27.0	11.5	471143.3	18,139.0	12,720.9	5,418.1
Canal Prism	by taken meetinanaa						•		
2.3 Embankment and	by machine, normal	m3	57.9	44.9	13	983768.3	56,960.2	44,171.2	12,789.0
Compaction of Bank	oj macinik, norman	,,,,,					,		
2.4 Borrow & Haulage	Excavation and haul	m3	54.6	42.6	1 12	754875.7	41,216.2	32,157.7	9,058.5
2.4 Bostow & tradiage	within 500 m	312.	21.0	12.0				•	
2.5 Teleperina P.	Manual	m2	9.1	0.0	- 91	800068.3	7,280.6	0.0	7,280.6
2.5 Trimming &	Mailear	11112	7.1	V.0	7.1	000000.5	7,000.0	0.0	.,
Surface Finishing	La machina	m3	38.5	27.0	115	372383.4	14,336.8	10,054.4	4,282.4
2.6 Excavation for	by machine	ms	20.2	27.0	11.5	312303.4	14,550.0	10,057.1	1,202.1
Diversion Work				41.0	10.5	614634.1	31,653.7	25,200.0	6,453.7
2.7 Embankment	by machine	m3	51.5	41.0	10,5	014034.1	31,003.7	2.5,200.0	0,400.7
for Diversion Work							169,586.5	124,304.1	45,282.3
	Sub-total						109,550.5	124,504,1	43,202.3
							+		
3. Lining Work	** *						4	9.840.8	31,602.7
3.1 Mortar Pluster	i" mortar	m2	51.8	12.3			41,443.5		
3.2 Concrete insitu	3" thick	m3		1,072.3	1923.9	60968.8	182,674.7	65,376.8	117,297.9
3.3 Precast Panel	2" thick	m3		1,200.0	2100		0.0	0.0	0.0
3.4 Joint	Rubber/Bitumen	m	25.0	20.0			6,766.7	5,413.3	1,353.3
3.5 Geomembrane	1 mm	m2	340.0	300.0	40		: 0.0	0.0	0.0
with geotextile									
•	Sub-total				•	.* .	230,884.9	80,631.0	150,253.9
4. Structure	•	-		100					
(New/Replace Installation	n)								3.466.0
Outlet		nos	26000	7800			4,524.0	1,357.2	3,166.8
VR Bridge	*	nos	40000	12000		30	1,200.0	360.0	840.0
Drop		nos	60000	18000	42000		720.0	216.0	504.0
Washing Step	43	nos	60000			21	1,260.0	378.0	882.0
Buffalo Wallow		nos	70000			52	3,640.0	1,092.0	2,548.0
Spillway		- រាចទ	70000	21000	49000		0.0	0.0	0.0
(Repair Work)	10% of New				1 1				
DR Bridge		nos	8000	2400	5600	6	48.0	14.4	33.6
VR Bridge		nos	4000	1200	2800	39	156.0	46.8	109.2
	Sub-total						11,548.0	3,461.4	8,083.6
6 M	3% of Item 1-4 above	. 1 0					12,360.6	6,252.0	6,108.6
5. Miscellaneous Items	3% OF REAL 1-4 40036	, <sub>L</sub>			100		12,243.5	•100	
Direst Cost						4.	424,380.0	214,651.5	209,728.4
III Administration and Cor	initina Cost						60,304.1	43,429.4	16,874.8
TIT AMERICAN AND COL	Sarang wood					34 - 37 - 4 T			
IV Institutional Reform Co	st			: .			16,303.8	7,259.0	9,014.8
V Physical Contingency (16	0% of item I. H.III and	(V)					50,131.7	26,534.0	23,597.7
:	on or areas as topics and	,		٠			. 1 4 1	291,873.9	259,574.7
							\$51,448.6		

Table E-14 Direct Construction Cost for Lining on Sarangwala Distributary System

Work Hem	Specification	Unit	:   ]r	it Cost(P	(s.)	Work	Co	s((1,000Rs.)	
TO IK LIGHT	Specification	Cint	Total	F	L	Volume	Total	F	L
1 Conpensation	and Haues ats	L.S.	16000		16000	2.34	41.2	0.0	41.2
1.1 Compensation for La			10000		10000	2.34	95.0	0.0	95.0
1.2 Compensation for H		L.S.					136.2	0.0	136.2
	Sub-total						130.2	0.0	130.2
II Direct Construction Cost	i								
1. Gate and Installation	at Disty's Head	nos	892,000	300,000	592,000	0	0.0	0.0	0.0
	•								
2. Earthwork			22.5	17.1		13853.8	311.7	241.1	70.7
2.1 Stripping (0.2 m)	by machine	m3	22.5	17.4	5.1	72199.5		1,949.4	830.3
2.2 Excavation for Canal Prism	by machine&manual	m3	38.5	27.0	11.5	72199.5	2,779.7	1,949.4	630.3
2.3 Embankment and	by machine, normal	m3	57.9	44.9	13	162495.1	9,408.5	7,296.0	2,112.4
Compaction of Bank	by machine, normal		31.3	1 1.12	•••	102173.1	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	.,,	-,
2.4 Borrow & Haulage	Excavation and haul	m3	54.6	42.6	12	222347.5	12,140.2	9,472.0	2,668.2
·	within 500 m								
2.5 Trimming &	Manual	m2	9.1	0.0	9.1	138954.5	1,264.5	0.0	1,264.5
Surface Finishing		_							503.0
2.6 Excavation for	by machine	m3	38.5	27.0	11.5	44151.3	1,699.8	1,192.1	507.7
Diversion Work	La mara de	m3	51.5	41.0		176203.2	9,074.5	7,224.3	1,850.1
2.7 Embankment for Diversion Work	by machine	1113	. 21.3	41.0	10.5	110203.2	2,014.3	C12 2-413	1,0.70.1
tor Diversion Work	Sub-tetal						36,367.1	27,133.8	9,233.3
								,	
3. Lining Work									
3.1 Mortar Pluster	I" mortar	m2	51.8	12.3	39.5	138954.5	7,197.8	1,709.1	5,488.7
3.2 Concrete insitu	3" thick	m3		1,072.3	1923.9	10588	31.723.8	11,353.5	20,370.3
3.3 Precast Panel	2" thick	m3		1,200.0	2100		0.0	0.0	0.0
3.4 Joint	Rubber/Bitumen	Bi	25.0	20.0	5	41306.7	1,182.7	946.I	236.5
3.5 Geomembrane	1 mm	m2	340.0	300.0	40		0.0	0.0	0.0
with geotextile		1						:	15
	Sub-total		٠.				40,104.3	14,008.8	26,095.5
A Company									
4. Structure (New/Replace Installation)	201								
Outlet	J11)	ำกับรั	26000	7800	18200	57	1,482.0	444.6	1,037.4
VR Bridge		nos	40000		28000		400.0	120.0	280.0
Drop		- 103	60000	1 1 1	42000		0.0	0.0	0.0
Washing Step		nos	60000	4	42000		600.0	180.0	420.0
Buffalo Wallow	The first of the second	- 808	70000		49000		1,190.0	357.0	833.0
		nos	70000		49000		0.0	0.0	0.0
Spillway (Repair Work)	10% of New	1103	10000	21000	17000				V.0
DR Bridge	10 % Of Item	nos	8000	2400	5600	2	16.0	4.8	11.2
VR Bridge		nos	4000		2800		52.0	15.6	36.4
AK Drioge	Sub-total	1103	4000	1200	2000	10	3,740.0	1,122.0	2,618.0
•							·		
5. Miscellaneous Items	3% of Item 1-4 above	L.S.					2,406.3	1,267.9	1,138.4
Pot 4 Ct 4							01.617.5	43.633.6	20.006.3
Direst Cost	• .			÷			82,617.7	43,532.6	39,085.2
III Administration and Co.	nsulting Cost						11,952.5	8,807.7	3,144.8
IV Institutional Reform Co	<b>ડા</b>						3,157.8	1,472.2	1,685.6
V Physical Contingency (I	0% of item 1, 11,111 and	(V)					9,786.4	5,381.2	4,405.2
								•	
Base Construction	on Cost						107,650.6	59,193.7	48,456.9
Base Construction	on Cost						107,650.6	59,193.7	48,45

