

TABLE A.13-1 BASIC UNIT COSTS (1) LABOUR COST

NO.	DESCRIPTION		UNIT	UNIT COST	
				L/C(US\$)	F/C(US\$)
1	Engineer	Experience: 10 years	M/M	1,000.00	
2	Engineer	Experience: 5 years	M/M	750.00	
3	Surveyor		M/M	500.00	
4	Assist. surveyor		M/M	250.00	
5	Clark, administration	Experience: 10 years	M/M	300.00	
6	Draftman		M/M	250.00	
7	Typist/word processor		M/M	250.00	
8	Clark, logistic		M/M	300.00	
9	Laboratory staff		M/M	250.00	
10	Driver	Sedan	M/M	200.00	
11	Office boy		M/M	160.00	
12	Watchman		M/M	160.00	
13	Foreman		M/D	15.00	
14	Mechanic		M/D	10.00	
15	Electrician		M/D	10.00	
16	Operator	Heavy-equipment	M/D	15.00	
17	Driver	Trucks, etc.	M/D	8.00	
18	Riggewr		M/D	8.00	
19	Welder		M/D	8.00	
20	Carpenter		M/D	8.00	
21	Bar bender		M/D	8.00	
22	Plaster		M/D	8.00	
23	Mason		M/D	8.00	
24	Painter		M/D	7.00	
25	Skilled labour		M/D	7.00	
26	Common labour		M/D	6.00	

TABLE A.13-1 BASIC UNIT COSTS (2) MATERIAL COST

NO.	DESCRIPTIONS	SPECIFICATIONS	UNIT	UNIT COST	
				L/C US\$	F/C US\$
1	Cement	Portland	t	87.00	
2	Concrete admixture	Water-reducing agent	kg		1.60
3	Concrete admixture	Water reducing, high quality	kg		2.80
4	Concrete admixture	Non-shrink	kg		1.40
5	Aluminium powder		kg		19.00
6	Fine aggregate	-5 mm	m ³	4.40	
7	Coarse aggregate	5-25 mm	m ³	6.50	
8	Crusher-run		m ³	19.60	
9	Aggregate for asphalt pavement	-16mm	m ³	21.70	
11	Turf		m ²	2.00	
12	Asphalt emulsion	PK	l		0.50
13	Deformed bar		t	487.00	
14	Binding wire	#20	kg	1.00	
15	Wooden square		m ³	207.50	
16	Wooden plank		m ³	217.40	
17	Ply wood, water-proof	12mm*0.9m*1.9m	sheet		19.00
18	Gasoline		l	0.28	
19	Diesel oil		l	0.26	
20	Electric power		kWh	0.04	
22	H-shaped steel	11300*300	t		590.00
23	Channel steel	250*90	t		612.00
24	Angle steel	100*100	t		605.00
25	Steel sheet pile	Type-III	t		915.00
27	Steel pipe	150A	m		30.00
29	Steel pipe	100A	m		14.50
33	Steel plate	12--16mm	t		625.00
34	Steel pipe for pile	φ 1500mm*12 mm	t	150.27	1,830.00
53	Wooden concrete form		sheet		10.00
54	Metal Concrete	w/accessories	m ² /d		0.30
70	Concrete form oil		l		1.10
71	Form separating agent		l		3.90
73	Curing mat		m ²		3.20
74	Curing film agent		l		3.10
75	Rubber hose		m		1.70
76	Hose for grouting	φ 12-16mm	m		2.30
85	PVC pipe	100mm 4m	nos.		34.20
87	PVC pipe	50mm 4m	nos.		9.60
94	Gabion	2*1*0.5m	kg		1.50
96	Nail		kg		0.90
97	Barbed wire		kg		0.90
99	Guard rail	Gr-A-2BS	m		93.00
100	Guard rail for bridge	Gr-BK-2PH	m		91.00
105	PC bar	φ 26mm	t		2,470.00
106	PC cable	12T12.7mm	t		1,167.00
107	Sheath	For 12T12.7mm	m		3.80
108	Sheath	For 12 φ 8mm	m		2.30
109	Sheath	For φ 26mm	m		1.90
114	PC anchor	For 27T15	set		2,220.00
115	PC anchor	For 12T13	set		175.00
116	PC anchor	For 12 φ 8	set		60.00
118	Center hinge shoe	Vertical shoes	pcs		45,000.00
119	Center hinge shoe	Horizontal shoes	pcs		5,000.00
120	Bearing shoe	200t	pcs		2,820.00
121	Bearing shoe	350t	pcs		4,590.00
122	Bearing shoe	490t	pcs		7,080.00
123	Bearing shoe	1050t	pcs		22,270.00
124	Concrete jointin gbond		kg		275.00
132	Expansion joint		m		1,570.00
140	Bridge railing	Steel made, H=1m	m		290.00
142	Rain collector	FC25(60kg)	pcs		590.00
144	Bridge surface lighting	H=12m	set		1,880.00

TABLE A.13-1 BASIC COSTS (3) EQUIPMENT COST

NO.	DESCRIPTIONS	SPECIFICATIONS	UNIT	UNIT OPERATION COST	
				L/C(US\$)	F/C(US\$)
1	Bulldozer	21t	hr	12.70	37.10
2	Bulldozer	15t	hr	9.50	30.00
3	Backhoe	0.6m ³	hr	9.00	30.00
4	Wheel loader	2.1m ³	hr	8.60	37.10
5	Dump truck	11t	hr	6.40	18.30
6	Water tanker	8 m ³	hr	5.70	20.80
7	Truck mixer	4.5 m ³	hr	15.70	23.30
8	Concrete pump car	90--110 m ³ /h	hr	6.60	66.70
9	Flat bed truck	11t	hr	6.20	16.70
10	Chip spreader	For 11t dump truck	d	2.40	22.10
11	Truck w/crane	2.9t crane on 4t truck	hr	4.70	20.10
12	Asphalt distributor	4000L	d	19.00	167.00
13	Line marker		d	4.80	175.00
14	Light van	2000cc	hr	4.00	6.70
15	4-wheel drive car	2000cc	hr	3.90	7.10
16	Micro-bus	15 persons	hr	4.10	12.50
17	Crawler crane	80t	hr	8.80	111.00
18	Crawler crane	50t	hr	6.90	68.10
19	Truck crane	35t	hr	6.60	90.40
20	Truck crane	25t	hr	6.60	69.60
21	Truck crane	15t	hr	6.10	55.40
22	Jib crane	29kw	d	8.00	195.80
23	Elevator for construction use	0.5t	d	8.00	62.50
24	Motor grader	3.7m	hr	7.60	50.00
25	Tire roller	8-20t	hr	5.00	25.00
26	Road roller	10-12t	hr	5.10	25.00
27	Vibration roller	8-10t	hr	7.10	47.50
28	Vibration roller	3t	hr	3.90	20.80
29	Tamper/rammer	60-100kg	d	16.50	12.50
30	Vibration hammer	75kw	hr	15.00	51.90
31	Water jet equipment	131PS	hr	8.50	34.50
32	Crawler drill	180kg	d	4.20	22.60
33	Hydraulic braker	600kg	d		75.80
34	Concrete braker	30kg	d		8.80
35	Port. air compressor	17m ³ /min	d	28.10	80.70
36	Port. air compressor	5m ³ /min	d	13.20	33.30
37	Diesel generator	200kva	d	66.00	71.50
38	Diesel generator	150kva	d	49.50	54.80
39	Diesel generator	100kva	d	33.00	74.60
40	Diesel generator	75kva	d	24.80	72.90
41	Diesel generator	45kva	d	13.20	50.80
42	Diesel generator	25kva	d	6.60	42.00
43	Submersible pump	150mm	d		8.30
44	Submersible pump	100mm	d		4.20
45	Submersible pump	80mm	d		3.20
46	Semi-automatic welder	300A	d	8.00	20.80
47	Arc welder	300A	d	8.00	4.20
48	Screening plant		d		370.00
49	Concrete plant	60m ³ /h	hr	12.00	88.00
50	Cement silo	100t	d		20.80
52	Grout mixer		d	8.00	88.80
53	Grout pump		d	8.00	145.80
54	Working pontoon	700t	d		592.00
55	Working pontoon	500t	d		463.00
56	Working pontoon	300t	d		263.00
57	Working pontoon	200t	d		188.00
58	Pontoon w/crane	25t crane on 200t barge	d	62.20	500.00
60	Working boat	4.9t	hr	10.93	20.80
61	Tag boat	10t	hr	18.82	33.30
62	Anchor barge	5t	hr	17.15	125.00
63	Reverse circulation drill	75 kW	hr	4.00	67.80
64	Tractor & trailer	30t	hr	12.64	58.30
66	Concrete spreader	3-7.5m	hr	9.00	45.80
67	Concrete finisher	3-7.5m	hr	9.00	39.60

TABLE A.13-2 COST OF CONSTRUCTION OF BRIDGE

NO.	WORK ITEMS	UNIT	Q'TY	LOCAL CURRENCY PORTION		FOREIGN CURRENCY PORTION		TOTAL
				UNIT (US\$)	AMOUNT (US\$ 1000)	UNIT (US\$)	AMOUNT (US\$ 1000)	AMOUNT
	CONSTRUCTION COST				9,884		42,884	52,768
1	Preparatory Works				816		4,887	5,703
	Construction Plants	LS			64		4,716	
	Office and Store house	LS			454		126	
	Miscellaneous	LS			298		45	
2	Bridge Construction				7,551		35,909	43,460
	Substructure				3,250		9,335	12,585
	Abutments (A1 & A2)				99		33	
	Concrete	m3	460	96.0	44	46.0	21	
	Reinforcement bar	t	30	567.0	17	0.0	0	
	Miscellaneous	LS			38		12	
	Piers (P1 - P13)				3,151		9,302	
	Foundation pile	m	2420	47.0	113	1493.0	3,613	
	Concrete	m3	9500	250.0	2,371	552.0	5,243	
	Reinforcement bar	t	1200	575.0	491	0.0	344	
	Miscellaneous	LS			176		102	
	Superstructure				4,301		26,574	30,875
	PC box girder				3,730		23,801	
	PC box concrete	m3	14107	108.0	1,528	1161.0	16,378	
	Reinforcement bar	t	2000	660.0	1,320	314.0	628	
	PC cable stressing	t	981	765.0	750	5582.0	5,770	
	PC bar stressing	t	82	1610.0	132	12500.0	1,025	
	Bearing shoes and expansion joints				86		824	
	Bearing shoes	pcs	8	125.0	1	11250.0	90	
	Cener hinge	pcs	8	10500.0	84	73000.0	584	
	Expansion joints	pls	7	143.0	1	21430.0	150	
	Bridge surface works				485		1,949	
	Bridge surface	m2	16300	7.7	126	702.0	118	
	Pavement	m2	11100	16.2	180	7.5	6	
	Railing	m	2760	26.1	72	408.0	1,126	
	Miscellaneous	LS			107		699	
3	River Bank Protection				338		206	544
	Right bank (10,000 m2)	LS			154		94	
	Left bank (12,000 m2)	LS			184		112	
4	Approach Road Construction				1,179		1,882	3,061
	Pakse side				179		325	504
	Embankment	m3	24000	1.5	37	5.7	136	
	Base course	m2	7500	10.9	82	1.9	14	
	Asphalt pavement	m2	7500	2.1	16	5.1	38	
	Slope protection (sodding)	m2	8400	1.3	11	0.0	0	
	Box culvert (2 pls)	LS			23		22	
	Miscellaneous	LS			10		115	
	Phonthong side				1,000		1,557	2,557
	Embankment	m3	165000	1.9	319	6.6	1,093	
	Base course	m2	25900	10.9	282	1.5	38	
	Asphalt pavement	m2	25900	1.8	46	4.2	109	
	Slope protection (sodding)	m2	39200	1.4	54	0.0	0	
	Box culvert (9 pls)	LS			290		164	
	Miscellaneous	LS			9		153	