Table E-15 Direct Construction Cost for Lining on Nasrana Distributary System

Work Item	Specification	Unit	Eln	it Cost(R	5.)	Work	C	ost(1,000Rs.)	
Work ttem	Specification	Cilit	Total	F	L	Volume	Total	F	L
1 Congensation									
1.1 Compensation for La	nd House etc	L.S.	16000		16000	30.32	533.6	0.0	533.6
1.1 Compensation for Us	nd Dump ato	LS.	.,,,,,		•••		190.0	0.0	190.0
1.2 Compensation for Ha		25.0					723.6	0.0	723.6
	Sub-total						723.0	0.0	
II Direct Construction Cost				_		_		20	
1. Gate and Installation	at Disty's Head	nes	892,000	300,000	592,000	0	0.0	0.0	0.0
A Bristoned									
2. Earthwork	by machine	n+3	22.5	17.4	5.1	63068.1	1,419.0	1.097.4	321.6
2.1 Stripping (0.2 m)		m3	38.5	27.0	-	364533.1	14,034.5	9,842.4	4,192.1
2.2 Excavation for	by machine&manual	111.5	30.3	21.0	11.5		• 1,02 112	210.2	••••
Canal Prism				- 24.0	12	763555.3	44,209.9	34,283.6	9,926.2
2.3 Embankment and	by machine, normal	m3	57.9	44.9	13	103333.3	44,207.7	34,203.0	J,720.2
Compaction of Bank									1 701 7
2.4 Borrow & Haulage	Excavation and haul	m3	54.6	42.6	12	141808.3	7,742.7	6,041.0	1,701.7
	within 500 m								
2.5 Trimming &	Manual	m2	9.1	0.0	9.1	545287.5	4,962.1	0.0	4,962.1
Surface Finishing					:				
2.6 Excavation for	by machine	m3	38.5	27.0	11.5	533637.8	20,545.1	14,408.2	6,136.8
Diversion Work	• • • • • • • • • • • • • • • • • • • •								
	by machine	m3	51.5	41.0	10.5	276423.9	14,235.8	11,333.4	2,902.5
2.7 Embankment	by maxime	111.7	31.3	••••				•	
for Diversion Work	Catalonal						105,730.1	75,903.7	29,821.5
	Sub-total					-	100,100.0		
3. Lining Work						·		£ 5000 A	01.630.0
3.1 Mortar Pluster	l" mortar	m2	51.8	12.3		545287.5	28,245.9	6,707.0	21,538.9
3.2 Concrete insitu	3" thick	ro3	2,996.2	1,072.3	1923.9	41580.2	124,582.6		79,996.1
3.3 Precast Panel	2" thick	rn3	3,300.0	1,200.0	2100		0.0		0,0
3.4 Joint	Rubber/Bitumen	m	25.0	20.0	5	61170.2	1,529.3	1,223.4	305.9
3.5 Geomembrane	Limm	m2	340.0	300.0	40		0.0	0.0	0.0
with geotextile									
with Beeterstie	Sub-total						154,357.7	52,516.9	101,840.9
	000 10121								
4. Structure	$(a_{i,j},\ldots,a_{i-1},\ldots,a_{$								
	-n1			1.73		100	100		
(New/Replace Installation	<b>117</b>	ถอร	26000	7800	18200	172	4,472.0	1,341.6	3,130.4
Outlet		005	40000	4.5			680.0	and the second second	476.0
VR Bridge			60000			7	720.0		504.0
Drop		nos	60000				60.0		42.0
Washing Step		nos			-		2,450.0	-	1,715.0
Buffalo Wallow		nos	70000		,		0.0		0.0
Spillway		nos	70000	21000	49000		0,0		0.0
(Repair Work)	10% of New				***		40.0	12.0	28.0
DR Bridge		nos	8000				40.0		112.0
VR Bridge	•	nos	4000	1200	2800	49	160.0		
	Sub-total						8,582.0	2,574.6	6,007.4
							8,060.1	3,930.0	4,130.1
5. Miscellaneous Items	3% of Item 1-4 above	e E.S.					0,000.1	. 5,750.0	1,150.1
Direst Cost							276,730.0	134,930.2	141,799.8
Direct Cost								22.220.2	11 400 1
III Administration and Cor	sulting Cost						38,709.0	27,299.7	11,409.2
IV Institutional Reform Co.	st	:					10,678	4,563.0	6,115.3
						:		1.4	
V Physical Contingency (I	0% of item I, II,III and	iV)					32,684.	16,679.3	16,001.8
Base Construction							359,524.9	183,472.2	176,052.7