TABLE A.13-3 DISBURSEMENT SCHEDULE

ITEMS OF WORKS	1996			1997			1998			1999			2000			TOTAL										
	F/C	TOTAL	I/C	F/C	TOTAL	I/C	F/C	TOTAL	I/C	F/C	TOTAL	I/C	F/C	TOTAL	I/C	F/C	TOTAL									
		(A)(1)			(A)(2)			(A)(3)			(A)(4)			(A)(5)			(A)(6)									
1) Construction Cost	816	4,887	5,703	0	0	0.000	498	2,444	2,852	0.300	245	1,466	1,711	0.200	163	977	1,141	0.000	0	0	0	0	816	4,887	5,703	
1) Preparatory Works	7,551	35,909	43,460	0	0	0.000	2,493	11,426	13,919	0.000	2,496	10,155	12,650	0.000	2,171	11,910	14,081	0.000	391	2,418	2,810	0	7,551	35,909	43,460	
2) Bridge Construction	3,250	9,335	12,585	0	0	0.370	1,203	3,454	4,656	0.490	1,593	4,574	6,167	0.140	455	1,807	1,762	0.000	0	0	0	0	3,250	9,335	12,585	
a) Substructure	4,201	26,574	30,775	0	0	0.300	1,290	7,972	9,261	0.210	903	5,581	6,494	0.399	1,716	10,603	12,319	0.091	391	2,418	2,810	0	4,201	26,574	30,775	
b) Superstructure	338	206	541	0	0	0.000	0	0	0	0.000	0	0	0	0.000	169	103	272	0.500	169	103	272	0	338	206	541	
3) River Bank Protection	1,179	1,892	3,061	0	0	0.789	907	1,447	2,354	0.154	182	290	471	0.077	91	145	236	0.000	0	0	0	0	1,179	1,892	3,061	
4) Approach Roads	9,884	42,884	52,768	0	0	0.000	3,807	15,317	19,124	0.000	2,922	11,911	14,833	0.000	2,594	13,138	15,729	0.000	560	2,521	3,082	0	9,884	42,884	52,768	
Total of Base Cost:																										
Price Contingency:																										
Physical Contingency:																										
Total of 1:																										
2) Engineering Services	146	1,314	1,460	0	0	0.940	7	66	73	0.000	0	0	0	0.000	0	0	0	0.000	0	0	0	0	0	146	1,314	1,460
1) Detailed Design	223	2,010	2,233	0	0	0.200	45	402	447	0.370	83	744	826	0.360	80	724	804	0.070	16	141	156	0	223	2,010	2,233	
2) Construction Supervision	369	3,324	3,693	0	0	1.887	52	468	520	0.000	83	744	826	0.000	80	724	804	0.000	16	141	156	0	369	3,324	3,693	
Total of Base Cost:																										
Price Contingency:																										
Physical Contingency:																										
Total of 2:																										
3) Administration Cost	792	0	792	0	0	0.200	158	0	158	0.000	248	0	248	0.100	238	0	238	0.100	79	0	79	0	792	0	792	
Total of Base Cost:																										
Price Contingency:																										
Physical Contingency:																										
Total of 3:																										
4) Land Acquisition & Compensation Cost	1,045	0	1,045	0	0	0.900	941	0	941	0.100	105	0	105	0.000	0	0	0	0.000	0	0	0	0	0	1,045	0	1,045
Total of Base Cost:																										
Price Contingency:																										
Physical Contingency:																										
Total of 4:																										
Total of Base Costs for 1, 2, 3 and 4:	12,090	46,208	58,298	218	1,248	1,466	4,958	15,785	20,743	0.000	3,447	12,654	16,001	0.000	2,912	13,859	16,771	0.000	655	2,662	3,317	0	12,090	46,208	58,298	
Total of Price Contingency:																										
Total of Physical Contingency:																										
Total of Contingencies:																										
G. Total:	12,090	46,208	58,298	224	1,295	1,510	5,636	18,277	23,914	0.000	3,950	15,019	18,969	0.000	3,557	16,912	20,449	0.000	815	3,338	4,153	0	14,162	54,831	68,993	

TABLE A.13-4 LAND ACQUISITION AND COMPENSATION COSTS

Category	Kind	Unit Price (US \$)	Quantity	Cost (US \$)
Buildings	1-SW	7,000	36	252,000
	1-SWC	8,000	1	8,000
	2-SW	10,000	2	20,000
	2-SWC	14,000	3	42,000
	1-SC	25,000	2	50,000
	2-SC	45,000	0	0
	3-SC	50,000	0	0
	Others			4
	Subtotal		48	372,000
Water	Deep Wells	1,200	0	0
Agricultr.	Rice Field	\$8/ha	70,000m2	56
Trees	Tamarind	25	1	25
	Teak	110	10	1,100
	Mango	30	3	90
	Palm	15	1	15
	Subtotal		15	1,230
TOTALS				373,286

NOTE A.13-1 MAINTENANCE PROGRAMME

1. PRESENT SITUATION OF MAINTENANCE SYSTEM AND ORGANIZATIONS FOR NATIONAL ROADS IN LAOS

1.1 Existing Maintenance System

1.1.1 Administrative System

Two organizations, MCTPC and DCTPC, are responsible for road administration on national roads in each province. They are executing their works jointly and respectively.

The organizations of MCTPC are shown in Fig. 1, Fig. 2 and Fig. 3.

The Communication Department shares duty and responsibilities for road maintenance activities in the Ministry. The Department implements whole road management activities, from planning to construction/maintenance, and also administrative/financial/technical management.

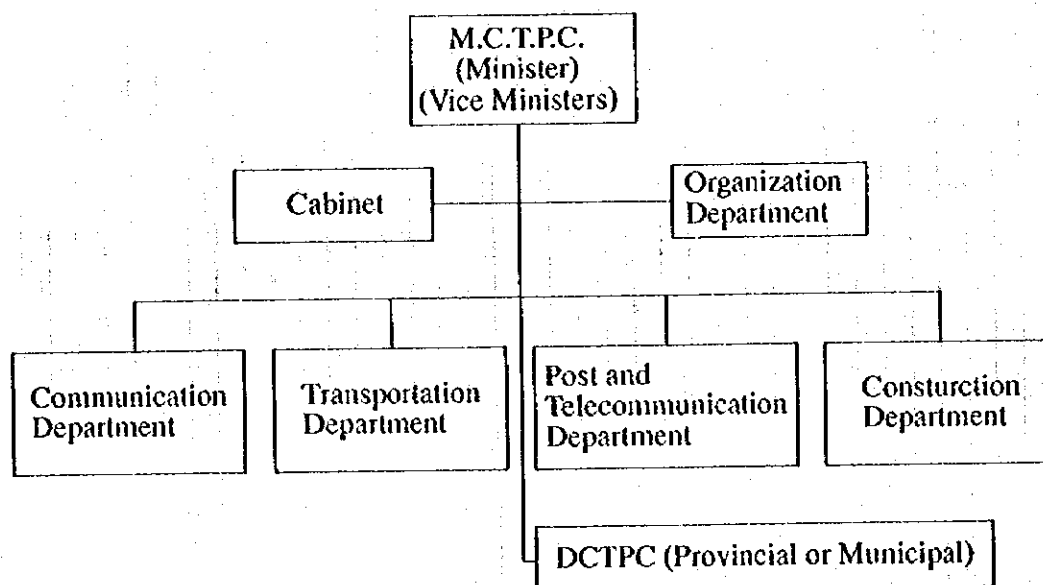


Figure 1 Organization Chart of MCTPC

The Road Administration Division (RAD) formerly named Road Maintenance Department, shares duty and responsibility for road maintenance in the Department.

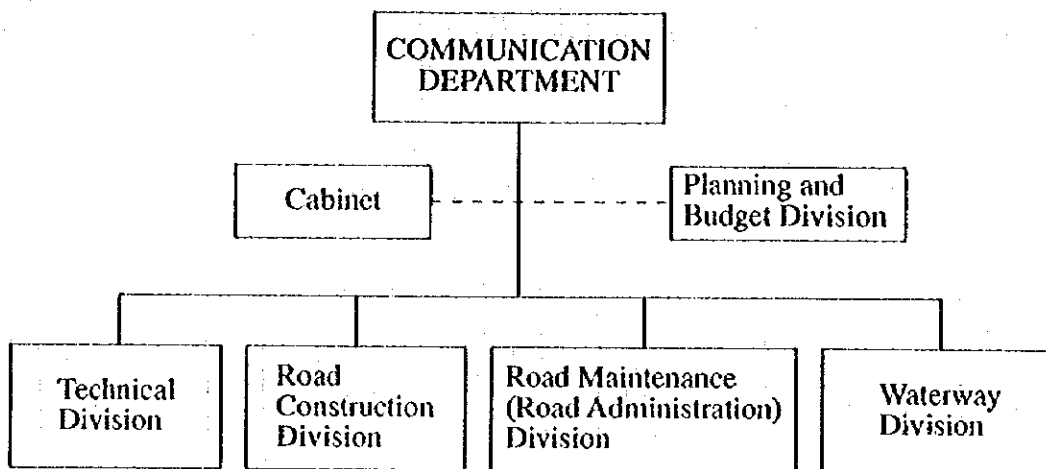


Figure 2 Organization Chart of Communication Department

The number of personnel of the Road Administration Division are as follows:

	Total	Senior	Medium	Primary
Head Office	14	11	3	-
North Reg.	8	6	2	-
Central Reg.	7	3	2	2
Southern Reg.	6	5	2	-
Total	35	25	8	11

(on 1994)

The organization of the Road Administration Division is Shown in the Fig. 3, including three regional offices. (Project offices for international funded projects are directly managed by the Communication Department.)

The Road Administration Division, RAD, has four sections and other four sub-organizations in the Division in the head office, and it has three regional offices of North, Central and South.

Pakse area is controlled by the southern regional office, RAD, MCTPC.

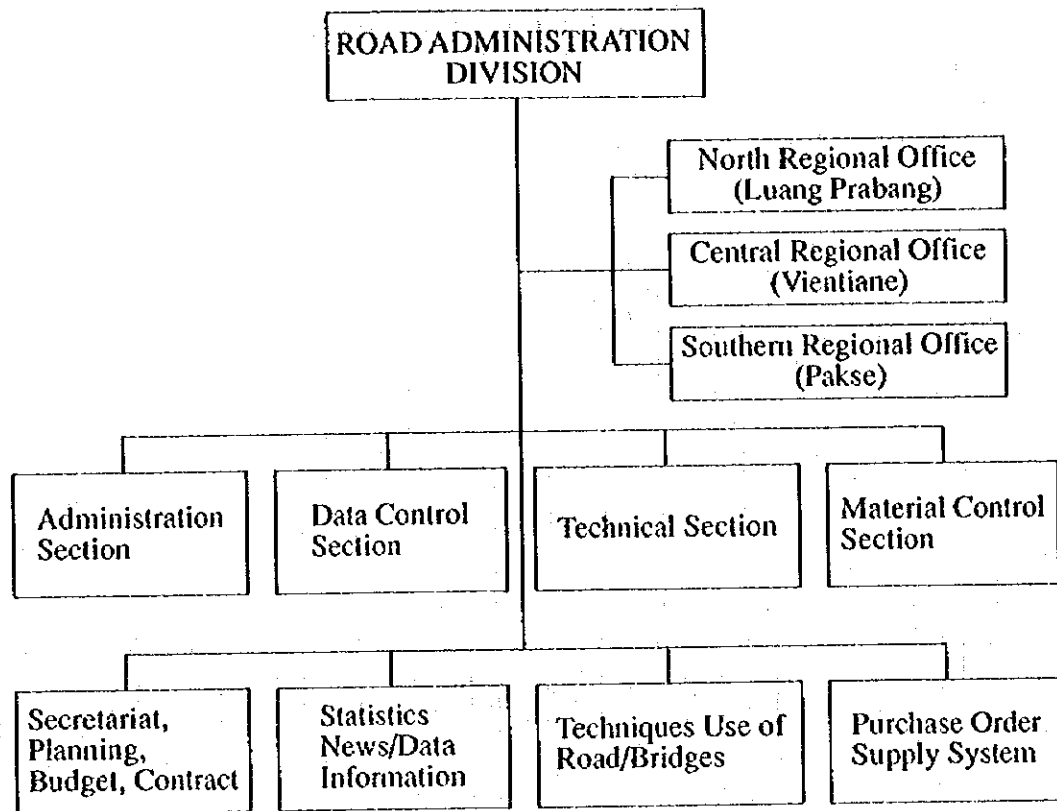


Figure 3 Organization Chart of Road Administration Division

1.1.2 Technical System

The MCTPC also has technically shared road maintenance works mainly through the Road Administration Division. However, actual past activities of the Division were mainly routine maintenance and low level periodical maintenance because of insufficient financial resource and staff.

Many parts of periodical maintenance, mainly high budget level ones, are executed by contract bases with external financial resources.

2. CURRENT PROBLEMS AND ISSUES

2.1 Systems

In 1993 and 1994, several programme and efforts were planned and implemented under the title of "Change Efforts in the Communication Department of the MCTPC".

Meetings to discuss present problems and plans to resolve those problems were held in

the Department, and the major problems in road maintenance system are pointed out as follows;

- Insufficient Data Control System

It was recognized that establishment of appropriate inventory system of roads and bridges should be necessary

- Lack of educational and training system/organizations

It is one of the serious problems on Road Administration in Laos that quite a few educational/training organizations are existing for road administration, and they are operated only in Vientiane area.

- Insufficient Financial Resource for Road maintenance

It is more desirable for the MCTPC to implement all routine maintenance works and a part of periodical maintenance works, such as pavement patching work, repairing of shoulder, reshaping of slope etc.

2.2 Organization

The MCTPC has two kinds of organizations for road maintenance activities, one is for routine maintenance activities, like road cleaning and ditch clearing, and another is for periodical maintenance activities, like road/pavement improvement and bridge replacement.

The former organization is operated by its own financial resources, Recurrent Budget, and the latter is operated by external financial resources, Project Budget.

Major problems in organization management are;

- Difficulty in continuing the activities after external funded projects are completed, due to lack of the own budget,

- Keeping capable staffs in the organization,
- Keeping workable conditions on purchased equipment,
- Continuing appropriate monitoring works.

- Not developed domestic private firms to be capable of sharing a part of road maintenance activities.

At present, most of large scaled road maintenance works, like road improvement/bridge replacement projects, are implemented by MCTPC by employing foreign consultants and foreign contractors.

It is mentioned that introduced new system/organizations for the projects are stopped to operate after finishing the project period in several cases, and purchased equipment are

used for other purposes because of difficulty of continuing the original programme mainly due to shortage of fund.

The Road Inventory System was implemented by RAD under the financial assistance of the Government of Nederland in 1990 using computerized data control system, but after finishing the period the RAD is requiring new fund for continuing the system and organization in order to get necessary data and information for appropriate road maintenance activities to implement appropriate works on appropriate time, and it is expected to reduce total national public investment to maintain major road network in all weather condition.

The DCTPC, Department of Communication, Transport, Post and Construction, Champasak (Pakse) has motor pool and small scale of workshop for construction equipment and transportation vehicles, but most of equipment are not worked because of the following reasons;

- 1) Old model with un-repairable mechanical troubles,
- 2) Lack of parts including tires and lamps,
- 3) Shortage of fund for operation.