Table E-16 Direct Construction Cost for Lining on Gojra Distributary System

Work Item	Specification	Unit	Ųn	t Cost(R	ls.)	Work	Co	st(1,000Rs.)	
	•		Total	F	L	Volume	Total	F	L
I Conpensation			···						
1.1 Compensation for La	nd. House etc	LS.	16000		16000	1.67	29.4	0.0	29.4
1.2 Compensation for Ha		LS.					40.0	0.0	40.€
	Sub-total						69.4	0.0	69.4
I Direct Construction Cost									
I. Gate and Installation	at Disty's Head	nos	892,000	300,000	592,000	0	0.0	0.0	0.0
2. Earthwork									
2.1 Stripping (0.2 m)	by machine	m3	22.5	17.4	5,1	8712.8	196.0	151.6	44.4
2.2 Excavation for Canal Prism	by machine&manual	m3	38.5	27.0	11.5	48274.9	1,858.6	1,303.4	555.2
2.3 Embankment and Compaction of Bank	by machine, normal	m3	57.9	44.9	13	99850.1	5,781.3	4,483.3	1,298.1
2.4 Borrow & Haulage	Excavation and haul within 500 m	m3	54.6	42.6	12	76982.8	4,203.3	3,279.5	923.8
2.5 Trimming & Surface Finishing	Manual	m2	9.1	0.0	9.1	82510.1	750.8	0.0	750.8
2.6 Excavation for Diversion Work	by machine	m3	38.5	27.0	11.5	36175.8	1,392.8	976.7	416.6
2.7 Embankment	by machine	m3	51.5	41.0	10.5	61583.4	3,171.5	2,524.9	646.6
for Diversion Work	Sub-total						17,158.3	12,567.8	4,590.5
Lining Work									
J. Lining Work  3.1 Mortar Pluster	I" mortar	m2	51.8	12.3	39.5	82510.1	4,274.0	1,014.9	3,259.
3.2 Concrete insitu	3" thick	m3	2,996.2	1.072.3	1923.9	6287.6	18,838.9	6,742.2	12,096.
3.3 Precast Panel	2" thick	m3	3,300.0	1,200.0	2100	0207.0	0.0	0.0	0.1
3.4 Joint	Rubber/Bitumen	m	25.0	20.0	5	29359.6	734.0	587.2	146.
3.5 Geomembrane	1 mm	m2	340.0	300.0	40		0.0	0.0	0.
with geotextile	Sub-total			4			23,846.9	8,344.3	15,502.
			1.						
I. Structure		-							
(New/Replace Installation	) <b>n</b> )		0.000	2000	10300		1.010.0	313.0	728.
Outlet		nos	26000	7800		40	1,040.0 40.0	312.0 12.0	28.
VR Bridge	•	nos	40000	12000 18000		1	180.0	54.0	126.
Drop		nos	60000				0.0	0.0	0.
Washing Step		nos	60000	18000		0	700.0	210.0	490.
Buffalo Wallow		nos	70000	21000		10			
Spillway	100 611	ROS	70000	21000	49000	. 0	0.0	0.0	0.
(Repair Work)	10% of New		0000				22.0	0.6	
DR Bridge		nos	8000	2400		4 .	32.0	9.6	22.
VR Bridge		nos	4000	1200	2800	4	16.0	4.8	11
	Sub-total						2,003.0	602.4	1,405
5. Miscellaneous Items	3% of Item 1-4 above	L.S.					1,290.4	615.4	645.
Direst Cost				. : .			44,303.6	22,159.9	22,143.
III Administration and Con	sulting Cost			1			6,265.2	4,483.5	1,781.
IV Institutional Reform Cos	s <b>t</b>						1,704.4	749.4	955.
V Physical Contingency (10	0% of item 1, 11,111 and	(V)				•	5,234.3	2,739.3	2,495.
Base Construction	<b>C</b>		1- 1				51,576.8	30,132.1	27,444.

Table E-17 Direct Construction Cost for Lining on Mungi Distributary System

Work Item	Specification	Unit	Un	it Cost(R	(5.)	Work		t(1,000Rs.)	
			Total	F	L	Volume	Total	F	L
I Conpensation	1.71	1.0	16000		16000	7.61	133.9	0.0	133.9
1.1 Compensation for La		LS.	10000		10000	7.01	50.0	0.0	50.0
1.2 Compensation for Ha		L.S.					183.9	0.0	183.9
	Sub-total						103.7	0.0	100.7
II Direct Construction Cost									
1. Gate and Installation	at Disty's Head	nos	892,000	300,000	592,000	2	1,784.0	600.0	1,184.0
					•	•			
2. Earthwork	Barana Mina	m3	22.5	17.4	5.1	26146.3	588.3	454.9	133.3
2.1 Stripping (0.2 m)	by machine		38.5	27.0		160320.2	6,172.3	4,328.6	1,843.7
2.2 Excavation for Canal Prism	by machine&manual	m3	38.3	27.0	11,5	100.720.2	0,114.5	41.720.0	1,0 1211
2.3 Embankment and	by machine, normal	m3	57.9	44.9	13	346437	20,058.7	15,555.0	4,503.7
Compaction of Bank									1 500 0
2.4 Borrow & Haulage	Excavation and haul	m3	54.6	42.6	12	383164.5	20,920.8	16,322.8	4,598.0
2.5 Trimming &	within 500 m Manual	m2	9.1	0.0	9.1	259539.6	2,361.8	0.0	2,361.8
Surface Finishing	Manea	1112	<b>7.1</b>	V.0			-,-		
2.6 Excavation for	by machine	m3	38.5	27.0	11.5	114944.9	4,425.4	3,103.5	1,321.9
Diversion Work	•								4 4 7 5 6
2.7 Embankment	by machine	m3	51.5	41.0	10.5	311992.6	16,067.6	12,791.7	3,275.9
for Diversion Work							70,006.6	52,101.7	17,901.9
	Sub-total	• ;					70,000.0	32,101.7	11,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
	•					: *			
3. Lining Work		á	<i>~</i> 10	100	10.6	259539.6	13,444.2	3,192.3	10,251.8
3.1 Mortar Pluster	I" mortar	m2	51.8				59,247.5	21,203.9	38,043.6
3.2 Concrete insitu	3" thick	_ m3	2,996.2		1923.9		0.0	0.0	0.0
3.3 Precast Panel	2" thick	m3	3,300.0	1 1 1			1,978.1	1,582.5	395.6
3.4 Joint	Rubber/Bitumen	m	25.0				0.0	0.0	0.0
3.5 Geomembrane	l mm	m2	340.0	300,0	40		0.0	0.0	0.0
with geotextile				•		·	74,669.8	25,978.7	48,691.0
	Sub-total						14,005.0	23,270.7	10,071.0
4 6								1.0	
4. Structure (New/Replace Installation)	201				110				100
	Jii)	: nos	26000	7800	18200	86	2,236.0	670.8	1,565.2
Outlet		nos	40000				480.0	144.0	336.0
VR Bridge			60000				60.0	18.0	42.0
Drop		nos	60000				0.0	0.0	0.0
Washing Step		nos	70000		2.0		840.0	252.0	588.0
Buffalo Wallow		nos	70000		and the second second	A CONTRACTOR OF THE PARTY OF TH	0.0	0.0	0.0
Spillway	100 - CM	nos	10000	21000	7,000		3.0		
(Repair Work)	10% of New		8000	2400	5600	3	24.0	1.2	16.8
DR Bridge	4	nos			The second second		16.0	4.8	11.2
VR Bridge	. 6 ) 1	nos	4000	1200	2000	•	3,656.0	1.096.8	2,559.2
	Sub-total								.= ,- ,- ,- ,-
5. Miscellaneous Items	3% of Item 1-4 above	e L.\$.					4,503.5	2,393.3	2,110.2
TO LOCAL							154,619.9	82,170.5	72,449.3
Direst Cost						*	13 4,013.5	02,2100	
III Administration and Cor	nsulting Cost				- p.		22,454.4	16,625.2	5,829.3
		•			by Johnson		5,903.3	2,778.8	3,124.5
IV Institutional Reform Co	šŧ						2,005.3	£,110.0	J-114-7.J
V Physical Contingency (1)	0% of item I. II.III and	lV)					18,316.1	10,157.4	8,153.7
	•								
Base Constructi	on Cost						201,477.6	111,731.9	89,745.7

Table E-18 Direct Construction Cost for Lining on Janiwala/Hamza Distributary System

Work Item	Specification	Unit	Ur	It Cost(F	₹s.}	Work	C	ost(1,000Rs.	)
			Total	F	L	Volume	Total	F	L
I Conpensation		·							
L1 Compensation for La	ind, House etc	L.S.	16000		16000	0.26	4.6	0.0	4.6
1.2 Compensation for Ha		LS.					25.0	0.0	25.0
•	Sub-total						29.6	0.0	29.6
II Direct Construction Cost									
I. Gate and Installation	at Disty's Head	nos	\$92,000	300,000	592,000	l	892.0	300.0	592.0
2. Earthwork									
2.1 Stripping (0.2 m)	by machine	m3	22.5	17.4	5.1	8405.1	189.1	146.2	42.9
2.2 Excavation for Canal Prism	by machine&manual	m3	38.5	27.0	11.5	48315.8	1,860.2	1,304.5	555.6
2.3 Embankment and Compaction of Bank	by machine, normal	m3	57.9	44.9	13	95381.2	5,522.6	4,282.6	1,240.0
2.4 Borrow & Haulage	Excavation and haul within 500 m	m3	54.6	42.6	12	75563.7	4,125.8	3,219.0	906.8
2.5 Trimming & Surface Finishing	Manual	m2	9.1	0.0	9.1	69849.2	635.6	0.0	635.6
2.6 Excavation for Diversion Work	by machine	m3	38.5	27.0	11.5	27789.7	1,069.9	750.3	319.6
2.7 Embankment for Diversion Work	by machine	m3	51.5	41.0	10.5	56288.0	2,898.8	2,307.8	591.0
TO DIVERSION WORK	Sub-total					•	16,112.9	11,864.3	4,248.6
3. Lining Work									
3.1 Mortar Pluster	l" mortar	m2	51.8	12.3	. 39.5	69849.2	3,618.2	859.1	2,759.0
3.2 Concrete insitu	3" thick	m3	2,996.2		1923.9	5321.8	15,945.2	5,706.6	10,238.6
3.3 Precast Panel	2" thick	m3	3,300.0	1,200.0	2100	3321.0	0.0	0.0	0.0
3.4 Joint	Rubber/Bitumen	m	25.0	20.0	5	35332.3	883.3	706.6	176.7
3.5 Geomembrane with geotextile	I mm	m2	340.0	300.0	40	53022.5	0.0	0.0	0.0
	Sub-total						20,446.7	7,272.4	13,174.3
I. Structure			•		•				
(New/Replace Installation	n)		•						
Outlet		nos	26000	7800	18200	32	832.0	249.6	582.4
VR Bridge	and the second	nos	40000	12000	28000	4	160.0	48.0	112.0
Drop		nos	60000	18000	42000	3	180.0	54.0	126.0
Washing Step		nos	60000	18000	42000	0	0.0	0.0	0.0
Buffalo Wallow		nos	70000	21000	49000	4	280.0	84.0	196.0
Spillway		nos	70000	21000	49000	0	0.0	0.0	0.0
(Repair Work)	10% of New					1			
DR Bridge		nos	8000	2400	5600	0	0.0	0.0	0.0
VR Bridge	· ·	nos	4000	1200	2800	3	12.0	3.6	8.4
	Sub-total						1,464.0	439.2	1,024.8
5. Miscellaneous Items	3% of Item 1-4 above	LS.					1,167.5	596.3	571.2
Direst Cost							40,083.0	20,472.1	19,610.9
II Administration and Cons	sulting Cost						5,719.9	4,142.0	1,577.9
V Institutional Reform Cost							1,538.1	692.3	845.7
V Physical Contingency (10	% of item I, II,III andIN	<b>/</b> )					4,737.1	2,530.6	2,206.4
Base Constructio	- C4						52,107.6	27,837.1	24,270.5

Table E-19 Direct Construction Cost for Lining on Pirmahal Distributary System

	Cariffeeles	Unit	Not	t Cost(R	. )	Work	Cos	t(1,000Rs.)	
Work Item	Specification	Unit	Total	F	L	Volume	Total	F	Ł
I Conpensation									1263
1.1 Compensation for La	nd, House etc	L.S.	16000		16000	10.01	176.2	0.0	176.2
1.2 Compensation for Ha	лd Pump etc	LS.					45.0	0.0	45.0
	Sub-total						221.2	0.0	221.2
II Direct Construction Cost								conn	1,184.0
I. Gate and Installation	at Disty's Head	กอร	892,000	300,000	592,000	2	1,784.0	600.0	1,104.0
2. Earthwork						50361	1 122 1	876.3	256.8
2.1 Stripping (0.2 m)	by machine	_m3	22.5	17.4	5.1	50361	1,133.1	8,284.1	3,528.4
2.2 Excavation for Canal Prism	by machine&manual	m3	38.5	27.0	11.5	306817.6	11,812.5		
2.3 Embankment and	by machine, normal	m3	57.9	44.9	13	638323.2	36,958.9	28,660.7	8,298.2
Composition of Bank 2.4 Borrow & Haulage	Excavation and haul	m3	54.6	42.6	12	448800.0	24,501.5	19,118.9	5,385.6
2.5 Trimming &	within 500 m Manual	m2	9.1	0.0	9,1	461798.8	4,202.4	0.0	4,202.4
Surface Finishing 2.6 Excavation for	by machine	n13	38.5	27.0	11.5	328315.9	12,640.2	8,864.5	3,775.6
Diversion Work	•		-	41.0	ın s	445610.3	22,948.9	18,270.0	4.678.9
2.7 Embankment for Diversion Work	by machine	m.3	51.5	41.0	10.3	443010.5	·	-	
	Sub-total						113,067.3	83,198.2	29,869.1
3. Lining Work									10.241.1
3.1 Mortar Pluster	[" mortar	m2	51.8	12.3		461798.8	23,921.2	5,680.1	18,241.1
3.2 Concrete insitu	3" thick	m3	2,996.2	1,072.3	1923.9		105,451.0	37,739.5	67,711.5
3.3 Precast Panel	2" thick	. m3	3,300.0	1,200.0	2100		0.0	0,0	776.7
3.4 Joint	Rubber/Bitumen	្នាក	25.0	20.0		155346.4	3,883.7	3,106.9	0.0
3.5 Geomembrane	L mm	m2	340.0	300.0	40	٠.	0.0	0.0	0.0
with geotextile	•						133 055 0	46,526.5	86,729.3
	Sub-total						133,255.8	40,320.3	00.727.3
4. Structure								+ 1	
(New/Replace Installation	on)		26000	7800	18200	100	2,600.0	780.0	1,820.0
Outlet		nos					960.0	288.0	672.0
VR Bridge		nos		18000		:	180.0	54.0	126.0
Drop		nos nos		18000			0.0	0.0	0.0
Washing Step	• ,	nos					1,750.0	525.0	1,225.0
Buffalo Wallow		nos					70.0	: 21.0	49.0
Spillway (Repair Work)	10% of New								
DR Bridge	10 % OF INCH	nos	8000	2400	5600	8	64.0	19.2	44.8
•		nos				15	60.0	18.0	42.0
VR Bridge	Sub-total					-	5,684.0	1,705.2	3,978.8
5. Miscellaneous Items	3% of Item I-4 above	ve LS					7,613.7	3,960.9	3,652.8
Direst Cost		٠		1 9	· .		261,404.9	135,990.9	125,414.0
III Administration and Co	nsulting Cost			1.			37,605.2	27,514.4	10,090.8
IV Institutional Reform Co						100	10,007.5	4,598.9	5,408.6
V Physical Contingency (I	1 1	dIV)					30,923.9	16,810.4	(4,113.5
Base Constructi		•					340,162.6	184,914.5	155,248.1