3. APPROPRIATE MAINTENANCE PROGRAMME FOR THE PAKSE BRIDGE PROJECT

3.1 System

Establishment of road maintenance system having the following functions are recommended:

- Monitoring of road/bridge conditions
 - Periodical patrol by MCTPC/DCTPC
 - Collecting information and opinions of users,

- Integrated capability for maintenance of the Pakse Bridge and the Connecting Roads
 - Having appropriate staff, administrative and engineering,
 - Maintain appropriate construction equipment and workshop,
 - Fund for necessary activities.

The new system is recommended to be established by MCTPC and be directly operated by MCTPC, especially for maintenance of the Main Bridge.

3.2 Organization

During construction stage, the project office will be established in DCTPC Pakse. It is recommended that the new organization of Pakse Bridge Maintenance Office shall be reorganized from the Project Office.

Recommended layout of the new organization are as follows;

- Director * : One civil engineer
- Engineer * : Two for Civil, road and bridge,
One for Mechanics
- Technician : Two for Civil,
One for Mechanics
- Administration staff : One staff

Note: Mark (*) means concurrent post in the DCTPC

3.3 Recommended Maintenance

1) Maintenance for the Main Bridge

The Recommended programme on maintenance for the Main Bridge are as follows;

(1) Routine Maintenance (Short Term Periodical Maintenance Activities)

- Cleaning of drainage and road surface,
- Checking miscellaneous facilities, handrail, lighting etc.,
- Temporary repairing damage due to accident.

The recommended patrolling plan is weekly patrol with two persons by vehicle and walk, if necessary.

(2) Middle Term Maintenance Activities

- Periodical maintenance of steel members, like railing, lighting pole etc.,
- Periodical maintenance of pavement surface.

The recommended maintenance cycle is 7 to 10 year interval except in case of accident.

Long term maintenance works would be implemented by other fund, like national budget or external financial resource, as rehabilitation project.

2) Maintenance for the Roads

Road maintenance activities would be implemented by DCTPC as part of NR-10 and NR-13S and the Pakse Bridge Maintenance Office would provide technical assistance

for DCTPC.

The Recommended maintenance programmes for the road portion are as follows:

(1) Routine maintenance: Weekly,

- Ditch cleaning,
- Bush/Slope Clearing

(2) Middle Term Periodical Maintenance: Yearly

- Patching pot hole,
- Repairing shoulder,
- Re-shaping slope.

(3) Long Term Periodical Maintenance

Long term periodical maintenance, like large scaled improvement of pavement, would be directly implemented by MCTPC with other fund or external financial resource.

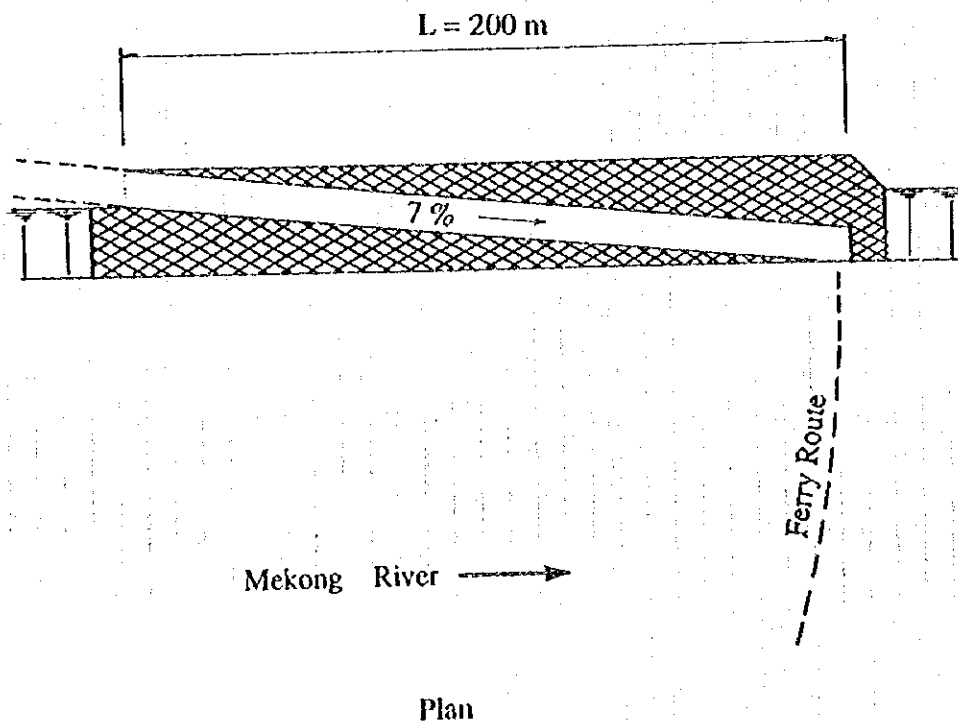
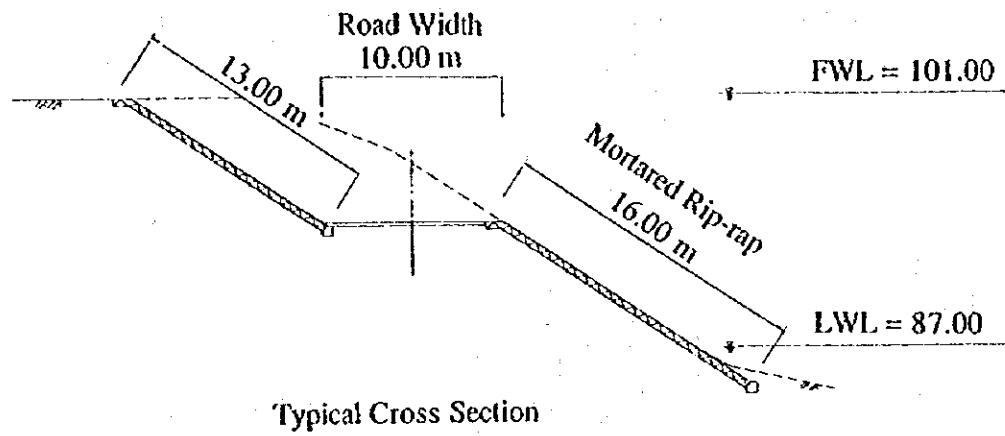
4. MAINTENANCE COST

According to the maintenance programme proposed above, the maintenance costs are estimated as follows:

1.	Administration cost	2,400 US\$/year
2.	Inspection cost	(Included into administration cost)
3.	Routine maintenance costs	7,380 US\$/year
	1) Cleaning work for roads and bridge	860 US\$/year
	2) Road surface maintenance	4,400 US\$/year
	3) Electricity Charge	1,450 US\$/year
	4) Others	670 US\$/year
4.	Periodical maintenance costs	26,230 US\$/5 years
	1) Renewal of ancillary structures	1,840 US\$/5 years
	2) Road maintenance	22,000 US\$/5 years
	3) Others	2,390 US\$/5 years