Table E-20 Direct Construction Cost for Lining on Killianwala Distributary System

Work Item	Specification	Unit	Ur	il Cost(F	(s.)	Work		ost(1,000Rs.)	
	•		Total	F	L	Votume	Total	F	L
Conpensation									
1.1 Compensation for La	nd, House etc	L.S.	16000		16000	19.26	339.0	0.0	339.0
1.2 Compensation for Ha		L.S.					30.0	0.0	30.0
,	Sub-total						369.0	0.0	369.0
I Direct Construction Cost									
1. Gate and Installation	at Disty's Head	nos	892,000	300,000	592,000	3	2,676.0	900.0	1,776.0
2. Earthwork									
2.1 Stripping (0.2 m)	by machine	m3	22.5	17.4	5.1	35217.7	792.4	612.8	179.6
2.2 Excavation for Canal Prism	by machine&manual	m3	38.5	27.0	11.5	217627.4	8,378.7	5,875.9	2,502.7
2.3 Embankment and Compaction of Bank	by machine, normal	m3	57.9	44.9	13	454506.5	26,315.9	20,407.3	5,908.6
2.4 Borrow & Haulage	Excavation and hauli within 500 m	m3	54.6	42.6	. 12	686415.4	37,478.3	29,241.3	8,237.0
2.5 Trimming &	Manual	m2	9.1	0.0	9.1	328683	2,991.0	0.0	2,991.0
Surface Finishing 2.6 Excavation for	by machine	m3	38.5	27.0	11.5	140293.7	5,401.3	3,787.9	1,613.4
Diversion Work  2.7 Embankment	by machine	m3	51.5	41.0	10.5	589830.0	30,376.2	24,183.0	6,193.2
for Diversion Work	Sub-total					•	110,941.4	83,495.5	27,445.9
3. Lining Work									
3.1 Mortar Pluster	1" mortar	m2	51.8	12.3	39.5	328683	17,025.8	4,042.8	12,983.0
3.2 Concrete insitu	3" thick	m3		1,072.3	1923.9	25043.9	75,036.5	26,854.6	48,182.0
3.3 Precast Panel	2" thick	m3	3,300.0		2100	230 1313	0.0	00	0.0
3.4 Joint	Rubber/Bitumen	m	25.0	20.0		110804.6	2,770.1	2,216.1	554.0
3.5 Geomembrane	1 mm	m2	340.0	300.0	40		0.0	0.0	0.0
with geotextile		· · ·							14.0
	Sub-total						94,832.4	33,113.5	61,719.0
4. Structure			1 1 1			· .			
(New/Replace Installatio	ຄ)					1.0			
Outlet		nos	26000	7800	18200	81	2,106.0	631.8	1,474.2
VR Bridge		nos	40000	12000	28000	11	440.0	132.0	308.0
Drop		nos	60000	18000	42000	3	60.0	18.0	42.0
Washing Step	1.	nos	60000	18000	42000	3	60.0	18.0	42.(
Buffalo Wallow		nos	70000	21000	49000	21	1,470.0	441.0	1,029.0
Spillway		nos	70000	21000	49000	. 0	0.0	0.0	0.0
(Repair Work)	10% of New		30 ST						
DR Bridge		nos	8000	2400	5600	3	24.0	7.2	16.8
VR Bridge		nos	4000	1200	2800	6	24.0	7.2	16.8
	Sub-total						4,184.0	1,255.2	2,928.8
5. Miscellaneous Items	3% of Item 1-4 above	LS.					6,379.0	3,562.9	2,816.1
Direst Cost							219,012.9	122,327.1	96,685.7
III Administration and Con	sulting Cost					· · · · · · · · · · · · · · · · · · ·	32,529.2	24,749.8	7,779.3
IV Institutional Reform Cos	<b>1</b>		*.				8,306.5	4,136.8	4,169.7
V Physical Contingency (10	% of item I, II,III and	(V)	· · · · · · · · · · · · · · · · · · ·				26,021.8	15,121.4	10,900.4
Base Construction	in Cost	•			*		286,239.3	166,335.1	119,904.1

Table E-21 Direct Construction Cost for Lining on Thamman Distributary System

Work Item	Specification	Unit	Uı	nit Cost(1	ts.)	Work		st(1,000Rs.	)
	•		Total	F	L	Volume	Total	F	L
I Conpensation									
1.1 Compensation for La	ind. House etc	L.S.	16000		16000	20.95	368.7	0.0	368.
1.2 Compensation for Ha		L.S.					20.0	0.0	20.0
	Sub-total						388.7	0.0	388.
H Direct Construction Cost									
1. Gate and Installation	at Disty's Head	nos	892,000	300,000	592,000	2	1,784.0	600.0	1,184.0
4 P- 11 - 1	-								
2. Earthwork	h.,	m3	22.5	17.4	5.1	27122.3	610.3	471.9	138.3
2.1 Stripping (0.2 m) 2.2 Excavation for	by machine by machine&manual	m3	38.5	27.0		144321.8	5,556.4	3,896.7	1,659.
Canal Prism	ву пасинесстания	111.3	20.3		11.5	144321.0	J <sub>1</sub> JJ0.4	3,630.1	. 1,039,
2.3 Embankment and	by machine, normal	m3	57.9	44.9	13	312375	18,086.5	14,025.6	4,060.9
Compaction of Bank 2.4 Borrow & Haulage	Excavation and haul	m3	54.6	42.6	12	184961.5	10,098.9	7,879.4	2,219.5
	within 500 m								-
2.5 Trimming & Surface Finishing	Manual	m2	9.1	0.0	9.1	223425.1	2,033.2	0.0	2,033.2
2.6 Excavation for	by machine	m3	38.5	27.0	11.5	156107.5	6,010.1	4,214.9	1,795.2
Diversion Work 2.7 Embankment	by machine	m3	51.5	41.0	10.5	173015.8	8,910.3	7,093.6	1,816.7
for Diversion Work	Sub-total						50,695.4	37,110.2	13,585.2
3. Lining Work			•						
3.1 Mortar Pluster	1" mortar	m2	51.8	12.3	39.5	223425.1	11,573.4	2,748.1	8,825.3
3.2 Concrete insitu	3" thick	m3	2,996.2	1,072.3	1923.9	17023.6	51,006.1	18,254.4	32,751.7
3.3 Precast Panel	2" thick	m3	3,300.0	1,200.0	2100		0.0	0.0	0.0
3.4 Joint	Rubber/Bitumen	m	25.0	20.0	5	82392.4	2,059.8	1,647.8	412.0
3.5 Geomembrane	1 mm	m2	340.0	300.0	40	: .	0.0	0.0	0.0
with geotextile	Sub-total						64,639.3	22,650.4	41,989 (
	4.1								
4. Structure						1 . 1			
(New/Replace Installatio	ก)								
Outlet		nos	26000	7800		72	1,872.0	561.6	1,310.4
VR Bridge		nos	40000	12000	28000	21	840.0	252.0	588.0
Drop		nos	60000	18000	42000	l	60.0	18.0	42 (
Washing Step		nos	60000	18000	42000	10	600.0	180.0	420 (
Buffalo Waltow		nos	70000	21000	49000		980.0	294.0	686.0
Spillway		nos	70000	21000	49000	0	0.0	0.0	0.0
(Repair Work)	10% of New								
DR Bridge	•	nos	8000	2400	5600	1	8.0	2.4	5.6
VR Bridge		nos	4000	1200	2800	8	32.0	9.6	22.4
	Sub-total						4,392.0	1,317.6	3,074.4
5. Miscellaneous Items	3% of Item 1-4 above	L.S.					3,645.3	1,850,3	1,795.0
Direst Cost		•					125,156.1	63,528.6	61,627.5
III Administration and Con	sulting Cost						17,812.0	12,853.4	4,958.6
IV Institutional Reform Cos		, 1.					4,806.1	2,148.4	2,657.1
									1.1
V Physical Contingency (10	0% of item I, II,III and I	V} -			•		14,816.3	7,853.0	6,963.
Base Constructio	n Coct						162,979.2	86,383.4	76,595.

Table E-22 Direct Construction Cost for Lining on Chinna Distributary System

Work Item	Specification	Unit		it Cost(R		Work		t(1,000Rs.)	
	-		Total	F	£	Volume	Total	F	L
I Conpensation					-,			· <del></del>	
1.1 Compensation for La	nd, House etc	L.S.	16000		16000	17.94	315.7	0.0	315.7
1.2 Compensation for Ha		L.S.					20.0	0.0	20.0
	Sub-total						335.7	0.0	335.7
II Direct Construction Cost									
	at Disty's Head	nos	892,000	300,000	592,000	2	1,784.0	600.0	1,184.0
2. Fasternade									
2. Earthwork	by machine	m3	22.5	17.4	5.1	18805	423.1	327.2	95.9
2.1 Stripping (0.2 m)		m3	38.5	27.0	7	112374.4	4,326.4	3,034.1	1,292.3
2.2 Excavation for Canal Prism	by machine&manual	(113	38.3	27.0	11.3	112314.4	4,540.4	5,054.1	2,072.3
2.3 Embankment and	by machine, normal	m3	57.9	44.9	13	235088.4	13,611.6	10,555.5	3,056.1
Compaction of Bank	Parametric and bank	1	516	42.6	12	134964.5	7,369.1	5,749.5	1,619.6
2.4 Borrow & Haulage	Excavation and haul within 500 m	m3	54.6	42.0	. 12	134904.3	7,303.1	3,147.3	1,017.0
2.5 Trimming &	Manual	m2	9.1	0.0	9.1	191668.2	1,744.2	0.0	1,744.2
Surface Finishing		_	30.6	22.0		100310	40764	2.400.0	. 1 406 1
2.6 Excavation for Diversion Work	by machine	m3	38.5	27.0	11.5	129230	4,975.4	3,489.2	1,486.1
2.7 Embankment	by machine	m3	51.5	41,0	10.5	141480.5	7,286.2	5,800.7	1,485.5
for Diversion Work	oj macinio	24.5	V 1.13	17(0			.,	-,	
	Sub-total		44.1		:		39,312.9	28,629.0	10,683.9
	i		:						
3. Lining Work					41		+ .		
	l" mortar	m2	51.8	12.3	39.5	191668.2	9,928.4	2,357.5	7,570.9
	3" thick	m3	2,996.2	1,072.3	1923.9	14605.3	43,760.4	15,661.3	28,099.1
3.3 Precast Panel	2" thick	. m3	3,300.0	1,200.0	2100		0.0	0.0	0.0
3.4 Joint	Rubber/Bitumen	m	25.0	20.0	5	63910.7	1,597.8	1,278.2	319.6
3,5 Geomembrane	Lmm je	m2.	340.0	300.0	40		0.0	0.0	0.0
with geotextile									100
	Sub-total						55,286.6	19,297.0	35,989.6
• 0.						•	·		
4. Structure (New/Replace Installation							1.0		
Outlet	ut)	nos	26000	7800	18200	88	2,288.0	686.4	1,601.6
VR Bridge		nos	40000		28000	23	920.0	276.0	644.0
Drop		nos	60000		42000	Ĩ	60.0	18.0	42.0
Washing Step		nos	60000		42000	3	180.0	54.0	126.0
Buffalo Wallow		nos	70000		49000	20	1,400.0	420.0	980.0
Spillway		nos	70000	21000	49000	õ	0.0	0.0	0.0
(Repair Work)	10% of New	1103	,,,,,,,	21000	47000	v	4.0	0.0	
DR Bridge	10% 0711011	nos	8000	2400	5600	0	0.0	0.0	0.0
VR Bridge		nos	4000		2800	. 3	12.0	3.6	8.4
VIC Diloge	Sub-total	110-5	4000		2000		4,860.0	1,458.0	3,402.0
5. Miscellaneous Items	3% of Item 1-4 above	L.S.					3,037.3	1,499.5	1,537.8
Direst Cost			:				104,280.8	51,483.5	52,797.3
		٠.٠.	18 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	-	1.1				
HI Administration and Con	sulting Cost						14,664.5	10,416.4	4,248 1
IV Institutional Reform Cos	st.		•	-	•		4,018.0	1,741.0	2,277.0
V Physical Contingency (10	% of item 1, 11,111 and	iV)					12,329.9	6,364.1	5,965.8
Base Construction							135,628.9	70,005.0	65,623.8