Accordingly, the annual maintenance cost for the Project was estimated at about 15,000US\$ per year





Item		Volume	Unit Cost	Amount
Excavation	70 x 200	14,000 m ³	5 US\$	70,000 US\$
Mortared Rip-rap	(13 + 16) x 200	5,800 m ²	28 US\$	162,400 US\$
Concrete Pavement	9 x 0.15 x 200	270 m ³	65 US\$	17,550 US\$
Total				249,950 US\$

FIGURE A.14-1 EXPANSION LAYOUT OF FERRY TERMINAL



TABLE A.15-1

FINANCIAL CASH FLOWS
 (CONSTANT 1995 PRICE : Case 1)

(US\$1,000)

No.	Year	COSTS			REVENUE	R - C (7) Net Cash Flow
		(1) Investment Cost	(2) Maintenance & Operation	(3) Total Cost		
	1996	1466		1466	0	-1466
	1997	22150		22150	0	-22150
	1998	17429		17429	0	-17429
	1999	18344		18344	0	-18344
	2000	3625	7.5	3633	706	-2927
1	2001		15.0	15.0	1607	1592
2	2002		15.0	15.0	1804	1789
3	2003		15.0	15.0	2000	1985
4	2004		15.0	15.0	2196	2181
5	2005		15.0	15.0	2393	2378
6	2006		15.0	15.0	2589	2574
7	2007		15.0	15.0	2785	2770
8	2008		15.0	15.0	2981	2966
9	2009		15.0	15.0	3178	3163
10	2010		15.0	15.0	3374	3359
11	2011		15.0	15.0	3545	3530
12	2012		15.0	15.0	3715	3700
13	2013		15.0	15.0	3886	3871
14	2014		15.0	15.0	4057	4042
15	2015		15.0	15.0	4228	4213
16	2016		15.0	15.0	4398	4383
17	2017		15.0	15.0	4569	4554
18	2018		15.0	15.0	4740	4725
19	2019		15.0	15.0	4910	4895
20	2020		15.0	15.0	5081	5066
21	2021		15.0	15.0	5252	5237
22	2022		15.0	15.0	5422	5407
23	2023		15.0	15.0	5593	5578
24	2024		15.0	15.0	5764	5749
25	2025		15.0	15.0	5935	5920
26	2026		15.0	15.0	6105	6090
27	2027		15.0	15.0	6276	6261
28	2028		15.0	15.0	6447	6432
29	2029		15.0	15.0	6617	6602
30	2030		7.5	7.5	3394	3386
	TOTAL	63014	450	63464	125545	62081

CONDITIONS :

1995 constant prices

Toll rate ; (Case 1) :the same rates as present Pakse ferry

FIRR

3.7%

TABLE A.15-2

FINANCIAL CASH FLOWS
 (CONSTANT 1995 PRICE : Case 3)

(US\$1,000)

No.	Year	COSTS			REVENUE	R - C (7) Net Cash Flow
		(1) Investment Cost	(2) Maintenance & Operation	(3) Total Cost		
	1996	1466		1466	0	-1466
	1997	22150		22150	0	-22150
	1998	17429		17429	0	-17429
	1999	18344		18344	0	-18344
	2000	3625	7.5	3633	314	-3319
1	2001		15.0	15.0	715	700
2	2002		15.0	15.0	803	788
3	2003		15.0	15.0	890	875
4	2004		15.0	15.0	977	962
5	2005		15.0	15.0	1065	1050
6	2006		15.0	15.0	1152	1137
7	2007		15.0	15.0	1239	1224
8	2008		15.0	15.0	1326	1311
9	2009		15.0	15.0	1414	1399
10	2010		15.0	15.0	1501	1486
11	2011		15.0	15.0	1580	1565
12	2012		15.0	15.0	1659	1644
13	2013		15.0	15.0	1737	1722
14	2014		15.0	15.0	1816	1801
15	2015		15.0	15.0	1895	1880
16	2016		15.0	15.0	1974	1959
17	2017		15.0	15.0	2053	2038
18	2018		15.0	15.0	2131	2116
19	2019		15.0	15.0	2210	2195
20	2020		15.0	15.0	2289	2274
21	2021		15.0	15.0	2368	2353
22	2022		15.0	15.0	2447	2432
23	2023		15.0	15.0	2525	2510
24	2024		15.0	15.0	2604	2589
25	2025		15.0	15.0	2683	2668
26	2026		15.0	15.0	2762	2747
27	2027		15.0	15.0	2841	2826
28	2028		15.0	15.0	2919	2904
29	2029		15.0	15.0	2998	2983
30	2030		7.5	7.5	1539	1531
	TOTAL	63014	450	63464	56425	-7039

CONDITIONS :

1995 constant prices

Toll rate (Case 3) : 50% of benefit per vehicle

FIRR

-0.6%

TABLE A.15-3

FINANCIAL CASH FLOWS

(Price escalation : Case 1)

(US\$ 1,000)

Year	COSTS			REVENUE	R - C
	Investment Cost	O & M Cost	Total Cost	Toll Revenue	Net Cash Flow
1996	1510		1510		-1510
1997	23499		23499		-23499
1998	19045		19045		-19045
1999	20646		20646		-20646
2000	4202	12.1	4214	819	-3395
2001		26.6	26.6	1867	1840.2
2002		29.2	29.2	2095	2065.4
2003		32.2	32.2	2322	2290.3
2004		35.4	35.4	2550	2515.0
2005		38.9	38.9	3218	3179.4
2006		42.8	42.8	3482	3439.5
2007		47.1	47.1	3746	3699.1
2008		51.8	51.8	4010	3958.4
2009		57.0	57.0	4274	4217.2
2010		62.7	62.7	5261	5198.2
2011		68.9	68.9	5527	5458.1
2012		75.8	75.8	5793	5717.3
2013		83.4	83.4	6059	5975.8
2014		91.7	91.7	6325	6233.6
2015		100.9	100.9	7643	7542.5
2016		111.0	111.0	7952	7841.0
2017		122.1	122.1	8260	8138.4
2018		134.3	134.3	8569	8434.7
2019		147.7	147.7	8878	8729.8
2020		162.5	162.5	10647	10484.7
2021		178.8	178.8	11005	10826.0
2022		196.6	196.6	11362	11165.6
2023		216.3	216.3	11720	11503.5
2024		237.9	237.9	12077	11839.4
2025		261.7	261.7	14428	14166.4
2026		287.9	287.9	14843	14555.0
2027		316.7	316.7	15258	14941.1
2028		348.4	348.4	15673	15324.3
2029		383.2	383.2	16088	15704.3
2030		105.4	105.4	9568	9462.2
TOTAL	68903	4067.1	72969.9	241321	168350.8

CONDITIONS:

Cost escalation ; 3% per annum

Toll rate ; (Case 1) : the same rate as present Pakse ferry

Toll revision ; 5 years interval, 3% per annum

FIRR

6.4%

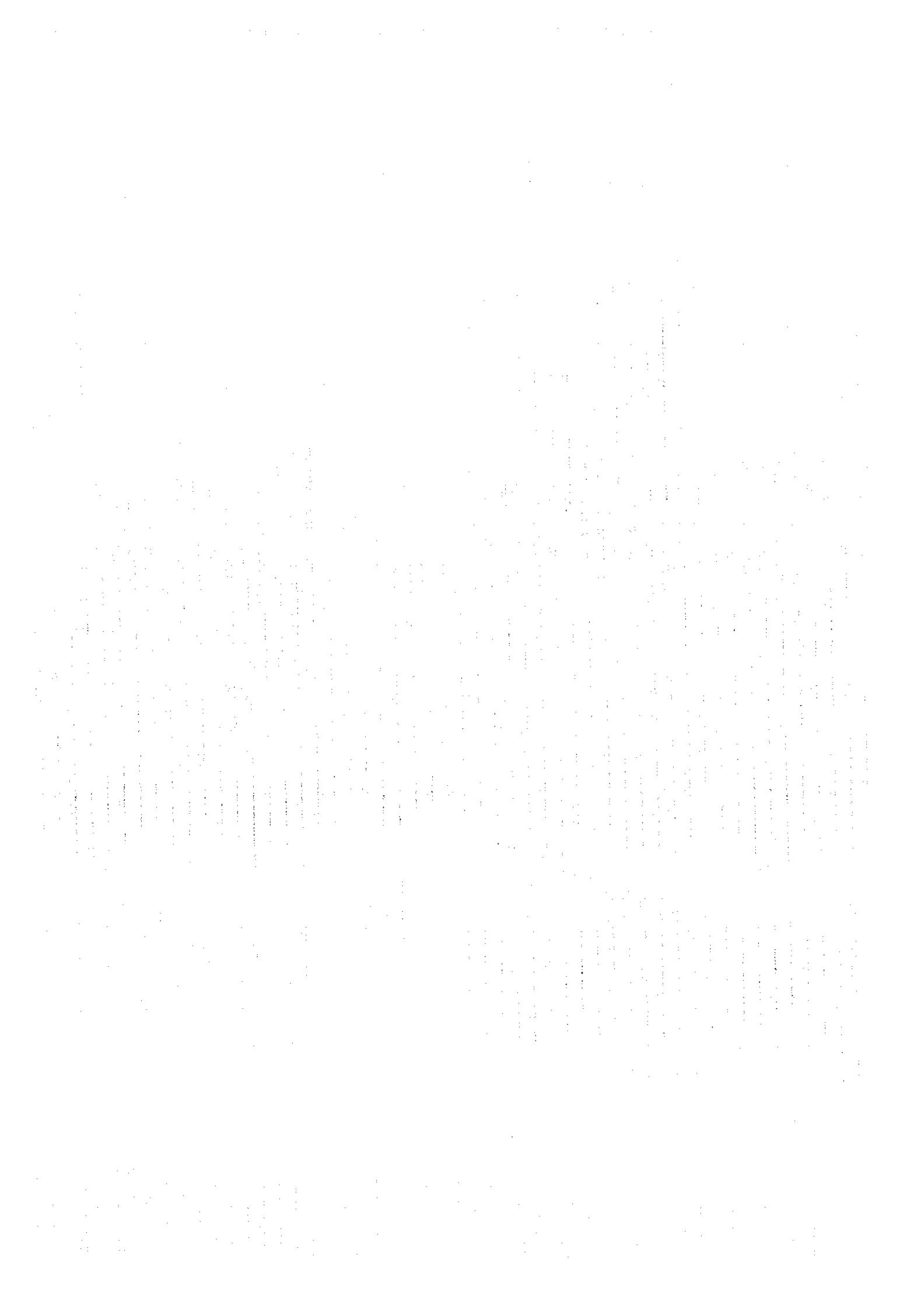
TABLE A.15-4 FINANCIAL CASH FLOWS
Price escalation : Case 3) (US\$ 1,000)

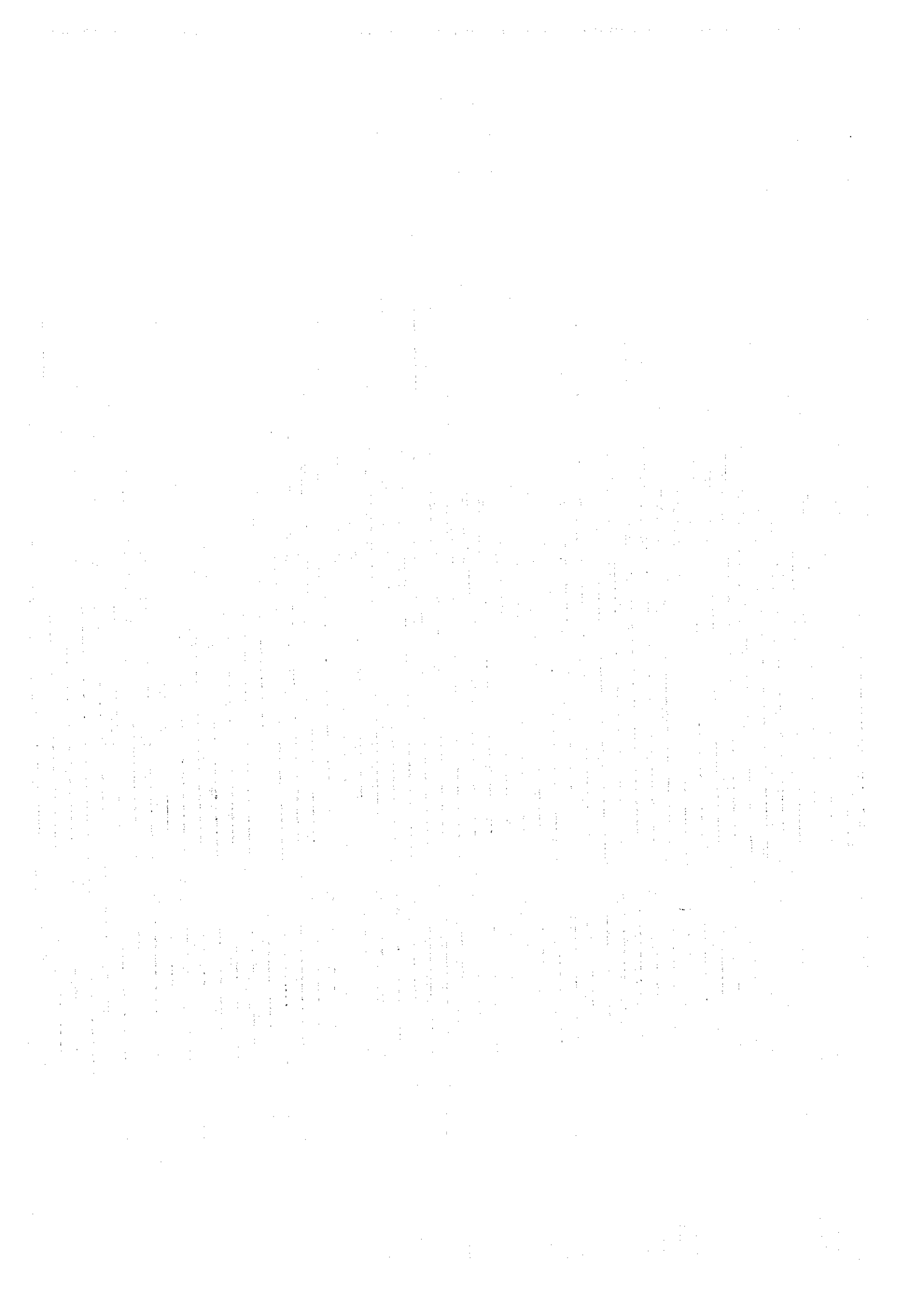
Year	COSTS			REVENUE	R - C
	Investment Cost	O & M Cost	Total Cost	Toll Revenue	Net Cash Flow
1996	1510		1510		-1509.98
1997	23499		23499		-23499
1998	19045		19045		-19045
1999	20646		20646		-20646
2000	4202	12.1	4214	365	-3850
2001		26.6	26.6	830	803.8
2002		29.2	29.2	932	902.4
2003		32.2	32.2	1033	1000.7
2004		35.4	35.4	1134	1098.8
2005		38.9	38.9	1436	1397.3
2006		42.8	42.8	1554	1511.2
2007		47.1	47.1	1672	1624.6
2008		51.8	51.8	1789	1737.6
2009		57.0	57.0	1907	1850.1
2010		62.7	62.7	2347	2284.6
2011		68.9	68.9	2470	2401.5
2012		75.8	75.8	2594	2517.9
2013		83.4	83.4	2717	2633.5
2014		91.7	91.7	2840	2748.4
2015		100.9	100.9	3434	3333.3
2016		111.0	111.0	3577	3466.0
2017		122.1	122.1	3720	3597.7
2018		134.3	134.3	3863	3728.2
2019		147.7	147.7	4005	3857.6
2020		162.5	162.5	4810	4647.7
2021		178.8	178.8	4976	4797.0
2022		196.6	196.6	5141	4944.6
2023		216.3	216.3	5307	5090.5
2024		237.9	237.9	5472	5234.5
2025		261.7	261.7	6534	6272.6
2026		287.9	287.9	6726	6438.3
2027		316.7	316.7	6918	6601.4
2028		348.4	348.4	7110	6761.5
2029		383.2	383.2	7302	6918.5
2030		105.4	105.4	4351	4245.5
TOTAL	68903	4067.1	72969.9	108867	35897.1

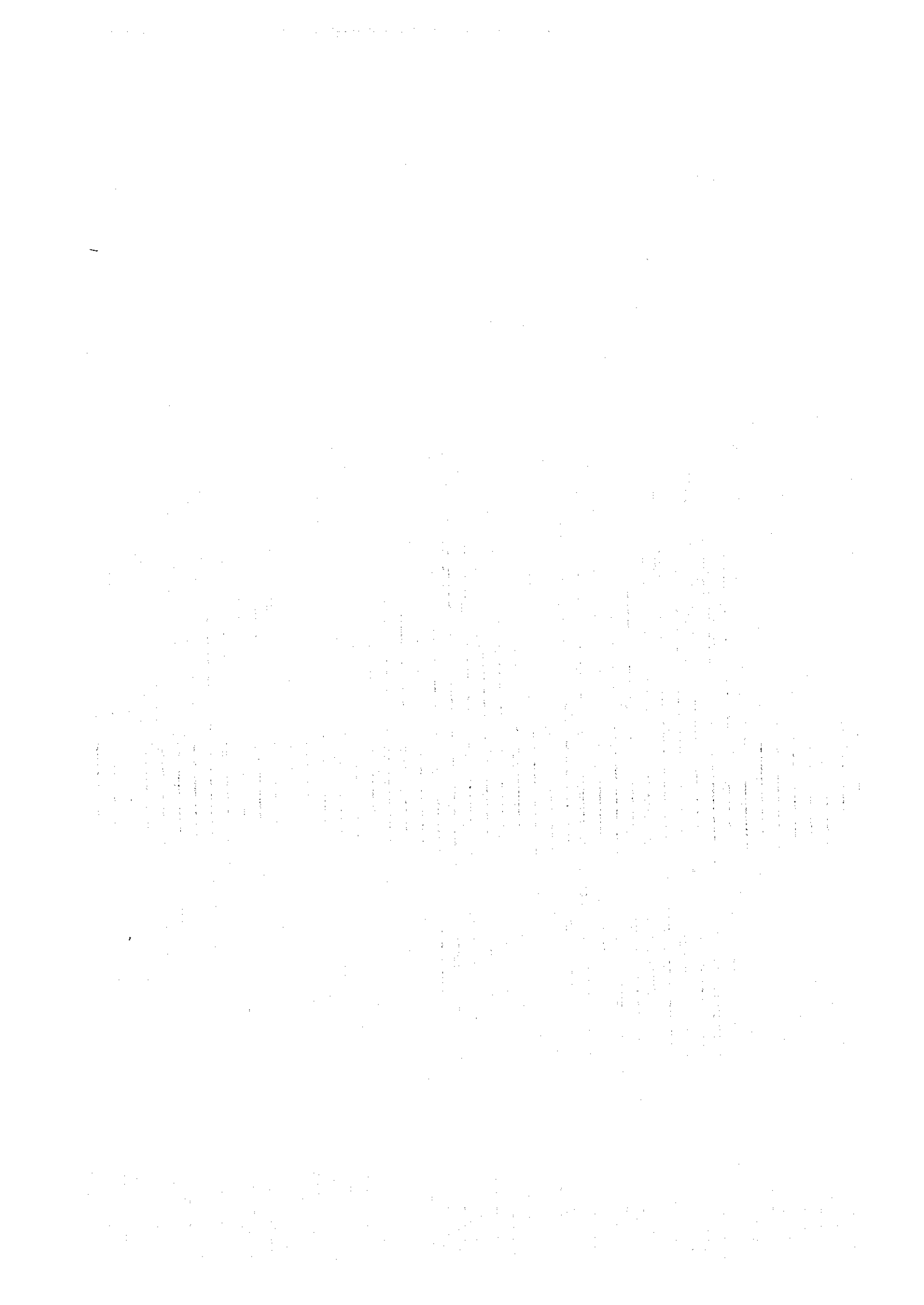
CONDITIONS:

Cost escalation ; 3% per annum
Toll rate ; (Case 3) : 50% of benefit per vehicle
Toll revision ; 5 years interval, 3% per annum

FIRR	2.0%
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