TABLE E-23 Price List of Labour and Construction Material

No. Item	Unit	Cost(Rs.) Total	Foreign	Local	Remarks
A. Labour		IO(a)	roteign	IAKAI	and the state of t
A. Labour 1 Forman	man-day	250.0	0.0	250.0	
2 Assist. forman/Semi-skilled	-	200.0	0.0	200.0	
	лап-оау тал-дау	200.0	0.0	200.0	
3 Heavy equi, ope	man-day	180.0	0.0	180.0	
4 Assist, heavy equi, ope	•	180.0	0.0	180.0	
5 Dump truck driver	man-day	150.0	0.0	150.0	
6 Assist. dump driver	man-day		0.0	150.0	
7 Common driver	man-day	150.0		200.0	
8 Carpenter/Mason	man-day	200.0	0.0	900.0	
9 Bar bender(cut and bind)	ton	900.0	0.0		
10 Common labour(unskilled)	man-day	110.0	0.0	110.0	
B. Construction Materials					
1 Aggregates, rock and soil					
a) Sand(normal)	· m3	110.0	0.0	110.0	from Chenab River
b) Sand(coarse)	m3	200.0	0.0	200.0	from Chenab River
c) Coarse Aggregate/Grav	el m3	300.0	60.0	240.0	Faisalabad(Rp 200/Salgodha, Rp 420/Lahore Rock quarry at Salgodha
d) Rock, Riprap	m3	425.0	85.0	340.0	Rock quarry at Salgodha, cost at Lahore
	kg/m3	40.0	0.0	40.0	tiven quarry at our general variations
e) Fine Clay	Kg/ni3	40.0	0.0	. 40.0	
2 <u>Lumber</u>	m2	100.0	0.0	100.0	
a) Plywood 5mm		130.0	0.0	130.0	
b) Timber ( Plank,1"*12")	Carrier Section 1997		0.0	90.0	
c) Timer(Scaffolding,4")	m	90.0	0.000	90.0 : 14000.0	
3 Rainforced iron bar	ton	20000.0		2590.0	
4 Portrand cement	ton	3700.0	1110.0	2390.0	
5 Fuel and Oil Product		٠,		11.0	
a) Gasoline	lit	16.5	5.0	11.6	
b) Diesel	lit	7.5	2.3	5.3	
c) Engine oil	lit	95.0	28.5	66.5	
d) Bitumen 80/100	kg	6.0	1.8	4.2	
6 RC Pipe & Flume				•60.0	
a) Dia. 6"	· m	125.0	25.0	100.0	
b) Dia. 12"	m	310.0	62.0	248.0	
7 Steel					
a) Steel Plate/products	ton	25000.0	5000.0	20000.0	
b) Hand Rail	ton	22000.0	4400.0	17600.0	
8 Other	4 - 4				
a) Brick	1,000pc	1500.0	0.0	1500.0	commonly available
b) Ceramic Tile	1,000pc	11500.0	0.0	11500.0	National Ceramic Co.
c) PVC Sheet (0.08-0.12n	nm) m2	18.0	18.0	0.0	imported from Korea
d) Polyethylene sheet(san	ne) m2	14.0	4.2	9.8	Local Product
e) EDPM Rubber Sheet(1	mm) m2	300.0	300.0	0.0	Japanese Market Price
f) FPA Sheet(0.8mm)	m2	170.0	170.0	0.0	Estimated price at PC-1 of FESS Project
g) Geo-Textile(1mm)	m2 <sup>*</sup>	30.0	0.0	30.0	
h) Tree Plant	1,000nos	5000.0	0.0	5000.0	
i) Water Stop(Lining Join		20.0	20.0	0.0	Rubber Belt(150mm width x 1mm thick)

Table E-24 Operation Cost of Construction Equipment

		Specifica			eration Co		
	No. Equipment	Spec.	PS	FC	LC	Total	Remark
				(Rs./hr)	(Rs./hr)	(Rs./hr)	
A	Earth Moving & Excavation	n					
	1. Bulldozer ,D6	Ht	160	851	90	941	
	2. Bulldozer D7	17 t	220	1,064	130	1,194	
	3. Bulldozer ,D8 with Ripp	er 21 t	290	1,918	179	2,097	
	4. Tractor shovel	1.2m3	100	660	127	787	*2
	5. Excavator	0.6m3	140	1,106	94	1,200	*1
	6. Excavator	1.2m3	210	2,092	130	2,222	*3
	7. Dredger of 1.2m3 backet		230	2,092	130	2,222	*3
	8. Tractor Trailer	5 t	60	162	35	197	*2
	9. Wheel loader	2.2m3	160	1,060	109	1,169	*1
	10. Dump truck	11.1	210	766	151	916	*
	11. Dump trock	201	290	1,467	206	1,674	
B.	Compaction						
_ •	12. Tyre roller	≒ 11-17t	100	336	70	406	*1
	13. Tyre roller	21-31t	150	586	87	673	*3
	•		150	1,241	121	1,362	
	14. Tamping roller (C. dozer	•	230	1,943	205	2,148	
	15. Tamping roller (C. dozer 16. Vibration roller	31	25	393	50	443	
	17. Vibration roller	15t	160	1,576	126	1,703	
		. 13t H-17t	100	464	99	563	*3
1	18. Sheep Foot Roller	-	100	52	6	58	*2
	<ul><li>19. Pneumatic Vibrater</li><li>20. Tractor Water Bowser, 4r</li></ul>		60	174	35	209	*2
1	21. Water tank rolly, 10m3	Ht	210	696	87	783	*1
,	22. Motor Grader of 3.7m br		150	1,241	121	1,362	*]
<b>~</b>		noc	130	1,011		1,302	
٠.	Other Equipment	10.	160	348	52	400	*2
	23. Normal Truck	10t		232	35	400 267	*2
	24. Normal Truck	2 t 2 t	100	the state of the s	46	365	*2
	25. Jeep,4-wheel drive	101	120 160	319 406	52	458	*2
	26. Truck w/ 2t crane	5t	60	209	35	244	*2
	27. Tractor w/ It crane	11m3	110	432	101	534	٠ ـ ـ ـ
	28. Compressor	17m3	190	636	150	78 <b>7</b>	
	29. Compressor		190	383	35	418	*2
	30. Concrete mixer, Ibag	0.16m3 0.5m3	<del>.</del>	696	58	754	*2
	31. Concrete mixer ,3bag 32. Truck Mixer(4m3)	0.3113 11t	210	696	- 36 - 87	734 783	*3
	33. Batching Plant, 0.6m3		210	1,297	44	1,341	
		41kw 10k <b>V</b> A	-	1,297	58	232	*2
	34. Generator						*2
	35. Generator 36. Crusher Plant,dia=600m	35kVA m 45kw	-	371 539	87 44	458 583	+ Z
	37. Secondary Crusher	m 45kw 0.5m3	_	128	17	363 145	*2
	38. Fuel Bowser, 10m3	i i	210	696	87	783	*1
	39. Low-bed Trailer	11t 35t	320	1,392	174	1,566	*3
	40. Bitumen Sprayer, Truck		210	696	87	783	*3
<b>.</b>		HADURCE 31 C	210		01	103	<b>ب</b> -
	. Boring, Blasting & Piling	2 71311		04	27	110	
	41. Boring Machine	3.7kW	-	94	36	130	•
ì	42. Augar Machine	45kw	210	539	44	583	
	43. Pile Driver	*	210	696	87	783	
	44. Pneumatic Jack Hamme	r 2" bit		220	23	244	
	45. Rock Drill			220	23	244	

Note: 1. Blank Remarks means etimated cost according to international price

<sup>2. \*1:</sup> Price Listed from Punjab Gov't 3. \*2: Price quated or checked from Local Market

<sup>3. \*3:</sup> estimated from Local Market Price of Equivalent or similar item

Table E-25 Unit Cost Comparison for Lining Work

Work Item	Specificaion	Unit	Uni Total	Unit Price(Rs.)		Refered Chashma	Refered Total Unit Price*1 shma FESS IM	rice*1 IMP	Remarks (Our Interim)	Labour Portion
1. Earthwork		.								
1.1 Excavation	by machine&manual	m3	38.5	27.0	11.5	42.0	110(1.1-3)	15.2	25.0	8.6
for Canal Prism 1.2 Embankment and	by machine, normal	m3	57.9	4.9	13.0	52.4	₫-	21.5	65.0	8.0
Compaction of Bank 1.3 Borrow & Haul		m3	54.6	42.6	12.0	9.0		1.8	1 6	6.6
1.4 1rmming & Surface Finishing	Manual	m2	 5	o O			2.6	6.7	o:	× ×
1.5 Excavation for Diversion Work	by machine and Manual	. m3	38.5	27.0	11.5		1	14.5	25.0	10.3
1.6 Embankment for Diversion Work	by machine	m3	51.5	41.0	10.5	1		14.5	25.0	1.5
J. I. in in a World										
2.1 Mortar Pluster	1:6 mix, I" mortar	m2	51.8	12.3	39.5	65.0	44.9	36.0	35.0	20.1
2.2 Concrete insitu	1:2:4 mix, 3" thick w/Slop Form	m3	2,996.2	-	1,923.9	2500.0	1870.0	2,000.0	3100.0	428.3
2.3 Precast Panel	1:2:4 mix, 2" thick	m3	3,300.0		2,100.0	2500.0	1870:0	,	•	400.0
2.4 Joint	Rubber Joint	ឧ	25.0	20.0	5.0		t	•	•	6. 0.
2.5 Geomembrane with geotextile	1 mm	m2	340.0	300.0	40.0		220.0	ı	410.0	10.0
)										

Note: \*1: adjusted at 1996 May Chashma: IICA Study for Chashma Lift Imgation Project in NWFP, 1994 IMP: Imgation Management Project (ADB), 1996 or Punjab Water Conservation Project, 1994 FESS: Fordowah

Table E-26 Disbursement Schedule for the Project

Work Item	Total	Total Cost(1,000)	)Rs.)					Dist	ursemer	Disbursement Schedule	ie	-			
	To	Foreign	Local	1999	3	2000	0	2001		2002	2	2003	33	2004	7
	:			íz.	7	Œ,	1	Œ,	L	(St.)	_	Œ,	۲.	Ĺτ	-1
1 Conpensation	3,401.9	0.0	3,401.9				¥.		1134		25.		1000		
If Direct Construction Cost  1. Gate and Installation	10,704	3,600	7,104			300	592	8	1184	1500	2960	1200	2368		hadir uzirininya kanitrikandi
2. Earthwork	834.890	614,598	220.291			11132	3903	123075	44709	145001	51448	167695	60116	167695	60116
3. Lining Work	1.019.252	354,689	664,563			6387	11815	75374	141098	80532	151148	86196	180251	96198	180251
4. Structure	62,820	18,846	43,974			466	1083	4263	9947	4072	9501	5023	11719	5023	11719
5. Miscellaneous Items	57.830	29.752	28.078			549	522	6609	2908	6933	6452	8103	7634	8067	7563
Direst Cost Total	1,985,495	1,985,495 1,021,485	964,010	0	0	18834	17921	209411	202845	238038	221508	278219	262088	276983	259649
III Administration and Consulting Cost	284.236	206,672	77,564	62002	23269	31001	11635	31001	11635	31001	11635	31001	11635	20667	7756
IV Institutional Reform Cost	76,118	34,54	41,574	17271	2079	5182	6236	6069	8315	10363	12472	10363	12472		indianity and the
V Physical Contingency	234.925	234,925 126,270	108,655	6373	2535	2802	3593	24732	22393	27940	24675	31958	28719	29765	26741
Base Construction Cost	2,584,177 1,388,971	1,388,971	1.195.206	70102	27883	81509	39518	272052	246322	307343	271424	351541	315914	327415	294146
VI Price Escaration	535.760	285,222	250,538	9200	2585	7596	4960	43331	39233	59641	52670	80810	72620	87345	78469
Total Project Cost	3,119,937 1,674,193	1,674,193	1,445,744	76602	30468	68114	44478	315383	285554	366983	324094 432352		388534	414760	372615

**FIGURES** 

Fig. 6.1-1 Proposed Organization of Project Implementation

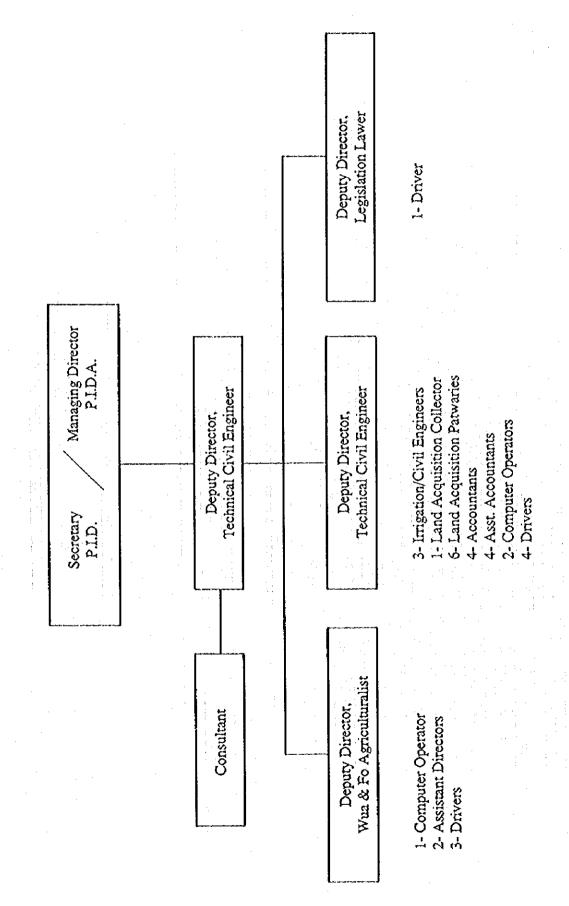


Fig. 6.2.3-1 IMPLEMENTATION SCHEDULE

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	1997		3	ξĺ	1	8	- 1	700k
ACTIVITIES	I I H II I II I I H I II I I I I I I I	IITIMIN [II]	מיושים מיות	II   II   IV	IIIII	口:口:1/	$I \mid M \mid J$	I II III IV
I. PREPARATORY WORKS								
(1) Loan Procedure							<del></del>	
Preparation of PC- I Form	0							
Approval of PDWP								
Approval of CBWP					-			
Financial Institution Apraisal	0					··		
Loan Agreement								
(2) Selection of Consultant			· · · ·					
II. PRE-CONSTRUCTION WORKS								
(1) Survey and Design Work including			· ·					
Review of Existing Development Plan								
(2) Preparation of Bid Documents								
(3) Prequalification of Contractors								
(4) Bidding/Contracting			CHILDREN					
II. LAND ACQUISTTION						: ;		
IV. CONSTRUCTION WORKS								
(1) LJC 12 12 12 12 12 12 12 12 12 12 12 12 12					• • • • • • • • • • • • • • • • • • • •			
Pindi					· ·			
Hujjan								-   -
Kirana					-			-
(2) LCC								
Sarangwala			1	- -	-   - -   -			
Nasrana			1		-	-		
Gojra			<u>_</u>	-				
Mungi			· · · ·			-	- -	-
Janiwala/Hamza			1					
Pirmahal			_Ł	-	-   -			
Killianwala					·			
(3) CBDC								·-
Thamman								
China							_	
V. ADMINISTRATION						1444		
W. ENGINEERING SERVICES			OCCIO DENGLIS					